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Foreign Trade Regimes and Economic Development: Brazil

by

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Introduction

This study of Brazilian commercial policy and its consequences for internal economic development has a number of objectives. One is to trace the import substitution process to its origins at the beginning of the century, and thereby to illuminate the characteristics of pre-1945, largely market-oriented industrialization. Many of the problems posed in this early period continued to plague policy makers in their later ultimately successful efforts to establish Brazil as a leading industrial nation.

Principal among these was the constant tension created by internal inflation with shifting relative prices accompanied by balance of payments disequilibrium. Elaborate policies of quantitative exchange restriction, multiple and auction exchange rates, and incentives to capital inflows were continuously designed to sustain the viability of the development process during the 1950's. The description of this disequilibrium model as it operated in the post-war period, its accomplishments, and its ultimate failure in the early 1960's, is another central focus of the volume.

A third feature is an analysis of the new policies instituted after 1964 with the intent of establishing a different and more solid basis for subsequent Brazilian economic growth. Brazil succeeded in attaining record rates of expansion after 1967, a marked contrast to the earlier acceleration of inflation and slowing growth. The role of commercial policy, and the dynamics of trade liberalization cum stabilization in this period, is a matter of considerable analytic, as well as practical, interest.

To supplement this macroeconomic orientation, two additional relevant issues require separate attention. One is the extent of resource distortion introduced by the protective system, whose structure was designed not merely to limit imports, but also to make investment in domestic industry profitable. Brazilian tariffs and surcharges reached extraordinary levels by the early 1960's. To what effect? New measures of simple and effective protection are developed to respond to this important query.

The last subject considered is the very rapid export expansion of recent years. A fundamental criticism of the import substitution strategy is its neglect of export possibilities. The current Brazilian development model, with its rising share of trade relative to national product, is self-consciously open. Of especial interest is the relative importance of exchange rate policies, especially the "crawling peg", and of export subsidies in initiating and sustaining this expansion. Of concern as well are the possible sectoral distortions introduced by the current subsidy program structured upon the indirect taxation system, and of course, the ultimate feasibility of the present model under conditions of uncertain and changing world trade.

The study thus ranges extensively over topics and time. Perhaps its most compelling conclusion is the significant role played by policy, heterodox and orthodox alike, in determining the style of economic development after 1945. But policy was a double-edged sword: maintaining what had been a successful course beyond its applicability was costly. Whether the specific instruments be coffee purchases, exchange rate incentives to import substitution, or export subsidies, a belief in their permanent adequacy sooner or later was betrayed by events. The basic issue therefore is not the universal superiority of liberal over restrictive policies, or of international rather than domestic price signals, but rather the appropriateness and adaptation of measures to a particular phase of development. The surge of growth after 1967 - "Brazilian Miracle" - was not a mere response to altered and more enlightened policies geared to altered objectives; rather it depended and capitalized upon prior development. What is generalizable from the study of Brazil is not the universal efficacy of the particular policies that were followed, but rather how they predictably evolved and interacted with economic conditions.

I

Early Import Substitution[1]

Brazil, in common with other peripheral countries that did not share in the industrial revolution of the nineteenth century, participated in the growing international economy before 1914 through its exports of primary commodities and its imports of manufactures and of capital. In the case of Brazil, the export sector increasingly depended upon coffee after mid-century, and the fortunes of that commodity were a central determinant of commercial policy. So, too, was the increasing debtor status of the government, and its dependence upon tariff revenues as a source of finance. And finally, and not least important, was the disposition - at least until 1929 - to modify only partially the guidance of world market prices that counselled agricultural specialization.

From mid-nineteenth century through the 1890's, there was a reasonably consistent cast to economic policy. Tariffs were not numerically low as frequently presumed, but although high, their motivation was quite distinctly fiscal rather than protective. Indeed, tariffs rose and fell in response to governmental deficits, although the background debate concerning the virtues and defects of liberalism as a long-term economic strategy is not entirely to be disregarded. Exchange rates were flexible rather than fixed. They depreciated as coffee prices fell, recovering in the subsequent upturn. But their range of variation in the cycle was relatively small - on average only about 10 per cent. Within this policy matrix the economy became increasingly specialized in coffee, and the Brazilian share of the world market increased. The more important factor, however, was the larger total trade in the commodity as incomes in the industrialized countries grew.

The last decade of the century proved a turning point in economic evolution. A series of fundamental changes coincided. One was the rapid immigration whose origins dated from the 1870's but accelerated through the 1880's and 1890's. This substitution of free labor was favored, first by gradual emancipation of slaves, and finally abolition in 1888. The coffee economy was also influenced on the demand side: for it is with the 1890's that the first signs of potential overproduction,

and significantly weakening international prices, present themselves. And finally, a significant political impulse to modernization posed itself with the substitution of the monarchy by a republic.

This conjuncture created an economic environment that was especially hospitable to a natural process of import substitutive industrialization that lasted until the Great Depression. New economic directions were charted. Central aspects of the new policies included: defense of internal coffee sector incomes both through undervaluation of the exchange rate, and also attempts to limit production; even higher levels of tariffs to finance greater government outlays and to repay debt, and also, eventually, to protect new industrial interests; and, at least at the beginning of the 1890's, (excess) monetization of the economy through the substantial issue of paper currency. How these interacted can be seen most vividly in the evolution of the domestic manufacture of cotton textiles.

As elsewhere in the nineteenth century, despite a gradual evolution of domestic manufacture of foodstuffs that led to reduced imports of some processed products, the cotton textile sector was the leading edge of Brazilian import substitutive industrialization. While there were a few mills dating back to the 1850's, as late as 1885 Brazilian cotton cloth manufacture was limited to some 50 mills with an output of only slightly more than 26 million meters, concentrated in the grossest grades. This production represented not much more than 10 percent of national consumption. Twenty years later, production had expanded tenfold, became more diversified, and represented 60 percent of consumption.

The transition is marked by a significant and permanent decline in the import coefficient in the 1890's. Imports declined because of a significant real devaluation that increased the costs of foreign cloth (after an earlier interval in which imports of capital goods had been favored). That real devaluation in turn was the result of the significant expansion in the money supply, which led to internal inflation, and with flexib

ates, exaggerated speculation against Brazilian currency. A real devaluation causes an obvious shift against imports, but also stimulates investment in exports by increasing their profitability. Simultaneously, however, the world price of coffee in dollars was undergoing a precipitous decline. In part owing to the cyclical decline of incomes in the developed countries, but more in response to the rapidly increasing world supply of coffee, the price halved between 1893 and 1898. As a consequence, incomes of the coffee sector were barely maintained in domestic currency over this interval, despite the favorable movement of the exchange rate. In such circumstances, the prospects for investment in import-substituting activities had greatest appeal.

Tariffs, the most direct policy instrument for influencing the attractiveness of industrial investment, while ostensibly abetting import substitution in this period, in fact did not. Although the ad-valorem rates (razoes) calculated on the basis of official values increased, the true ad-valorem proportions based on market prices declined. For official values in Brazilian currency were determined by the 1890 exchange rate and were therefore well below prices actually prevailing. Despite the imposition of various compensating surcharges, actual customs receipts as a proportion of the value of imports declined in the 1890's. Reduced collections in turn checked the capacity of the government effectively to implement a deflationary policy as severe as it might have chosen. Over the period 1894-1897, while expenditures in current milreis were held constant (and declined in real terms), a deficit was nonetheless experienced.

This is not to assert that Brazilian industry would have been able to compete in the absence of high tariff levels, but rather that the latter had already existed for some time, and in similar structure, without having successfully evoked a response of this magnitude. This de-emphasis of the initiating role of tariff policy to early import substitution carries over to the post-1900 period as well. It is common to attribute the early 20th century growth of textiles, the "Golden Age", to the Tariff

of 1900. That those rates were protective in application is indisputable. Contemporaries referred to the Brazilian tariff as among the highest in the world, with apparent justification. But the primary objective was to tax imports, not encourage import substitution. Only by maintaining imports of the most highly taxed commodities could revenues be sustained. Progressively, internal sales taxes were introduced from the 1890's on to diminish this reliance on tariff revenues. But not until the First World War did tariff revenues come to less than two-thirds of governmental receipts.

It is the attractive internal market, possible only in the context of rising coffee incomes before 1914, coupled with increasing productivity, that permitted domestic production to continue to grow before 1914, not the level of the tariff. In absolute terms, of course, it was low wages that made industry viable. Brazilian efficiency was one-third to one-half of what was to be found in the United States, while wages were significantly cheaper. The profitability of that lower level of factor returns was reinforced by the tariff, but is itself even more fundamental.

Coffee incomes recovered because world economic conditions improved, and also because of internal policies. In 1906 coffee stockpiling was initiated to maintain international prices. In addition, a stabilization fund was established in the same year to impede appreciation of the currency by purchase of foreign exchange at a fixed price, issuing convertible notes in return. Brazil thus actively pursued undervaluation, and rejected the exchange flexibility of earlier coffee cycles. Such a policy served the interests of coffee growers and domestic manufacturers simultaneously. It increased the revenues of the former, without inducing increased export supply; it made import substitutes more expensive for the latter. Only during the brief interval from 1901 to 1906 when internal stabilization was vigorously pursued, in part at the demand of foreign debtors, was the climate unfavorable to both.

The benefits inherent in the undervaluation disequilibrium were only partially replicated by the circumstances of limited imports during the First World War. Exports were favored to new markets no longer served by England and Germany. But because both

complementary and competitive imports were also adversely affected, the gains from the disruption of normal trade were somewhat more ambiguous. Capital formation suffered because of the reduced supply of foreign machinery, but the stimulus provided by domestic demand assured production at full capacity levels and concomitant high profits. These profits in turn help to explain the large imports of more modern machinery in the early 1920's, and the start of import substitution in the cement and steel industries.

This early stage of late-comer industrialization, occurring as it did with minimal direct state intervention, proceeded in almost alternative waves of capacity and demand impetus. In was not a smooth and synchronous process, making it impossible to define only the periods of capacity creation as central to growth, while ignoring the creative role of demand that is so characteristic of successful import substitution.

In summary, Brazilian industry had achieved by 1919 substantial autonomy in production of principal consumer goods, Foodstuffs, depending on input from domestic agriculture, were protected by the tariff of distance that militated against transport of processed products. Domestic textiles has acquired domination in the national market through a phased process of import substitution and export-led income growth, and while requiring protection to compete, showed signs of possible vitality. Yet, as a whole, industrial production was both limited and unsophisticated, as Table I shows. More than 80 percent of value added emanated from production of consumer goods, and a third from food processing alone. The counterpart of such a profile was heavy reliance upon imports of intermediate and capital goods. Wood and leather were the only products of this type for which imports did not constitute more than half of supply.

Moreover, the ratio of imports to total supply understates the true dependence of the economy upon foreign inputs. A more appropriate measure incorporates the intermediate domestic resources required to produce the final output.[2] By this reckoning, imports come close to 40 percent of total supply in 1919, and more like half in 1920 when imports had completed their recovery from their wartime lows. The Brazilian economy was thus quite far from having completed the process of import substitution.

TABLE I

DISTRIBUTION OF VALUE ADDED BY USE[a] AND IMPORTS AS A PERCENTAGE OF TOTAL SUPPLY,[b] 1919

	Percentage Distribution	Imports as a Percentage of Supply
Consumer Goods	80.2	
Textiles	24.4	13.7
Clothing	7.3	6.2
Food	32.9	11.5
Beverages	5.4	23.8
Tobacco	3.4	0.3
Rubber	0.1	70.7
Printing and Publishing	NA	NA
Chemicals	4.2	57.0
Leather	0.2	32.0
Nonmetallic Minerals	1.2	40.5
Miscellaneous	1.2	53.4
Consumer Durables	1.8	
Electrical	-	100.0
Transport	-	53.5
Furniture	1.8	2.2
Intermediate Goods	16.5	
Metallurgy	3.8	64.2
Nonmetallic Minerals	2.8	40.5
Leather	2.0	32.0
Chemicals	0.8	57.0
Wood	5.7	6.1
Paper	1.4	58.3
Rubber	-	70.7
Electrical	-	100.0
Capital Goods	1.5	
Mechanical	0.1	96.7
Electrical	-	100.0
Transport	1.4	53.5
Total	100.0	24.7[c]

Source: Industrial Census, 1920; and Villela, A., et al., "Aspectos do Crescimento da Economia Brasileira, 1889-1969", Table 5-VIII, Rio de Janeiro, 1971.

[a]Classification and subdivision of industries by use was based on content of subgroups reported in the census; all transport was treated as investment. Federal excise tax has been subtracted, and foodstuffs adjusted for inclusion of sugar refining and bakery production for comparability with later censuses.

[b]No finer breakdown of imports than by sectoral level was available, hence the percentages refer to the entire sector, and not specific use. For that reason, where industries appear under multiple uses, their percentage is repeated.

[c]Total excludes printing and publishing.

The 1920's, however, despite a promising start, were not a propitious decade in which to continue. Tariff protection in 1900, now framed in terms of high specific rates, had been progressively eroded by the war-induced inflation. Post-war capacity expansion that might have increased productivity and reduced costs, was in fact only partially utilized.

Anticipated profits were not realized. Between 1922 and 1926 industrial production grew hardly at all, and the performance thereafter, while improved, is far from sterling.

There seems little doubt that this disappointing aggregate performance of industry, like that of textiles in particular, was influenced by sharply increased imports during the decade. Nondurable consumer goods imports grew at an annual rate of almost 15 percent between 1921 and 1928; those of durables still more rapidly. By contrast, imports of capital goods for domestic industry, after an initial rise after the war, did not sustain the advance beyond mid-decade. Imports were favored by their falling relative prices during the decade. Beyond the erosion of the tariff, there was again a fluctuating exchange rate to contend with. Between 1923 and 1926 the milreis appreciated due to sharply augmented coffee exports and tight monetary policies, with direct consequence for the cheapness of foreign commodities. Had domestic manufactures attended to increased internal demand proportionately, the annual rate of growth of industry between 1922 and 1926 would have been a highly satisfactory 8 percent. There was therefore no lack of demand in general. With a much larger increase of real GNP of more than 10 percent in both 1927 and 1928, and depreciation of the milreis, there was greater spillover into domestic industry.

Coffee valorization had again been introduced during the beginning of the decade, but until 1926 without corresponding attempts at stabilization of the currency. The scheme was therefore conspicuously less favorable for industrial activity than earlier guarantees linked to undervaluation. Rising coffee income, which trebled between 1921

and 1925, became a mechanism for financing competitive imports and exchange appreciation. Predictably, when appreciation had begun to influence adversely the receipts of the sector in 1926, a return to the exchange stabilization system of 1906 was indicated. Exactly as before, the rate was devalued below its prior market level despite continuingly high exports. Industrial and coffee interests were again made compatible.

This success was not to endure long. The bumper harvest of 1929-30 coincided with the beginning of the world depression. That foreclosed appeal to foreign capital markets in the magnitude required to avert a major balance of payments crisis. Brazil, which would have faced a serious payments deficit because of its extended debt position and falling relative prices of coffee in any event, now was faced with falling aggregate demand and a diminished supply of capital.

Yet that crisis soon rescued domestic industry from the floundering of the 1920's. After brief and mild exposure to the cycle between 1929 and 1931, gross domestic product exceeded its 1928 peak in 1932, and thereafter proceeded to evolve at a rate of 5.6 percent until 1939, more rapidly therefore than its pace of the 1920's. Manufactures led the surge, increasing at a rate of 8.6 percent while agriculture expanded only half as rapidly. Real imports declined to half their 1929 peak by 1934 and then stagnated for the succeeding five years. The precipitous decline in exports, which in turn set in motion the inevitable sequence of exchange controls, increased protection and even despite these, depreciating rates of exchange, explain the source of the import substitution of the 1930's.

Since production grew in this fashion after 1932 while the recovery of the foreign sector was limited, it is clear that internal demand was the impulsive factor in the growth of the 1930's. It is important to stress this point since recent controversy surrounding the exact extent of the reflationary significance of the governmental coffee policy seems to have obscured it.

In fact, coffee policy was an important, although not singular, feature of the recovery. The acquisition of coffee in 1930 by the state of São Paulo, financed by a sterling loan, permitted disbursement of milreis unmatched by foreign imports; the foreign exchange instead was used to service the debt. And although as much as two-thirds of the internal payments to growers from 1931 to the beginning of 1933 were financed by export taxes, the effect is more stimulative than appears at first glance. In the first instance, the export tax was not borne entirely internally; indeed it can be presumed that the inelasticity of demand shifted it to foreign consumers disproportionately. As a consequence, the net contribution to the income level of the coffee sector is not simply the net deficit of the coffee fund, but includes as well the price effect on exports. In the second place, there are monetary as well as fiscal implications deriving from government finance. The Federal contribution of 250 million milreis was made in high powered money, adding to the reserve base, just as the equivalent credit from the Banco do Brasil, in which commercial bank reserves obligatorily were held, permitted a higher value for the money multiplier.

The upshot is that coffee policy counted, and between February 1933 and June 1934 when 60 percent was financed by credits, to even a greater extent. Over the whole period, purchases by the fund amounted to almost as much as was exported, and 60 percent of that was destroyed. In the absence of intervention on that massive scale it is difficult to imagine an equally rapid and benign response to the Great Depression.

Governmental fiscal policy outright also contributed to the recovery. The large deficit in 1932 was in large part fortuitous, the consequence of the insurrection in São Paulo in that year requiring large expenditures. Yet, increasingly, the Federal government behaved in proper, albeit not always conscious, Keynesian fashion thereafter. Planned deficits were part of subsequent budgets, and the realized shortfalls were very much the result of conscious additional expenditures rather than passive responses to receipts. Nor did monetary policy fail to play a role. In 1936, when the deficit was

underattained, the Federal government monetary emissions were almost 5 times greater than the deficit.

Added to the stimulus of deficit finance and maintenance of coffee sector income was commercial policy. The greatly increased positive commercial balance in 1931 and 1932 obviously was an important and timely contribution to demand. The surplus was due to the much greater reduction of imports compared to exports, provoked by devaluation and eventually outright exchange controls. There was relatively little choice. The accumulated foreign debt required servicing, and all alternative applications were sacrificed to that end. As a consequence, import capacity fell even beyond the decline in exports. In 1934 Brazil unilaterally reduced its obligations.

The effort to sustain foreign payments in fact failed. But the lesson in exchange control was not forgotten. After a short interval of free rates, restrictions were again imposed in 1937, and also, later after the war. To such restrictive exchange policy was joined a revision of the tariff in 1934. That change was motivated more by the administrative necessity of increasing the out-of-date specific levies than for its additional protective force. The previous reliance on surcharges in gold to increase the level of the tariff was no longer viable in a non-gold standard world. But the new law was again framed in specific form. Total receipts relative to the value of imports under the new tariff accordingly declined during the 1930's as prices began to rise. It was therefore not a principal factor in the rise of domestic industry in the Great Depression, although it clearly indicated an economic policy geared to reducing imports.

Import substitution flourished without a more restrictive tariff. The industries which grew most rapidly were the intermediate and capital goods sectors. Metallurgy, nonmetalic minerals, and paper all increased considerably more rapidly than industry as a whole. Consumer goods, with the exception of durables, were able to complete the substitution process. Even for textiles, elimination of foreign supply accounted for a third of domestic growth. Among the internal consequences of the boom was an increasing

concentration of industrial production in São Paulo, which even earlier in 1919 had shown an industrial profile more oriented to newer, more technologically advanced sectors. By 1939 its dominance as the manufacturing center of the country was assured.

Although utilization of previously installed capacity was an important factor in the growth of non-durable consumers' goods, significant capital accumulation occurred in the new import substitution sectors, and in industry as a whole. For the first time, domestic inputs figure importantly in this process. This diversification of domestic production during the Great Depression is revealed in Table II. The structure of value added by use in 1939 has perceptibly altered in favor of intermediate and capital goods. Consumer goods have declined from 80 percent of value added to a little more than two-thirds. Even within this category important changes have occurred. Food and beverages have declined from 50 to 40 percent of the total. Textiles, chemicals, and printing and publishing have increased. Correspondingly, the sectoral distribution of imports indicates for the first time perceptible domestic participation in certain industries. Intermediate sectors like metallurgy and chemicals produced more than half of supply. Note particularly that the chemical sector, which in 1919 was directing more than 80 percent of its output to consumer goods, in 1939 has proceeded to the point of almost equal division. Capital goods have increased their participation in value added by a factor of more than three, while the previously almost complete dependence upon imports has simultaneously receded.

The magnitude of import substitution during the Great Depression is imperfectly measured in current prices because the whole burden of commercial policy was to increase the relative prices of foreign substitutes. It is only in constant values that the true extent of the change becomes evident. And it is a significant one. In 1920 relative prices, the decline in the import component of total supply is from 34 to 15 percent; in 1939 prices, from 50 to 25 percent. In value-added terms, the absolutes are altered, but the relative decline is the same. Indeed, in no period subsequent to 1920 did the

TABLE II

DISTRIBUTION OF VALUE ADDED BY USE[a] AND IMPORTS AS PERCENTAGE OF TOTAL SUPPLY,[b] 1939

	Percentage Distribution	Imports As Percentage of Supply
Consumer Goods	69.7	
Textiles	22.0	5.7
Clothing	4.8	3.5
Food	23.6	2.8
Beverages	4.3	8.5
Tobacco	2.3	0.0
Rubber	0.2	40.7
Printing and Publishing	3.6	4.2
Chemicals	6.5	37.5
Leather	0.2	7.7
Nonmetallic Minerals	1.0	13.6
Miscellaneous	1.2	40.5
Consumer Durables	2.5	
Electrical	0.4	65.8
Transport	-	56.2
Furniture	2.1	0.8
Intermediate Goods	22.9	
Metallurgy	7.6	41.4
Nonmetallic Minerals	4.3	13.6
Leather	1.5	7.7
Chemical	4.2	38.7
Wood	3.2	4.3
Paper	1.5	37.5
Rubber	0.4	40.7
Electrical	0.1	65.8
Capital Goods	4.9	
Mechanical	1.3	79.5
Electrical	0.3	65.8
Transport	3.3	56.2
Total	100.0	20.4

Source: Industrial Census, 1940, Fundacão Getúlio Vargas, "Estrutura do Comércio Exterior do Brasil, 1920-1964", Vol. 2, Rio de Janeiro, 1969.
[a]Division by use of certain industries followed titles of subgroups. For 1939, division of the electrical industry was based on the 1949 ratio between intermediate and capital goods for those groups; all of transport before 1959 was treated as investment, following Candal, A., "A Industrializacão Brasileira", IPEA, Rio de Janeiro, 1968.
[b]Percentages in total supply refer to entire sector rather than particular use; for that reason, where industries appear under multiple uses, the percentage is repeated.

reduction in the import coefficient play so large a role as that between 1920 and 1939. This is all the more remarkable since the 1920's actually saw a reversal of the decline in import participation.

The rapidity and unplanned character of industrialization, under severe import constraints, led to a labor intensive style of development. The São Paulo industrial censuses report employment growth of production workers between 1932 and 1937 at a rate of 10.4 percent per annum, leaving a margin for labor productivity gain of less than 2 percent per annum. Another approach is to estimate the rate of capital inputs directly. Two alternatives, both based upon capital stock series from the industrial censuses, suggest annual rates of increase in the net capital stock of 2.9 and 3.3 percent between 1919 and 1939. Both are considerably less than the 5.1 percent annual growth of manufactures.

Capital services might have increased more rapidly than the stock. The rate of machine use was much more intensive during the Depression than previously, as the practice of two and even three shifts daily became a normal one. Under this assumption, the residual gain in productivity due to technology is a quite modest 0.4 percent annually. The Depression was clearly a demand, and not a capacity and technology augmenting, phase of the import substitution process.

Over the short-term such a capital-scarce industrialization absorptive of labor at a constant real wage was both feasible and profitable. Over the longer term, despite the horizontal diversification, such a pattern of development may have had more serious consequences. By perpetuating an antiquated technology in the consumer goods industries, whose productivity growth had already been limited in the decade of the 1920's, the Great Depression may have laid the basis for later contradictions. In the 1950's, under the pressure of rising real wages in the expanding urban sector, the same labor-intensive mode of production originally established in these traditional sectors could not be employed efficiently, leading to slow rates of growth and reductions in employment.

World War II prolonged the diminished role of imports in total supply, but with an important difference. Brazilian exports increased, both in volume and in price. But in the absence of adequate import supply, substantial foreign reserves accumulated. That surplus did not signal a healthy reversal of the crisis conditions of the Depression, however. Because domestic inflation proceeded at rapid rates - prices doubling between 1939 and 1945 - a new problem potentially loomed: exchange overvaluation. Much of the commercial policy for some years after the War was conditioned by that different situation.

II

The Post-War Import Substitution Process

As we have seen, prior to 1945, Brazilian import substitutive industrialization proceeded behind a system of largely flexible exchange rates, high tariffs, and minimal direct governmental intervention. Significant real devaluation, and corresponding internal adjustments, occurred both in the 1890's and the early 1930's, and favored internal manufactures. With favorable tariff protection, manufactures did not recede. The circumstances in the two cases were not entirely parallel. The balance of payments significantly improved in the early period particularly after stabilization of coffee prices in 1906. In the 1930's, however, although the quantity of imports doubled between 1933 and 1939, export earnings were much more modest as commodity prices, and the terms of trade, remained adverse. To assure continued allocation of foreign exchange to governmental debt service, exchange control was implemented in the Depression. Instead of an undervaluation disequilibrium that had been sustained by exchange stabilization funds, and had attracted capital inflows while favoring exporters, a new type of import substitutive industrialization emerged.

Brazilian commercial policy after 1945 and its sequences of phases until 1964 was closer to the Depression experience. Overvaluation became endemic, requiring continuing attention to the balance of payments and allocation of imports. Domestic manufactures earlier had benefitted from commercial policy, but that advantage had been a by-product

of a more fundamental commitment to the export sector; i.e., coffee. After the War, with the commodity crisis of the Depression fresh in the memories of officials, the principal policy objective became the growth of domestic manufactures; and a significant source of the transformation was to involve resource transfer from the agricultural, export sector.

The overvalued exchange rate became, until 1957, the explicit instrument for altering domestic relative prices in favor of imports and against exports. Direct allocations of foreign exchange to certain categories of imports, and subsidies to foreign investments, in turn became the means of guaranteeing cheap intermediate and capital goods imports, but exorbitantly expensive consumers' goods. Protectionism and cheap imports were thus made compatible. Commercial policy was the principal means for directing domestic sectoral transfers.

The post-War import substitution strategy was thus inevitably not one of equilibrium. There was a constant threat of imbalance between imports and exports. At an overvalued rate, imports were in excess demand and exports in insufficient supply. The consequence was continuing impending crisis in the balance of payments that one or another new ingenious policy might avert in the short-term, but could not avoid in the long-term.

But the disequilibrium model was also not without its advantages to a government bent on industrialization. The use of the exchange rate to tax internally was feasible; more direct and economically efficient instruments quite possibly would have aroused more successful political opposition from still powerful agrarian interests. A second advantageous feature of the model was its compatibility with internal inflation. Brazil in the post-War period, due largely to Federal governmental deficits at least partially expended initially to hasten internal development, faced continuing inflationary pressures. In order to reduce the pressure of increasing costs of imports on internal prices, nominal exchange rates were held fixed - thereby accentuating overvaluation as domestic prices rose. The rising internal price level, and the inflation taxes collected, enhanced the

governmental role and promoted industrialization directly - at least until the inevitable devaluation cum stabilization crisis checked the process.

Eventually, these crises became of sufficiently increased intensity - and joined to disarticulation of the import substitutive productive structure with demand - led to the sterile combination of limited real growth, foreign exchange scarcity, inflation, and even deterioration of minimum wages, that characterized the years preceding 1964. By that time, the policy was yielding results far different from its earlier, more benign consequences.

There were three essential reasons this particular form of disequilibrium had successfully facilitated industrial transformation in the 1950's. One was the short-run inelasticity of export supply (and the temporary high world commodity prices) that minimized the adverse consequences of the tax imposed by overvaluation. Another was the significant attraction of foreign investment to Brazil, as well as short-term finance, both of which permitted capital formation in manufactures while postponing foreign exchange liability. The last was the positive role government spending played in provision of productive infra-structure, while successfully inducing forced savings at low rates of inflation. All three conditions were inherently temporary. Export supply was eventually affected; outflows/balance of payments to service prior inflows eventually exceeded current capital available; and maintenance of forced savings depended upon accelerating inflation that produced significant distortions. Import substitution was thus a process whose successful management required especially timely recognition of its inconsistencies. Unfortunately, this perception dawned belatedly, as the subsequent more detailed review of the sequence of post-War policy makes clear.

Brazil emerged from the War in apparently favored circumstances. As an ally it had maintained the value of exports of coffee to the United States. Equally important, removal from the direct zone of combat and relative industrial advance made possible large increases in exports of manufactures, principally textiles, in the markets of Latin America and

other peripheral areas like South Africa. The consequence was a substantial increase in import capacity unmatched by available import supply - a parallel to World War I experience. The magnitude of accumulation of reserves was much greater in this instance. They reached some $600 million at war's end. The prospects for foreign exchange limitations to development seemed remote indeed. Yet within a few years, Brazil was relying upon licensing restrictions and exchange controls, not in a situation of depression or shrinking markets, but during prosperity and increasing exports.

What created the post-War balance of payments crisis was the problems surrounding inconvertibility. Brazil largely bought with hard currency and earned soft, as Table III demonstrates. Further complicating matters was the illiquidity of nominal reserves. Estimates place the foreign resources actually capable of mobilization in 1947 at $92 million rather than the theoretical level of $673.[3]

The first attempt to curb imports came as early as mid-1947. This tentative effort, limited to centralization of foreign exchange sales and steps to establish allocation priorities, was followed by a full licensing scheme in February 1948. The criteria for acceptance of imports were their non-competitiveness and/or essentiality. Particular recipients of foreign exchange were selected by their past participation in the import trade. This crude system continued without appreciable change until the next crisis arising from the surge in import demand in 1951 and 1952. The only significant modification was the extension of subsidies to exporters of designated products whose markets were threatened. Such operacões vinculadas were the forerunner of the multiple rate structure subsequently introduced in the 1950's. At this point they were only of temporary significance and not a systematic instrument.

The effectiveness of overvaluation as a subsidy to industry during this early post-War period is a matter of dispute. Table IV establishes a quantitative basis for judgement. The extent of the sectoral transfer, measured by the deviation of the over-valu exchange rate from a hypothetical purchasing power parity level, is far from trivial.[4]

TABLE III

BRAZILIAN BALANCE OF TRADE

Mill of $

	Convertible		Inconvertible		Total	
	Imports (CIF)	Exports (FOB)	Imports (CIF)	Exports (FOB)	Imports (CIF)	Exports (FOB)
1946	400	404	235	546	635	950
1947	923	610	310	536	1233	1146
1948	768	660	353	520	1121	1180
1949	645	663	458	433	1103	1096
1950	527	780	558	556	1085	1356
1951	1088	918	899	851	1987	1769
1952	1130	761	856	657	1986	1418

Source: D. Huddle, "Balanco de Pagamentos e Controle de Câmbio no Brasil," Revista Brasilera de Economia, 10, 27; SUMOC, Relatorio, 1956, p. 72.

The implicit subsidy to the industrial sector so measured is close to 6 percent of the value of production of manufactures in 1949, 16.4 percent of income originating in manufactures, and perhaps a fourth of the profit share. Relative to agricultural output the tax is of the order of 20 percent. It stands to reason that the transfers should be significant. By 1952 the divergence between the actual and "equilibrium" rates amounted to about 100 percent; exports were at the same time about 10 percent of total product. Consequently the tax was of a dimension similar to the export share.

How fully industry actually appropriated this tax is more difficult to reckon. Quantitative controls open a wedge between the supply and demand price, with actual price indeterminant between the two. To the extent that sales were made at the demand price, importers and merchants alone benefitted; sales at the supply price made goods available to industry cheaply. The very much lesser increase of industrial than agricultural prices over this period (39 percent versus 125 between 1947 and 1952) at the same time that production accelerated is consistent with a real gain to producers. Certainly, given the magnitude of the transfer, it is difficult to believe that the industrial sector was not a significant beneficiary.

The burden of the policy unequivocally fell upon exports. Lower domestic prices influenced incomes more than quantities, however, at least for the principal export commodities. (Incomes themselves may have been influenced by less than by the full extent of the tax since incidence would have been shared by consumers where demand was inelastic.) Because agricultural commodities enjoyed bonanza international prices during this period, export supply did not contract. Accordingly, overvaluation merely reallocated the windfall gains away from exporters to users of foreign inputs.

Specific export taxes, or multiple exchange rates, would have been preferred instruments for such an objective rather than generalized overvaluation. For example, in view of the continuing large coffee plantings between 1949 and 1953 which saw a 20 percent increase in area, a still more confiscatory policy applied to coffee might have been

TABLE IV

OVERVALUATION AND IMPLICIT SECTORAL TRANSFERS

	Exports (Bill Cr $)	Export Exchange Rate Cr $ / $	Parity Rate	Exports Valued at Parity Rate (1) x (3)/(2)	Gross Subsidy Bill Cr $ (4)-(1)	Gross Subsidy Bill 1949 Cr $	Industry Share %	Industry Share of Transfer As Percentage of Income Originating in Manufactures %
1947	23	18.4	26.3	33	10	12	49.5	21.9
1948	23	18.4	26.1	33	10	11	47.7	15.8
1949	22	18.4	28.9	34	12	12	52.9	16.4
1950	26	18.4	28.7	41	15	14	51.0	16.4
1951	34	18.4	31.0	57	23	18	49.2	20.5
1952	28	18.4	36.0	54	26	18	49.0	18.0

Source: Exports: National Accounts
Export Exchange Rate: IMF
Parity Rate: 1938 rate extrapolated by rates of Brazilian wholesale price excluding coffee to America wholesale price as presented in Peter Knight, Brazilian Agricultural Technology and Trade (Praeger, 1971), p.59.
Deflated Subsidy: deflated by implicit GDP deflator
Industry Share: Intermediate and capital goods imports directly for industrail use as calculated from Fundação Getulio Vargas, Estrutura do Comércio Exterior do Brasil; a broader definition, including all imports to non-agriculture yields the following series: 68.3, 66.8, 68.3, 65.6, 67.4, 69.2.

Income Originating in Manufactures: Conjuntura Econômica, September 1971.

desirable. Yet neither taxes nor multiple rates were fully feasible. Constitutional prohibition impeded use of the former, and both liberal economic ideology and political power of the growers circumscribed the latter. If the coffee rate had been particular, it could develop into a focus for resistance. In fact, after 1953 when such rates were established, coffee growers succeed in preventing a significant differential in favor of other exports until such time as direct government coffee purchases converted the potential tax to an actual subsidy for the sector.

Overvaluation in 1948-1952, because it was general, and in conjunction with high external prices, enabled the government to tax coffee growers without generating sufficient resistance to check the policy. But, however successful vis-a-vis coffee, not all export products were comparable. The data in Table V make that very clear. Non-coffee exports declined significantly both in value and in quantity between 1948 and 1952. Yet the results are not merely the consequence of exchange rate policy. For both cotton and sugar, in which governmental intervention occurred, the distorted internal relative price structure clearly did not lead to misallocation in production. There was continuing supply but lesser exports as the government stockpiled such commodities in anticipation of a resumption of high world prices. For example, cotton exports virtually ceased in 1952 not because the cruzeiro price failed to attract sellers, but because the government felt the dollar price too low; in 1953, after another large crop, exports resumed at lower real cruzeiro returns despite intervening devaluation.

More generally, despite the decline in the quantum of agricultural exports, the internal terms of trade favored agriculture over the period 1948-1952, and the annual average rate of growth of sectoral production was slightly greater than in the subsequent decade. The export market for most agricultural products was so small relative to domestic consumption that expectations of domestic prices governed production decisions in any event. There was misallocation because exports were inadequate; but the distortion did not compare in severity to a situation in which export demand determined production decisions.

TABLE V

MERCHANDISE EXPORTS, 1946 - 1952

	Coffee			Non-Coffee		
		Indexes			Indexes	
	Value (Mill $)	Quantum (1948=100)	Price (1948=100)	Value (Mill $)	Quantum (1948=100)	Price (1948=100)
1946	350	89	80	625	110	82
1947	414	85	99	743	101	106
1948	491	100	100	692	100	100
1949	632	111	116	468	77	87
1950	685	85	164	674	81	120
1951	1058	94	229	712	82	126
1952	1045	90	237	371	53	102

Source: IBGE, Anuário Estatístico, various issues. The quantity index is Laspeyres, the price Paasche.

A second caution in reading Table V is the presumption that the entire decline in non-coffee exports is the consequence of progressive overvaluation. Such activities as textile manufacture were quite likely not permanently competitive even with more realistic exchange rates; it was the special war-time shortages, just as in World War I, that had made temporary exports possible. Trade potential in other commodities was not much more favorable, and complicated by generalized inconvertibility. For the very areas in which Brazilian exports were in demand were those whose payments were highly suspect. Bilateral agreements were one means of dealing with the problem, albeit not with great success.

The restrictions imposed by export licensing during the period were largely to avoid additional accumulation of inconvertible foreign exchange, as well as to dampen domestic inflation. They do not point to lack of an export mentality, as much as to serious problems of economic management during a difficult readjustment period for the world economy. Brazilian authorities indeed did engage in selective devaluation for minor exports during 1950 and 1951 through the operacão vinculada. This procedure enabled exporters of certain products to sell foreign exchange at market rates to importers who would simultaneously be assured of an import license. Perhaps as much as 20 percent of non-coffee exports were subsidized in this fashion in 1950; it is known that 9.3 percent were so benefitted in 1951 despite discontinuance of new licenses in February of that year.[5] The system even at its best had a fatal flaw: export earnings were allocated to non-essential, but profitable, imports through the tied transactions.

The net result of overvaluation for earnings from minor exports during the interval 1948 to 1952 was a loss of around $300 million, taking into account likely supply elasticities to relative price changes.[6] It is so small - less than 5 percent of total export receipts - because rapidly rising international prices between 1949 and 1952 limited relative price changes, and also, simply because coffee so dominated export earnings. Nor is the quantitative magnitude much altered by considering lesser inflows on capital account owing to the policy. In a regime of non-diversified exports such as

Brazil possessed by 1949, and in circumstances of inelastic supply, overvaluation was not a disastrous, short-term policy.

Nor was it stagnation of export earnings that eventually terminated the quantitative restriction regime. Rather, it was the failure of import licenses to ration demand successfully in 1951 and 1952. The Korean War encouraged lavish authorizations to import as a precaution against the shortages feared by many; unfortunately such authorizations were unlimited in duration. Between July 1950 and December 1951 licenses worth $4.3 billion were awarded, although only $2.6 were utilized. In 1952, the authorities were impotent to prevent imports at rates 50 percent greater than issuance of licenses. Deficits were accumulated in the two years to the extent of more than $900 million, financed for the largest part by short-term commercial credits.[7] This second post-war balance of payments crisis, in part endogenously generated but also a consequence of mismanagement, provided a stimulus for policy change just as had the earlier one in 1947.

The new exchange regime rejected pure quantitative restrictions in favor of greater reliance upon market forces and price responses. Initial modifications in January, 1953, permitted exporters to transact as much as 50 percent of their earnings in the free market. Since the free rate represented a devaluation of more than 100 percent, the privilege granted significant incentives. Exports did not increase, and for some commodities, actually declined, due, possibly, to expectations by foreign importers of still more favorable prices; for some traditional commodities, the monthly pattern is consistent with speculative behavior, although the data cannot differentiate between local exporters and foreign buyers.

Failure of exports to increase eventually led to devaluation of the import side in October, as it should have even earlier. Since the crisis was one of demand in the first instance, rather than supply, control over demand had to be reasserted. The task

of policy was to accomplish it while assuring minimal effects upon the essential imports of intermediate and capital goods increasingly required by the domestic industrialization already under way. The chosen instrument, many elements of which had been previously tried in Latin America, was a multiple-rate auction system.

The two principal features of the regime are analytically separable. Multiple rates were necessary both to tax exports, and also to bestow the privileges upon certain imports. The specific levies of the Tariff of 1934 had long since lost relevance under the erosive effects of inflation, and a substitute would have required an elaborate legislative bargaining process. Differential import rates were thus the only means of discrimination once specific restrictions were abolished. The limited number of classifications, compared to individual licenses or even tariff codes, of course, provided greater scope for market guided allocation; they also assured that importers of non-essential products for which licenses had been obtained in the past would not benefit as they had done when exchange rates were uniform.

The auction of exchange, or, more correctly, auction of permission to buy it, served other purposes. First it inverted the sequence of the earlier licensing scheme which had authorized imports without prior availability or purchase of exchange. Secondly, it reserved for the government the scarcity value of overvalued imports by imposing competitive bedding for the predetermined allocations of exchange within each auction category. The new exchange system thus represented a more efficient, profitable, and market guided variant of quantitative restrictions. But a variant it still was, because its ultimate rationale was the administrative direction of an overvalued exchange rate.

With the October reform came retreat on the export side. An official rate, with specific bonuses, substituted for the previous partial access to a fluctuating free rate. The actual non-coffee rates as initially established were approximately the equivalent of the free market scheme, while the coffee rate became more favorable - at

the very moment when world prices were reaching their peak. Subsequently the bonuses were gradually adjusted and eligibility redefined in subsequent years as attention focused on lagging exports. But the lags behind internal inflation were to prove a continuing handicap to exports and contrast with the wider scope and greater rapidity of market adjustments on the import side.

A final feature was a special import category in which the previous operative conditions were in fact little changed. Wheat, governmental imports, fertilizer and insecticides, and certain essential capital goods were to be allocated exchange at a special rate, custo de cambio, approximately equal to the average export rate. Newsprint was still more favored and initially continued to be imported at the old par rate (later altered to the custo de cambio). Exchange for petroleum products was auctioned in special, and rigged, circumstances that limited the premium paid. Common to all these arrangements was the limited exposure to free demand and supply influences to determine the price of foreign exchange. About half the exchange was allocated to these special products during the operation of the auction system.

Table VI summarizes the level and structure of rates during the years this exchange regime remained operative. Immediately obvious in the progressive devaluation of the cruzeiro over this period. Under conditions of accelerating domestic inflation that increased to about 25 percent annually, such a drift is hardly surprising. To this extent the new exchange regime did not permit the same cumulation of overvaluation as had licensing. Yet the same transfer of resources from exporters, and preferential allocation among importers, continued and even increased. The tax on exporters in general may be estimated by the difference between the weighted average auction exchange rate and that for non-coffee exports; the tax on coffee was slightly greater because its rate was lower. Between October 1953 and mid-1956 the differential between import and export rates considerably widened: by the latter year the weighted average rate for a imports was almost twice the rate offered for the most favored exports. However well the variable exchange rate registered the rising demand for foreign exchange for

TABLE VI

EXCHANGE RATES BY CATEGORY

(Cr $ Per Dollar)

Import Categories	1953 (Oct-Dec)	1954	1955	1956	1957 (Jan-Aug)
I	31.2	41.8	63.8	73.8	58.3
Chemicals and Pharmaceuticals, Capital Equipment for the Basic Industries					
II	37.8	44.9	66.0	81.3	74.5
Essential Raw Materials and Spare Parts					
III	44.0	57.8	82.4	103.2	100.6
Raw Materials, Spare Parts and Machinery for Consumer Goods Industries					
IV	48.8	68.3	86.3	115.6	138.3
Foodstuffs and all Other Imports					
V	81.5	110.8	171.6	222.4	299.1
Finished Consumer Goods					
Weighted Average	40.8	51.7	73.4	88.1	82.0
Average Import Rate[a]	NA	33.8	46.1	58.0	NA
Export Categories					
Coffee	23.4	27.4	36.4	36.7	38.8
Non-Coffee[c]	28.4	31.0 42.6	39.4 42.6 48.8	41.5 51.2 56.3	43.1 55.0 67.0
Cost of Exchange (Custo de Cambio)	25.8	25.8	41.3	43.8	43.8
Free Market Rate	49.2	62.2	73.5	73.6	75.7[b]

Source: EPEA, Setor do Comercio Internacional, Diagnóstico Preliminar, Riode Janeiro, 1967; SUMOC, Annual Reports; Anuário Estatístico; International Financial Statistics

[a] Total imports in dollars divided by value in cruzeiros.

[b] Average for entire year; it would be about 10 percent lower for Jan-Aug period.

[c] Non-coffee rates were divided into more and less favored categories in subsequent years.

imports, it failed to extend its incentive effects to exports. Market forces were almost exclusively operative on the demand side. Even there the variation of rates was determined by the prior allocation of exchange to each of the categories.

There was in fact a steady increase in the allocation of exchange to the most essential categories, and a corresponding tendency for the rate differentials to widen as Table VI reports. The costs of priority imports was kept low. There was also a progressive tendency for more and more imports of capital goods to bypass both the normal auction and special categories. Compared to total auction transactions amounting to 70 percent of imports in 1954, the proportion by 1957 was well under half.

These increasing imports of capital goods without exchange cover were an important reason the auction system avoided a balance of payments crisis despite stagnating exports. The principal enabling act was Instruction 113 of the Monetary Council, issued in January 1955. It allowed equipment for production of goods included in the first three auction categories to be imported without a monetary transaction. The payment instead was made by acquiring equity in an existing or newly established enterprise. For products not in the first three categories, special governmental action could provide authorization. Such an administrative decision facilitated the creation of the motor vehicle industry.

The gain to the foreign enterprise from Instruction 113 can be approximately measured by the difference between the free rate for financial transfers and the Category III rate that would have applied to most imports of capital goods. Since the free rate yielded fewer cruzeiros than required to import the same dollar amount of equipment, bypassing the foreign exchange market entirely was an incentive to foreign investment.

Firms in essential industries, both foreign and domestic, also were given incentives to seek foreign loans to finance investment. Amortization and interest remittances for approved equipment imports could be made at the highly favorable cost of exchange,

rather than the free rate. It was necessary for the term of the loan to be at least five years, and for interest rates not to exceed 8 percent. For investments without such priority, but still favored, the applicable rate was determined by the average rates of the first three categories.

The flow of private investment responded positively to such measure. Private long-term inflow increased by $34 million in 1955 and by $139 million in 1956. At their peak in 1957, the inflows of $356 million were more than a fourth of merchandise exports. Table VII provides a more detailed analysis of registrations of capital under the provisions of Instruction 113. Three points stand out. First, one notes the much greater reliance upon loans than equity finance: over the period the former account for about half of all equipment imported into Brazil, while direct investment represents less than a sixth. While some of these loans were extended to subsidiaries of foreign firms, the sectoral composition confirms that Brazilian enterprises, particularly those with public participation, benefitted predominantly; thus whatever the national criticism of the advantage conceded by Instruction 113 to foreign private investment, the substantial finance attracted to infrastructure and basic industries dominated.

Yet domestic firms were discriminated against, and that indeed is the second point. Foreign equity was given license under the authorization granted by Instruction 113 to search out the profitable opportunities afforded by the high level of protection given to consumers' goods, particularly durables. Of the total direct foreign investment registered, fully three-fourths was applied in motor vehicles and other non-priority areas. Domestic firms could not compete against potential foreign investors by obtaining loans on favorable terms. The shortage of exchange favored direct investment in such industries, and future claims, against applications for loans and more immediate remittances. The discrimination was more fundamental than the features of Instruction 113, of course. It ultimately resided in the decision to implant these new productive sectors in Brazil within a short time. The technological advantage to the foreigner was

TABLE VII

EXTERNAL RESOURCES APPROVED AND APPLIED, 1955-61

(Mill Dollars)

	1955			1956			1957		
		Finance			Finance			Finance	
Sector	Direct Investment	With Priority[a]	Without Priority	Direct Investment	With Priority	Without Priority	Direct Investment	With Priority	Without Priority
Energy	2.5	40.4	-	-	23.9	-	0.7	67.2	-
Transport	-	31.4	-	-	82.7	-	0.8	105.2	-
Food	1.4	-	-	.4	8.1	-	3.3	7.3	28.9
Basic Industries	11.3	6.3	-	16.0	126.4	57.5	42.9	25.1	188.2
Steel	0.5	6.3	-	3.5	51.6	-	-	10.5	-
Motor Vehicle	-	-	-	6.2	45.6	57.5	32.3	2.3	188.2
Other Sectors	16.1	1.3	-	39.3	12.3	-	60.5	29.9	-
Total Registrations	31.3	79.4	-	55.7	253.4	57.5	108.2	234.7	217.1
Realized Import of Equipment Financed Abroad	31	60		55	158		107	223	
All Import of Equipment		332			238			485	

Source: Economic Bulletin of Latin America, IX No. 2 (November 1964), pp. 174-75 for authorization; EPEA, Diagnóstico, p. 243 for realizations

[a]At cost of exchange for amortization and interest.

Sector	1958 Direct Investment	1958 Finance With Priority	1958 Finance Without Priority	1959 Direct Investment	1959 Finance With Priority	1959 Finance Without Priority	1960 Direct Investment	1960 Finance With Priority	1960 Finance Without Priority
Energy	-	133.7		-	95.7	.0	-	64.2	-
Transport	1.1	185.4		-	74.8	0.3	-	41.0	-
Food	0.7	4.5	11.3	-	1.5	8.2	12.2	3.0	39.2
Basic Industries	70.3	48.9	103.6	53.7	177.3	31.6	72.6	115.3	14.4
Steel	-	18.6	-	-	129.9	1.4	5.5	89.6	10.0
Motor Vehicle	59.1	25.0	98.7	46.8	17.6	28.1	56.3	12.9	-
Other Sectors	10.4	19.9	0.1	12.1	5.4	2.8	22.0	18.4	9.2
Total Registrations	82.5	392.4	115.0	65.8	354.7	42.9	106.8	242.1	62.8
Realized Import of Equipment Financed Abroad	83	268		93	290		63	224	
All Import of Equipment		483			473			492	

Sector	1961 Direct Investment	1961 Finance
Energy	-	19.1
Transport	-	46.4
Food	4.0	0.3
Basic Industries	23.5	51.3
Steel	2.8	31.4
Motor Vehicle	3.5	16.7
Other Sectors	11.7	11.0
Total Registrations	39.2	128.1
Realized Import of Equipment Financed Abroad	47	274
All Import of Equipment	489	

real and inevitable under such circumstances; the specific financial arrangements were only the symptom.

The final point made by Table VII is the predominant share of the motor vehicle industry in the inflow of foreign capital during the period. It alone absorbed more than a fourth of the finance. Special provisions were enacted to permit short-term finance of the many parts required as manufacture began; although only of one year duration, these credits permitted a special auction price for exchange that brought it well below the normal rate. That requirement explains the appearance of the new category of finance without priority.

The Kubitschek government thus took an instrument designed by economic liberals to favor foreign investment, and used it to foster and fashion import substitution. Equipment imports were subsidized, leading to distortions favoring both foreign finance and excessive capital intensity, both within sectors and because of the sectoral composition of industrialization. Table VIII seeks to quantify the order of magnitude of this subsidy, and its sources. Compared to the consequences of overvaluation before 1952, the transfers shown here are smaller. In part this is because the present calculations are focused solely on imports of capital equipment rather than measuring the total tax on exports. Yet even the latter is smaller after 1956 than it had been earlier. Indeed, the net transfer from exports eventually turned negative as the massive accumulation of coffee stocks after 1958 required resources and the export rate could no longer be maintained so overvalued. Commercial policy could extend significant and even increasing subsidies to industry as Table VIII shows, but it could no longer simultaneously provide for internal transfer of real resources to pay for them.

The auction system, although few of its subsidy features, came to a virtual end in 1957. Only two categories remained. The general category now comprised virtually all imports except a few. The system had performed reasonably well in regulating imports, partly by tying import licenses and foreign exchange availabilities more strictly. In addition auction receipts had provided a source of governmental revenue that considerably outstripped collections from the long out of date specific tariff. This Phase II

TABLE VIII

IMPLICIT SUBSIDIES TO THE INDUSTRIAL SECTOR, 1955-1960

		1955	1956	1957	1958	1959	1960
(1)	Direct Investment Without Exchange Cover (Mill $)	31	55	107	83	93	63
(2)	Differential in Import Rates[a] (Cr$/$)	13	30	30[b]	78	132	125
(3)	Direct Investment Subsidy (Mill Cr $)	403	1650	3210	6474	12276	7875
(4)	Equipment Imports Financed at Cost of Exchange (Mill $)	60	158	223	268	290	224
(5)	Differential in Import Rates[c] (Cr$/$)	45	59	57	150	192	215
(6)	Finance Subsidy (Mill Cr $)	2700	9322	12711	40200	55680	48160
(7)	Total Subsidy (Mill Cr $)	3103	10972	15921	46674	67956	56035
	Total Subsidy/ Total Income Originating in Manufactures (%)	2.1	6.0	7.3	18.1	19.1	11.6

[a] Category III minus free market rate for 1955-1957; thereafter general rate plus tariff for industrial equipment as reported in Clark and Weisskoff, "Import Demands and Import Policies in Brazil" minus free rate.

[b] Category III for Jan-Aug minus free rate of June 30.

[c] As above except that cost of exchange rate is used rather than free market.

Source: Tables VI and VIII and Conjuntura Econômica, September 1971 for estimates of income originating in industry.

Method: (3) = (1) x (2)
(6) = (4) x (5)
(7) = (3) + (6)

experience in Brazil was therefore a distinct improvement over the earlier and primitive quantitative controls.

A variable tariff system, such as the auctions represented, satisfy the objective of a given distribution of imports. A fixed tariff system, on the other hand, allows consumers to adapt to given prices. More significantly, it also ties changes in productivity elsewhere, as transmitted through international prices, to domestic prices. If imports become cheaper, domestic suppliers lose out unless their costs go down too. With the auction system, that linkage disappears.

The Brazilian variable tariff system also encouraged a lagging export rate, because priority imports themselves were tied to that export rate, and there was a clear preference to maintain their low price. Moreover, the separate free market for capital transactions required that export receipts be segregated from it, with the consequent need for licensing and bureaucratic regulation. Finally, the existence of an equilibrating process to allocate limited exchange on the import side, reduced the incentive to seek to increase the quantity of foreign receipts. The very success in accommodating to exchange shortages in the short-run was inimical to their long-run resolution.

Brazil left the auction regime in mid-1957. The change owed itself less to significant dissatisfaction with its operation than to political expediency. In fact, the auction system had always been viewed as a temporary, transitional phase since its first establishment in 1953, and an ad valorem tariff code had been in elaboration since 1955. The substitution of the tariff in 1957 helped resolve the balance of payments problems then being experienced. As the price for a compensatory credit of $375 million from the International Monetary Fund, Brazil returned to a unified fixed exchange rate regime with an ad valorem Tariff.[8] That step was viewed favorably by the IMF because it allowed the balance of payments to discipline internal inflation. There was also domestic enthusiasm, although on other, and opposite, grounds. Domestic industrialists preferred the certainty of fixed legislative barriers tailored to their

special interests rather than broad and variable categories whose implicit level of protection was sometimes not fully predictable. Whereas the IMF viewed the substitution as a step toward liberalization, a legitimate Phase III reform, the domestic enthusiasts viewed the protection afforded by a tariff as a more effective source of protection for import substitution.

The latter were more nearly correct. The Tariff of 1957 did not in fact signal a serious move toward liberalization. Its provisions enacted the prior exchange rate categories without reduction in import cost. There were three basic tariff levels: 0-10 p cent for products whose supply was entirely external; 10-60 percent, high enough to permit import substitution at the upper range and low cost supplies at the lower; and 60-150 percent, for those goods already largely locally supplied. At the upper end of such rates, there was also an element of luxury taxation designed to discourage imports of high quality, and non-competitive, consumer goods. Because this deterrent was deemed insufficient, and in order to assure that non-essentials were completely discouraged, two auction categories for exchange were established. The special category, while incorporating some 35 percent of tariff items on a simple count, would be allocated very limited exchange; the exaggerated relative price structure of the previous multiple rate system was thereby preserved. By 1960 the special category premium amounted to more than 200 percent while only the trivial sum of $1 million was made available for such imports. More important still, at the other extreme, the priority categories previously falling outside the auction system proper, were retained virtually intact. They continued to be subsidized by highly overvalued rates.

A new administrative agency, the Conselho de Política Aduaneira, was established to grant discretionary exemptions from the Tariff, as well as increases where deemed necessary. The Law of Similars was also activated and its enforcement granted to the Council. Upon registration, government agencies were prohibited from importing the item, no exemptions were granted to private importers of the product. Moreover, similars were reclassified to the most expensive special category, thereby increasing significantly their cost.

The operation of the Law was not in fact widespread. Registrations were relatively few in number. My tabulation, based on the Council's decisions, shows a total of 188 in the period from 1956 to 1963, about the same as in the previous five years. The number is as high as it is because the product descriptions are very detailed. While the great majority of products were intermediate and capital goods, their importance relative to total domestic production in these sectors is likely quite modest. Fewer than 10 percent of the capital goods examined by Clark and Weisskoff were in one special category, and hence likely similars, in 1964. For metallic intermediates the same proportion holds, while for non-metallic intermediates it is close to 15 percent.[9] These data, and parallel evidence indicating little change in importation in product groups containing similars suggest that the rate of this specific quantitative restriction in the import substitution process was rather limited.

Industrialization had proceeded quite independently of the tariff, and it continued with little change after its establishment. So, unfortunately, did the underlying disequilibrium in the balance of payments. For the 1957 reform did not deal with the stagnation of export receipts and its unfavorable exchange rate. No adjustment of export rates took place until the next year when a significant number of minor exports were transferred to the free category. The thrust of commercial policy continued to operate on the wrong side of the market.

It was the failure to resolve the payments pressures by export liberalization that led to the decisive, far reaching measures to reform commercial policy in 1961. In the interim, the steps taken progressively to extend to exports a more favorable exchange rate - reaching their ultimate in Instruction 192 issued on December 30, 1959, which maintained a special regime only for coffee, cocoa, petroleum and castor seed oil - had not succeeded. Exports other than coffee and cocoa increased only 5 percent in value in 1959 and not at all in 1960.

Unfortunately, Brazil chose to cast its lot with the free market in difficult times. Commodity prices at the end of the 1950's were weak. In these crucial years from 1958

to 1960, when export receipts were almost constant, volume rose by more than 10 percent despite limitations on the export of beef, wool, cotton and rice. It was not so much a failure of export supply as a world market in a state of potential oversupply. This lack of earnings from less staple exports was compounded by the problems faced by coffee and cocoa. Again price weakness is the villain of the piece: the quantity increase of 30 percent between 1958 and 1960 came to nil in receipts.[10]

Despite entry of long term capital at unprecedentedly high rates, the shortage of foreign exchange thus became progressively more serious. The exchange rate for the general import category skidded from Cr $80 per dollar in the last quarter of 1957 to Cr $227 in the first quarter of 1960. To prevent continuing deterioration in 1960, the monetary authorities intervened and auctioned larger quantities of exchange. The de facto floating rate policy gave way to a fixed exchange rate defended by an increasing volume of compensating finance. The balance of payments deficit in 1960 reached $430 million. Private bank credit and swaps were the most prominent sources of finance, after a break with the IMF in 1959 over failure to implement a satisfactory anti-inflationary package. A mounting internal imbalance now threatened as well: inflation in both 1959 and 1960 was in excess of 30 percent. The inability any longer to tax exports as international prices fell - indeed, coffee purchases were now necessary - put greater burdens on monetary policy to finance the transfer to industry via inflation and forced savings.

A classic devaluation cum stabilization increasingly became inevitable to check the divergent tendency of the model. It came with Instruction 204 in March, 1961, shortly after the new President, Jânio Quadros, took office. The reform definitively abolished the auction of exchange for all imports except those in the totally insignificant special category. In fact the auctions had already become irrelevant after 1957. Imports, exports other than coffee and cocoa, and financial transactions would henceforth all be funnelled through a single market whose rate would be determined by the monetary authorities. The special exchange rate for imports like wheat, newsprint, and

petroleum and for remissions financed under Instruction 113 was effectively abolished by increasing the applicable rates 100 percent to the prevailing free market level. Two transitional restrictions were introduced to aid in the control of internal inflation. Importers were required to make prior deposits in amounts equivalent to their contracts in the form of short-term bills of 150 days at 6 percent interest; and a larger proportion of export proceeds was to be paid in bills. Finally, an immediate devaluation of 40 percent was imposed.

These measures recaptured favor for Brazil in the eyes of the internationl authorities and the financial community more generally. New credits totalling $656 million were negotiated to finance debt repayment and current import requirements. The IMF was to provide $160 million, and United States public agencies, including the Ex-Im Bank, Treasury, and AID another $338 million; the residual was promised by private banking groups, largely European. The outstanding debt was similarly renegotiated to the extent of $859 million, thereby relieving a severe potential exchange shortage.

Domestically, a formal plan to reduce federal governmental expenditures was prepared and decreed in June. Monetary restraint, despite larger fiscal deficits than the previous year, had successfully limited expansion to 12 percent in the first half of the year, aided by the balances made available by import deposits. But the key to continuing monetary policy was control over governmental expenditures and borrowing.

For the first time in the post-war period, Brazil had thus responded to persistent disequilibrium by orthodox policies. It had undertaken genuine liberalization. There was a gratifying immediate improvement in the balance of payments. Non-coffee exports increased in volume and value. Even more important quantitatively, there was a renewed in-flow of capital; official long-term in-flows generated a positive net balance for the first time since the early 1950's. Reserves were augmented in 1961 by $178 million.

Inflation, however, did not abate. The large devaluation inevitably provoked increased domestic prices: for the first half of the year wholesale prices rose 15.5

percent compared to 9 percent in a comparable period the year before. Monetary restraint remained in effect despite mounting complaints concerning lack of availability of credit. Yet it was still not so severe that output growth had been curbed. There was still no stabilization crisis, and the corrective, or once-for-all, relative price increases required to restore balance had been accomplished.

The experiment thus hung in the balance through August. Quadros' dramatic resignation on August 25 signaled its effective end. The aftermath of a presidential succession crisis is not a propitious environment in which to pursue monetary restraint, nor one in which expectations assist the transition to a new equilibrium level of lower internal expenditure and consumption. While lip-service was paid to the continued commitment to a unified rate and domestic retrenchment, the new president, João Goulart, had both restricted executive authority and little faith in the discipline of market processes.

In the last quarter of 1961, there was a massive governmental deficit and an increase in the money supply of 21 percent that signalled the end of the policy of restraint The exchange rate remained unchanged until May 1962, thereby appreciating in real terms some 30 percent. Devaluation, when it eventually came, was only 15 percent. Substitute selective measures were preferred such as the boneco, or bonus, granted to sellers of exchange earned from exports. The preferential rates for wheat and petroleum reasserted themselves as means for restraining domestic price increases and holding down the cost of living.

Through 1962, Goulart continued to lack full executive powers, and the ministerial form of government was a passive rather than active source of authority. Deteriorating economic conditions helped to assure overwhelming popular approval of restoration of presidential power to Goulart in December, 1962. That occasion also signaled the last serious effort to contend with the increasingly problematic economic situation. The Plano Trienal was hastily assembled at the end of 1962 by Celso Furtado as a blueprint for restoring equilibrium. Its principal novelty was its realistic commitment

to a gradualist policy for attainment of internal stability, rather than a promise of immediate end to inflation. Success necessarily depended upon a large dose of external finance, as had been recognized in 1961. To secure such support, the government again devalued and imposed monetary controls.

The government was not without success in manipulating credit in this venture. Until June, 1963, the money supply had increased only 10 percent, and even seasonally adjusted to an annual rate of about 37 percent remained close to the target of the plan. Moreover, the real governmental deficit had been held below the previous year's, and financed to some extent through sales of foreign exchange, thereby freeing credit to the private sector. But both acceleration of inflation and decline of output now perceptibly occurred. The relationship between instruments and targets was no longer direct and immediate.

Faced with a 40 percent inflation by mid-year, the government yielded to higher wages, more credit, and more expenditure. The exchange rate remained fixed, although ironically, the export subsidy system, improved world prices, and declining internal demand provoked larger exports than in any year since 1956. But the export side of the ledger was of little significance quantitatively compared to the accumulated claims on foreign exchange. Aversion of a payments crisis depended upon continuing capital inflows, and they predictably ceased in view of the rapidly worsening internal conditions.

Inflation had accelerated because continuing reliance on the inflation tax to finance governmental deficits set in motion dynamics that could not easily be modified. Although a continuing level of forced savings is consistent with a constant inflation rate in a static equilibrium, the transition to deficit finance is complicated by inflationary expectations. The latter mean that price increases tend to exceed increases in the money stock as holders of real cash balances prefer other assets. But to insure the same real value of deficit financed expenditure then requires larger issues of money - and higher rates of inflation.

A further complicating factor in the Brazilian scene was the relationship between holdings of real cash balances and economic growth. Higher rates of expansion will lead to larger real balances - as anticipated cash requirements are acquired. Thus the more rapid growth in Brazil in the mid-1950's saw a regular increase in real money balances relative to income - which corresponded to low rates of inflation and a successful mobilization of forced savings. But after 1961, there was no further increase despite rising real incomes, and more inflationary finance was required merely to maintain the same level of resource transfer to the government.

Accelerating inflation, and declining real balances, of course, had adverse effects upon production decisions. Thus quite apart from the constraining effects of foreign exchange shortage, real growth was progressively made more difficult. Superimposed in addition was the downturn of a cycle born of the import substitution process. Import substitutive activities experience an initial rapid growth owing to either repressed, unsatisfied demand, or to actual displacement of imports. In either case, the first expansion of demand exceeds the feasible long-term rate. This leads to large investment in the early years to accommodate the apparent market. Because import substitutes are relatively important, and because their technologies are capital intensive to boot, the impact on aggregate investment is considerable. Moreover, the import substitution strategy leads to a temporally bunched process. Many goods are introduced within a short interval through the common stimulus of policy measures making domestic production more attractive.

Finally, and perhaps most important, the accuracy of price signals and the responsiveness of the private sector, accompanied by compensating governmental policy - all of which are necessary to counteract the inherent cyclical tendencies of the process - were absent from the Brazilian scene. On the contrary, attempts at stimulative fiscal policy only compounded the balance of payments disequilibrium and evoked more inflation. If the new, underutilized capacity could have been converted to immediate export, more consistent policies would have been possible. But its exclusive focus on the internal market was an inherent feature of the self-contradictions of the import substitution process.

The circumstances of rising social and political tension in 1963 was not one conducive to dealing with these complicating elements that simultaneously produced negative per capita income growth and inflation of more than 80 percent. Rather, an increasingly polarized climate led to a search for radical solutions by both sides. For Goulart and his followers, the path led sharply leftward motivated by belief in the need for fundamental transfers of wealth and power. For the conservative opposition, the restructuring required was more orthodox, but no less complete. The conditions under which the market direction of economic activity obtained had to be restored: inflation and the balance of payments were immediate targets, but the larger objective of a reduced governmental role and enlarged function for the price mechanism was no less prominent. Military intervention decided the issue in favor of the latter option in April 1964.

III

Post-1964 Trade Liberalization Policies

After 1964, and especially 1967, economic performance dramatically improved. Real rates of growth since 1968 have averaged close to 10 percent per annum, and before the recent resurgence in 1974, inflation had subsided to an annual rate of about 15 percent. These are far different indicators from the dismal results of the early 1960's. They have been achieved under the guise of a radically different economic philosophy that supplanted the earlier import substitution model. A central element of the new strategy has been much greater participation in the international economy, both in the product and financial markets. Correspondingly commercial policy has been liberalized in many dimensions.

Before this structural transformation is analyzed, however, it is useful to focus on the role of commercial and domestic policy immediately after 1964 in resolving the balance of payments problems that had so continuously plagued Brazil in the post-War period. For that resolution gave policy makers essential additional freedom to implant their new economic strategy.

Unlike the earlier efforts, the 1964-67 policies represent a complete Phase III liberalization experience. The crucial differentiating element is the continuity of the commercial and domestic policies that were instituted, not their novelty. The application of orthodox stabilization measures earned an inflow of foreign resources in sufficient magnitude to permit escape from the shadow of balance of payments crisis. Such policies also contributed, however, to a perhaps excessive and unnecessary decline in economic activity.

It is the latter point that is in issue concerning the post-1964 liberalization. That orthodox policies, after adaptation, eventually accomplished their principal objectives is not in doubt. Whether other policy options were superior, in terms of total product, and effects upon the lower reaches of the income distribution, is the relevant question. The answer, of course, depends upon the feasibility of a "successful" import liberalization.

Admittedly, the economic circumstances facing the new government in April 1964 were grim indeed: inflation in the first quarter had totalled 25 percent; foreign reserves were inadequate to meet impending obligations; and real product per capita had declined in the previous year. Energies were immediately directed at internal priorities: monetary restraint, fiscal balance, and limitation of wage increases. Commercial policy in the first instance was limited to renegotiation of the outstanding debt. That was by no means a trivial matter. By this time, with a third of the total debt of $3.9 billion likely to fall due in 1964, the capital account was a more significant factor in restoring balance of payments equilibrium than reallocations of current imports and exports. An agreement in July provided breathing room that was later further enhanced by increased capital inflows in 1965, principally from AID.

In other dimensions of commercial policy, the government proceeded more cautiously. Subsidy rates for wheat and petroleum were eliminated in May, but these had been of only modest proportions. After the 1961 reform such preferences had never again assumed their earlier importance. Bonuses to exporters had already ended in February, with the large devaluation in that month. Three further devaluations took place in

August, in September, and at the very end of December. These left the average real exchange rate for exports in the April-December period some 15 percent more favorable than the 1963 annual average, but 10 percent worse compared to the January-March period during which export bonuses had been paid. Moreover, there was no evidence of convergence in import and export rates. Although the prior deposit requirement was reduced from 100 to 60 percent of the import contract, that change was more than compensated by a financial surcharge of 20 percent applicable to almost all imports. In April-December the ratio of the effective import rate to exports stood at 1.29, compared to 1.26 in 1963, and 1.21 in January-March.

The initial efforts at liberalization were thus far more tentative and limited than was the integrated reform of 1961. What differed was the persistence of restrictiveness. Actual results fell far short of what had been projected. Growth rates of product were less than 3 percent in 1964 and 1965, and the higher rate in 1966 was already falling at the end of the year. Inflation remained at close to 40 percent through 1966. Yet the government continued to emphasize the need for increased savings and foreign investment in 1965 and 1966 long after the excess capacity generated by the previous import substitution boom became obvious. It continued to apply restrictive fiscal and monetary policy even beyond the point of elimination of excess demand, and influenced costs adversely by high interest rates and inefficient scale. Indeed, perhaps most serious, the policy of pragmatic gradualism which the government adopted de facto was more the consequence of inconsistent and temporary adaptations rather than conscious intent. Thus during the recession of 1965 the government did back away from generalized monetary restraint - allowing the money supply to increase by 75 percent during the year and using credit allocations to favored firms that engaged in price restraint - thereby stemming the output decline while holding down price increases. But in the next year, the monetary brake was applied harshly and expansion limited to 16 percent provoking another and more serious slowdown in industrial activity, but

without reduction in inflation.

The government policy committed itself to reducing aggregate demand to regulate inflation by ultimately chastening producer expectations. Unemployment was not necessary to cause workers to revise their wage demands, for real wages were already in decline owing to government controls. The new wage formula limited normal wage changes to those required to restore the average level of real wages prevailing in the previous 24 months. This permitted an initial smaller nominal increase than that required to return to the real wages at the time of the last adjustment. The smaller increment would in turn become self-justifying by reducing inflationary pressures. The equity of the new system depended crucially upon the allowance for inflation during the following year when money wages were fixed. In fact, the government continuously understated anticipated inflation during the period 1964-1967, leading to a reduction in real minimum wages of about 20 percent.

This internal stabilization strategy was not the counterpart of a more realistic commercial policy designed to restore external equilibrium by curbing domestic consumption. Rather, the sequence was the opposite. Slower growth directed to stem inflation had as a secondary consequence substantially reduced import demand, and thus made liberalizing measures possible. The annual commercial balance in 1961-63 averaged a deficit of $133 million; in 1964-66 there was an average surplus of $292 million. Of this reversal of $425 million, diminished imports accounted for $189 million, and increased exports $236 million. The decline in imports in turn is almost entirely explained by reduced imports of capital goods.

Table IX calculates more accurately the contribution of lesser growth upon the import balance. Potentially, imports would have increased with a continuing increase in domestic product. Imports were much more than unit elastic with respect to output, and also were related to the rate of growth since more rapid expansion implied the need for capital goods not available domestically. The gross product elasticity in

TABLE IX

PROJECTED IMPORT DEMAND: 1964-1966

	(1) Actual Imports CIF Current $ Mill.	(2) Actual Imports CIF Constant $ Mill.	(3) Predicted Actual Imports Constant $ Mill.	(4) Predicted 6% GDP Growth Imports Constant $ Mill.	(5) (4)-(3) Converted to Current $ Mill.
1964	1263.5	1414.9	1452.1	1661.9	187.4
1965	1096.4	1239.9	1439.4	1818.0	334.7
1966	1496.2	1627.9	1677.4	2064.9	347.9

Annual Average 290

Source:

(1) Anuário Estatístico

(2) Laspeyres quantity index times 1955 value of total imports; quantity index calculated by Instituto Brasileira de Estatística and published in Anuário Estatístico.

(3) Predicted imports using actual GDP in regression equation fit to 1953-1970 data:

$$M = -452.6 + 28.16\ GDP + 2209.1\ \Delta\ GDP/GDP - 5.93\ Pr - 177.1\ T$$

$$(4.33)\quad (6.13)\qquad (1.93)\qquad (2.73)\qquad (4.32)$$

$R^2 = .94$; Durbin-Watson = 1.95

Where imports are measured in millions of 1955 dollars, GDP is the index of real gross domestic product (1955 = 100), Pr is the real exchange rate including tariffs plus surcharges times the price index of imports (1955 = 100), and T is time, 1953 = 1.

(4) Predicted imports using $GDP_{1963+t} = GDP_{1963} \cdot (1.06)^t$ and $\frac{\Delta GDP}{GDP} = .06$.

1964 implied by the regression is 3.3. It is offset for observed changes year to year by the trend effects of import substitution; on a net basis, for 1964, the elasticity is still 1.6. That it should be so high - and later import growth suggests even higher elasticities - illuminates the potential balance of payments deficit on current account threatening any strategy of rapid growth. The virtue of the post-1964 policies was that they found eventual means of confronting that problem through export growth that were more efficacious than the measures of the late 1950's and early 1960's. The initial measures after 1964 immediately alleviated the shortage of foreign exchange, but due to recession induced curtailment of demand. The annual savings in foreign exchange for the period 1964-66 owing to the shortfall from a 6 percent growth rate are a considerable $290 million. In 1961, by contrast, imports declined not at all, and the external pressures never abated.

This reversal on current account in 1964 and thereafter had direct implications for the effectiveness of external assistance. The substantial increase in gross capital inflow at the time of the earlier reform in 1961 was necessary to finance a current account deficit, to amortize maturing debt, and to offset short-term capital repatriation. With a trade surplus, the capital inflow after 1964 was used to close out definitively the short-term liabilities accumulated from the stop-go efforts to finance current account deficits of the late 1950's and early 1960's.

This unintended use of external finance - which had been made available to allow uninterrupted imports - was quite productive. It was in many ways equivalent to partial cancellation of the previous debt since the new official loans contained large grant elements. Equally important was the postponement. Without the imminent threat of a foreign exchange shortage, the government could proceed with the dismantling of the elaborate protective structure that had been laboriously constructed to discourage import demand. Because of the improved payments situation, the price of imports was lowered as part of the liberalization strategy, rather than increased; the wedge between import and export exchange rates was reduced on the import side. Unfortunately, this opportunity was partially purchased at the cost of lesser output. The relevant lesson,

perhaps, is that the magnitude of external assistance accompanying liberalization should be substantially greater than is customary, if trade reform is to avoid adverse internal consequences. It takes a considerable time to restructure the domestic economy to increase exports; temporary, and hedged, guarantees of finance do not provide enough latitude for such transformation at continuing high rates of growth.

The lengthy period of internal restraint and slow growth was, moreover, itself a factor assuring continuing, and accelerating, official capital inflow. AID and the IMF conditioned assistance on the maintenance of a restrictive stance domestically. Approval of new loans was dependent upon faithful application of policy instruments, not the accomplishments. It was a reasonable position. The policies could be continuously monitored, whereas actual results were frequently subject to aberrations - like bad harvests - over which the government had no control.

Yet such a linkage presumed that the conventional policies were always the correct ones. The substitution of a new finance minister in 1967, Antônio Delfim Netto, came at a fortuitous moment. For some time it had been clear that more expansionary policies might provide both more rapid growth and lesser inflation. Profit expectations could be met by greater output as well as by increased price. Excess capacity meant that expenditures were more productive than increased savings. New policies in fact were instituted during 1967, and rewarded with immediate success - but also lesser official finance. Disbursements of the AID program loan were slowed, but the stronger Brazilian exchange position enabled reserve depletion to substitute. Eventually, the international agencies came to recognize, and laud, the wisdom of the new strategy.

The role of private sector finance in this early post-1964 period was relatively subordinate. Although increased utilization of private foreign capital was an important component of the immediate post-1964 strategy, it was belated in its realization. Direct foreign investment in the period 1964-1966 was hardly greater than in 1961-1963 despite legislation repealing the earlier limitations on remittances and the priority given to settling outstanding expropriation controversies. Efforts to stimulate short-term

monetary loans for working capital motivated Instruction 289 in January 1965. These were particularly attractive to subsidiaries of foreign firms. Through registration they were guaranteed priority for future repurchases of foreign exchange. Unlike the previous swap arrangements, however, the Central Bank did not establish a fixed rate for repurchase of foreign exchange. The risk of devaluation thus impinged on the borrower. But with monetary stringency and high internal real rates of interest, and with devaluations relatively infrequent through 1965 and 1966, the loans were attractive to borrowers. The significant gross inflows of 1965 and 1966 were matched, however, by repayments of previous short-term obligations so the net contribution to the balance of payments was limited.

For the years 1964-1966 as a whole, then, governmental long-term finance showed a net balance of $442 million; net private sector inflows from all sources, finance of all durations plus investment, amounted to $222 million. Net compensatory capital amortizations in turn came to $700 million as the current account surplus of $292 million plus the governmental receipts were put to use to cancel outstanding debt. In the earlier period, 1961-1963, governmental net long-term finance was a smaller $380 million; private net flows, a larger $453 million; and compensatory finance a positive $331 million to underwrite a current account deficit of $831 million.[11a]

In this context of slackened growth and dramatic balance of payments reversal, commercial policy liberalization proceeded, culminating in a new tariff code in 1967. By 1965 the prior deposit and financial surcharge provisions were phased out. The premium for special category imports also fell as more exchange was made available for their purchase. In addition, that year and the subsequent one, a number of products were transferred to the general category. In 1967 the special category was abolished in the full reform of the tariff code.

The new legislation maintained the relative structure of the previous tariff, but reduced the ad valorem rates. Typically, where rates had been in the 60-80 percent

range, they were now 40-50 percent; at the higher level the maximum levies on consumer goods were reduced from 150 percent to 100 percent, and the average by an equivalent percentage. After its initial formulation, the government decided to combine the new tariff code with devaluation, and reduced the rates somewhat more to compensate. On average for manufactures, using import weights, and excluding petroleum, the 1967 code reduced tariffs 42 percent compared to 1957; on a supply weighted basis, because of the importance of the special category, the reduction was a much larger 64 percent. Excluding the special category altogether, the supply weighted decline is only 23 percent.

Paul Clark, writing in 1967, summarized well these post-1964 policy measures:

"Brazilian import liberalization over the last three years has been dramatic and sweeping. There have been five main elements: (a) elimination of exchange premiums on general-category imports due to import surcharges and advance deposits; (b) reduction of exchange premiums on special category imports... from 260% in 1964 to 96% in 1966; (c) effective elimination of the entire special category by March 1967; (d) a general tariff reform and reduction of the tariff structure effective in March 1967; (e) devaluation of the basic exchange rate 15-20% less than the rise in domestic prices since 1964."[12]

The consequences of these changes, however, are not quite so dramatic as he concludes. Table X sets out two alternative calculations of the varying cost of imports between 1962 and 1967 that both quantify and further illuminate the process of import liberalization.

Panel A estimates the effective exchange rate, and its components, applicable to actual imports. Panel B measures the same from the perspective of the domestic productive structure. Two series for industry are included in the latter; one [Column (1)] makes allowance for possible redundancy, while the other [Column (4)] takes the tariff rates at face value. These precise differences are explained in more detail presently.

While the exchange rates calculated in both panels decline steadily after 1964, the extent and phasing of the reductions are quite different. The potential cost of industrial imports declines much more rapidly - especially as measured by the maximal applicable rate. Moreover, the timing of the descent is determined by the reduced and eventually abolished special category premium. Actual imports were affected by the premium hardly at all. Even the imposition and removal of various special charges had limited significance. These were not applied to products exempted from tariff duties, nor, of course, wheat and petroleum. Since exemptions were quite extensive - as can be seen by the low level of actual collections in Column (3) - the aggregate consequences of the surcharges were much diluted. They applied only to marginal imports, allowing those regarded as more essential to remain low in cost.

Consequently, the determining change in the actual cost of imports is the real appreciation of the cruzeiro subsequent to 1964. This accounts for three-fourths of the reduction in the effective import rate. After the devaluation in December 1964, and until the establishment of the system of frequent periodic readjustments in August 1968, devaluations were few and far between. The cruzeiro was depreciated only by 19% in November 1965, despite inflation more than twice as great. More than another year would pass until the next devaluation of 24% in February 1967, again a decline

TABLE X

BRAZILIAN EFFECTIVE IMPORT EXCHANGE RATES, 1962-1967
(1964 CRUZEIROS PER DOLLAR)

A.

Actual Cost of Imports

	(1) General Import Exchange Rate	(2) Special Category Exchange Premium	(3) Tariff Collections	(4) Prior Deposits & Surcharges	(5) Total Costs of Imports Excluding Wheat & Petroleum	(6) Subsidies for Wheat & Petroleum	(7) Total Cost of All Imports
1962	1246	6	170	96	1518	130	1415
1963	1044	6	143	114	1307	55	1225
1964	1284	5	146	89	1524	244	1365
1965	1236	2	174	35	1447	27	1378
1966	1024	3	168		1195		1154
1967	994		102		1096		1074

B.

Potential Cost of Imports

	(1) Industry	(2) Agriculture	(3) Total	(4) Maximum Industry
1962	2680	1150	2143	3306
1963	2250	936	1784	2817
1964	2888	1194	2297	3632
1965	2584	1174	2089	3189
1966	1803	973	1506	2028
1967[a]	1421	924	1242	1421

TABLE X (CONT'D)

Source: Panel A

(1) Basic import exchange rate from IPEA, Diagnóstico and Conjuntura Econômica deflated by wholesale price index excluding coffee.

(2) Special category premium from Clark and Weisskoff, "Import Demands", multiplied by percentage of special category exchange purchased at auction to total exchange transacted for imports.

(3) Tariff collections in Cr $, from Anuário Estatístico, divided by values of imports, CIF, in $ as converted by basic exchange rate, times (1). The value of imports excludes wheat and petroleum, estimated on the basis of their FOB proportions.

(4) Financial charges, interest foregone, and export bonuses as a percentage of the basic exchange rate from Clark and Weisskoff, times the ratio of import duties actually paid to the legal level stipulated, times (1). The legal level is estimated from an average of two import weighted tariff estimates, one using 1959 imports, the other 1967. More detail concerning the methodology is given in Section IV.

(5) Sum of (1) to (4), (the error introduced by summing (2) rather than recalculating a weighted average is trivial since special category imports are less than .5 percent).

(6) Difference between weighted average exchange rates for wheat and petroleum and the basic rate. The differences for wheat and petroleum individually are given by Clark and Weisskoff.

(7) [(1) - (6)] weighted by wheat and petroleum imports plus (5) weighted by all others.

TABLE X (CONT'D)

Source: Panel B

(1) Supply weighted tariff for industry, 1959 weights, taking account of minimum redundance as elaborated in text and Section IV.

(2) Supply weighted tariff for agriculture, 1959 weights, including subsidies to wheat and taxes on agricultural exports.

(3) (1) times .64 plus (2) times .36, weights derived from 1959 production levels.

(4) Maximum legal rate for industry without allowance for redundancy.

[a]Refers to period April-December after tariff reform.

inferior to domestic inflation. This exchange rate was maintained until January 1968 when it was changed only by 17%. The cumulative effect of the policy was an appreciation of some 25% after 1964. The absence of a pressing need to devalue because of the favorable trade balance reflected itself in reduced costs of foreign inputs and eliminated, after a temporary contrary effect in 1964, pressure on domestic prices from this source.

It is highly doubtful, however, that the presumed downward effect on domestic prices of the apparent reduction in protection, and hence increased competition, in Panel B were realized. Because the source of that protection had been so obviously temporary, and altered frequently to suit the immediate needs of monetary policy and foreign exchange crises, its influence on internal prices, and production decisions, was correspondingly minimal. Put another way, the level of protection afforded by the special category premium - which applied to a significant proportion of domestic production - was so great as to be redundant. There was no longer a stable relationship between the potential cost of imports and internal prices. Changes within such a redundant range were hence quite irrelevant to actual prices.

A partial measure of such redundance is afforded by Table X. The exchange rate series for industry in Column (1) of Panel B is as much as 20% less than the series in Column (4) embodying the legal statutory provisions. This difference is obtained by reckoning a zero tariff for manufactures which are also exported in significant quantity, and by assigning the later, and lower, tariff to products neither imported before or after the tariff reform in 1967. The lack of imports implies that the subsequent tariff level was the maximum that could have been relevant earlier. The lower tariff does not take account of the considerable exemptions reflected in Panel A, neither for the level of the duties nor for the incidence of the surcharges.

Yet even as measured, it is clear that the tariff reform of 1967 involved less far reaching changes than the legal provisions suggest. Indeed, its contribution to lesser

protection for industry is hardly more than the effect of the appreciation of the cruzeiro.

A more important result of the import liberalization policy was its definitive elimination of subsidies. After their modification 1961, the special exchange rates for wheat and petroleum had reasserted themselves in a cyclic pattern - subsidies first increasing in an effort to stem internal inflation and then being eliminated to satisfy foreign lenders of the commitment to realistic exchange rates, and smaller government deficits. The considerable subsidies for 1964 as a whole reflect the vain efforts of the Goulart government to restrain price rises at the beginning of the year. In May, equalization was established and new purchases of exchange were made at parity. It helped, of course, that the cruzeiro also appreciated. Even without subsidies the 1966 exchange rate enabled imports at less costly prices than the 1962 rate with them.

Inevitably, as the import exchange rate for industry was shorn of its surcharges, it began to approach much more nearly the rate for agriculture. The latter, however, continued to be taxed rather than protected. The mechanism for differentiating the exchange rate was a variable contribution quota applied to export earnings. Applied occasionally to cocoa and others, the tax was continuously applicable to coffee. The coffee quota over this period was quite stable at between 54 to 58 percent of the proceeds.

This convergence of the industrial and agricultural exchange rates had its counterpart in the narrowing of the effective rates for imports and exports as a whole. But the convergence took place at export rates that in real terms were less favorable than they had been earlier. Table XI indicates the course of export exchange rates.

Both to compensate for the general disincentive to exports, and also to stimulate exports of manufactures in particular, the government began early on to explore subsidies specific to the industrial sector. It was not a new idea. The tariff legislation in 1957 had granted draw-back privileges for imported inputs used in producing manufactured exports, but it had not been implemented until 1964. Briefly in 1963, also, a special

TABLE XI

EXPORT EXCHANGE RATES, 1962-1967

(1964 Cr $ per $)

	(1) Non-Coffee Exchange Rate	(2) Export Bonus	(3) Subsidy For Manufactures	(4) Manufactures Rate	(5) Coffee Rate
1962	1182	38	-	-	509
1963	1004	101	-	-	454
1964	1210	46[a]	12	1268	570
1965	1220	-	83	1303	551
1966	1015	-	143	1158	435
1967	983	-	178	1161	467

Source:

(1) EPEA, Diagnóstico 1962-1964; 1965-1967, free market buying rate, Conjuntura Econômica; deflator is wholesale price index excluding coffee.

(2) EPEA, Diagnóstico; deflator as in (1).

(3) Effective subsidy from all sources as estimated in Section V times (1).

(4) (1) + (2) + (3).

(5) Average of IMF quarterly rates; deflator as in (1).

[a]Effective only though February.

and more favorable exchange rate for manufactures was introduced, but such a multiple rate incentive was not carried over. Instead, the revisions of the income tax legislation and the consumption tax law provided opportunities to give special treatment to exports of manufactures. Both were implemented in 1965. So too were more extensive credit facilities to finance exports. The year before, the states of São Paulo and Minas Gerais had granted exemptions from excise taxes on such exports.

These were modest beginnings. In 1967 the new constitution exempted exports of manufactures from state value added taxation. And in 1969 and 1970 actual credits were made available to subsidize exports in a more vigorous fashion. Ultimately, as we shall see, the extent of rebates permitted export prices to be less than two-thirds of the domestic level, while yielding the same rate of profit. But in this early phase of liberalization, the attention to exports of manufactures was much more limited. While the subsidy progressively increased, the effective export rate in 1967 was lower than in 1962!

For non-traditional agricultural exports, no special help at all was forthcoming. In 1968 and 1969 some states were encouraged to exempt exports from the value added tax to which agricultural products had become subject. Few could forego the needs for revenue although some exemptions were forthcoming, from São Paulo especially.

The significant increase of exports, both industrial and non-traditional primary products, thus did not have its basis in price inducements. Rather the explanation resides in other determinants. For the new primary exports, an internal policy more favorable to agriculture evoked greater supply response. Output of non-coffee crops, which had not grown with any consistency in the 1960-1964 period was 20 percent higher in 1967 than in 1964. Moreover, since exports of these new crops were a residual after satisfaction of domestic demand, they were also sensitive to less bouyant internal markets. Exports of agricultural products were higher in this 1964-1967 period than would be predicted by agricultural output alone.

For manufactures, the case is even clearer. The large exports of steel products to Argentina in 1965, for example, were provoked by excess capacity, and virtually bartered for wheat. At a more aggregate level, statistical analysis corroborates the role of recession. Fully a quarter of the larger exports of manufactures in the 1964-1967 period compared to 1960-1963 are explained by the larger excess capacity in the former - quite apart from the trend increase in industrial production. To export may not have been the solution, as the government posters proclaimed, but it was preferable.

The crucial necessity was to maintain that momentum under more favorable growth conditions. Brazil succeeded in doing exactly that after 1967. It thereby accomplished the transformation to a more open economy in which rapid export growth, and progressive integration into international capital markets, provided the required import capacity to sustain higher rates of capital formation.

Its ability to do so was still in doubt in 1968 and 1969. The rapidly increasing deficit on current account in 1968 as economic recuperation stimulated more than proportional imports raised the spectre of earlier balance of payments constraints. This time, however, the government could, and did, respond more constructively. Because of the prior amortization of short-term debts, Brazil could rely on new short-term capital inflows - facilitated by Central Bank Resolution 63 that governed the influx of loans through the banking sector. Without curtailing imports unduly, attention was instead given to encouraging exports. Much more liberal subsidies could be afforded because the domestic deficit was under control, and internal growth generated more than unit elastic revenues.

In August 1968, in addition, after an earlier devaluation at the beginning of the yes/the government radically modified its exchange rate policy by introducing a system of frequent and regular mini-devaluations. As long as such certain changes were smaller than the interest rate, speculators could not gain. On the contrary, by eliminating the potential profit from anticipatory remittances immediately prior to an expected devaluation, the new policy excluded this important source of pressure on the exchange rate. Indeed, it was the intense speculative activity in mid-1968 as imports began rapidly to increase that was important to the decision.

The system itself is not novel. Both Colombia and Chile had experimented with similar arrangements. Its virtue is to neutralize the effect of internal inflation upon the exchange rate. Brazil acted without the wholehearted blessing of the IMF, which feared that the action represented still further relaxation in the commitment to price stabilization. That interpretation was correct, but the inference wrong that elimination of inflation should continue to be the prime objective.

Brazilian success with the crawling peg has proven notably greater than the earlier experiences. An important reason is that the exchange rate innovation was imbedded in a widening system of export promotion rather than one of import restriction. It

therefore guaranteed the government's commitment that Brazilian products would remain competitive on the world market. Another element in the effectiveness of the adjustable rate was its adoption in a period of decelerating inflation. The required devaluations thus were both small, and declining, and did not reinforce internal cost pressures to any appreciable extent.

A third initiative in commercial policy directed itself to control of imports. After encouraging at the beginning of 1968 imports linked to external finance by abolishing the requirement of previous purchase of exchange, the Central Bank in May limited the term for settlement to 180 days. This was done to avoid repetition of earlier episodes in which excessive importation led to significant increases in outstanding short-term debt. In July still further efforts to limit imports motivated the reinstatement of previous purchase of exchange for all commodities whose tariffs exceeded 50 percent. This range included all non-essential products.

A more drastic step was the upward revision of tariffs in December. Products that had been in the special category prior to its abolition in 1967 had their tariffs immediately increased by 100 percentage points. A series of administrative decisions of the Customs Council simultaneously increased the minimum prices at which goods would be valued for customs purposes. The effect was to increase the average tariff for manufactures by a fourth, from 43 to 54 percent. But this is to overstate its effect. The redundancy that limited the significance of earlier reductions operated symmetrically to dilute the increases. More important was the influence on some marginal imports of consumer goods.

Note that these measures on the import side were taken within the climate of prior liberalization. They were not harsh or far reaching. Nor did they have to be. Despite the growth in imports in 1968 of more than 20 percent, the rise in exports and the much larger inflow of capital produced a balance of payments surplus.

Imports grew much less in 1969, aided by record levels of domestic crude oil production and larger wheat crops. Exports and entry of capital, on the other hand, continued to increase. This year was the turning point, as for the first time despite accelerating growth, a significant balance on trade account was recorded, and medium and long-term capital began to enter in substantial sums. Brazil could even afford to limit the short-term capital it would accept, as it did before mid-year.

The initial period of liberalization was thus complete, and a success. But its special features should not be forgotten. There were costs in output that might have been avoided, and distributional consequences that might have been ameliorated. Less commitment to orthodoxy earlier on might have helped. For it was not devaluation and corresponding price effects that determined the transformation to a more open economy. It was active intervention in behalf of exports, and a competitive industrial and agricultural sector, that ultimately counted. For despite the apparent distortions of the import substitution process, Brazilian industrialization was far from inefficient. That is the topic of the next section.

IV

Tariff Protection and Economic Efficiency

From the beginning of the twentieth century, Brazilian tariff legislation has provided generous margins of protection for domestic industry. The Tariffs of 1900 and 1934 were both commented on by contemporaries for their high levels. Much the same could be said for the subsequent 1957 revision, although by that time other developing countries, particularly in Latin America, had outdone Brazil in their zeal, including Argentina, Chile and Colombia.[13]

The structure of nominal protection is as significant as its absolute level. Low priced intermediate inputs and capital goods provide a margin of additional protection to final activities using them. A continuing characteristic of the Brazilian tariff has been its low level, or even exemption, on duties on such inputs, with corresponding increases in the effective protection enjoyed by the consumer goods industries.

The relative level of effective protection provides a crude indicator of the distortions introduced into the productive structure by tariff legislation. A high effective tariff suggests considerable comparative inefficiency in the activity, while products with lower effective tariffs can be expected compete more effectively. Despite the high level of Brazilian tariffs, and the presence of special additional restrictions such as the Law of Similars, such inefficiency does not seem to have characterized Brazilian industrialization in the post-War period. Nor has post-1964 trade legislation affected the allocation of resources or efficiency of production as profoundly as it has the calculated levels of protection. The recent surge of rapid growth is easier to interpret once this essential continuity of the industrialization process is understood.

The reason for this conclusion is the failure of tariffs to measure the deviation from world, and hence efficient, prices for the wide range of products in which Brazilian industry provided virtually the entire supply. By the end of the 1950's, less than 2 percent of demand for manufactured consumers goods was satisfied by imports; for industrial intermediate inputs, the participation was greater, 12 percent; and for capital goods, greater still, approximately a third.[14] The tariff levels are exactly inversely related, and become so high as to make them very inaccurate indicators of relative prices.

Table XII makes this point forcefully. It presents a direct comparison of retail prices in Brazil and the United States for 44 like products, and contrasts them with the theoretical ratios permitted by the protective structure. In only 11 instances do the retail price ratios approximate the potential values. For the vast majority of products, including all those in the special category, the actual prices fall far short.

Redundancy is especially to be expected when temporary surcharges have been levied against imports. These increases may possibly have reduced import demand modestly, but certainly not to any great extent. The price elasticity for the non-essential products to which the surcharges were typically applied seems at most to be only about unitary, and the participation of such imports was quite small. Their influence was thus marginal at

TABLE XII

DIRECT RETAIL PRICE COMPARISONS, BRAZIL AND UNITED STATES, JUNE 1962

Commodity	Price Ratio[a]	Tariff Indicated Ratio	Potential Total Protection Ratio[b]
Consumer Goods Non-Durables			
Beer	.68	2.2	4.38*
Footwear	.99	2.2	4.38*
Cotton Fabric	1.33	2.2	4.38*
Rayon Fabric	1.15	2.2	4.38*
Woolen Fabric	2.05	2.2	4.38*
Matches	.87	1.2	4.38*
Washing Soap	.23	1.0	4.20*
Toilet Paper	.42	2.2	4.38*
Vitamin C	.60	1.1	1.51
Penicillin	.38	1.5	1.88
Aspirin	3.75	1.3	1.70
Durables			
Electric Lightbulbs	1.52	2.0	4.20*
Refrigerator	1.59	2.2	4.38*
Washing Machine	1.31	2.2	4.38*
Electric Iron	1.96	2.2	4.38*
Sewing Machine	.94	2.5	4.66*
Radio	1.88	2.0	4.20*
Television	2.05	2.0	4.20*
Passenger Car	2.02	2.5	4.66*
Bicycle	1.99	2.0	4.20*
Intermediate Goods			
Metal Structures	.74	1.8	2.16
Iron For Construction	.62	1.5	3.73*
Corrugated Galvanized Sheet	.52	1.5	3.73*
Cement	.84	2.0	2.34
Sheet Glass	.82	1.8	2.16
Paint	1.43	1.8	2.16
Tires For Lorries	1.27	2.0	2.34
Capital Goods			
Gasoline Engine	3.00	1.8	2.16
Diesel Engine	1.65	1.8	2.16
Electric Engine	.58	2.0	2.34

TABLE XII (CONT'D)

Commodity	Price Ratio[a]	Tariff Indicated Ratio	Potential Total Protection Ratio[b]
Capital Goods (Cont'd)			
Generating Unit	2.29	1.8	2.16
Portable Arc Welder	1.99	1.4	1.79
Lathe	2.52	1.6	1.98
Drill	.94	1.6	1.98
Ball Bearings	1.49	1.1	1.51
Tractor	1.36	1.0	1.42
Wheel Tractor	2.14	1.0	1.42
Disc Plow	1.08	1.2	1.61
Centrifugal Pump	1.55	1.8	2.16
Fire Extinguisher	.95	1.8	2.16
Typewriter	1.07	1.4	1.79
Calculating Machine	1.59	1.3	1.70
Adding Machine	1.22	1.3	1.70
Metal Desk	1.13	2.2	4.38*

Source: Original prices: "El Processo de Industrializacion en America Latina, 1965", United Nations Economic Commission for Latin America, Statistical Appendix, p. 89.

Dollar values are converted at the basic rate for 1962, 383.17; tariffs, etc., are measured against same rate.

Tariffs and excise taxes: Brazilian legislation; tariffs are those enacted in 1957 which remained in force with minor change until 1967.

[a]Brazilian prices net of excise tax relative to U.S. price.

[b]One plus tariff plus special category premium where applicable plus costs for prior deposits plus miscellaneous port charges. Special category products are indicated by asterisks.

best. But measured protection based on production weights is significantly affected, as if domestic firms could raise their prices accordingly.

Another, and more aggregate indication of the irrelevance of these surcharges in the Brazilian case is given by the effects of changes in the exchange premium for special category imports. This excess charge rose from 82 percent in 1959 to 240 percent in 1961. Actual imports in this category were $5 million in the former year, $2 million in the latter - in both instances an entirely irrelevant amount. Yet the calculated nominal tariff for textiles increased almost exclusively for that reason from 151 to 306 percent, and for industry as a whole from 87 percent to 180 percent. Since other requirements like prior deposits were not applicable to essential imports eligible for tariff waivers, they too fell on a narrow group of imports.

Much of the increase in protection in Brazil after 1958, and its reduction after 1964 in fact involved the rise and decline in such surcharges. The new tariff of 1967 did reduce the simple nominal levies for manufactures from the 1957 legislation, to be sure, but only modestly. Weighted by the structure of production, such nominal tariffs were reduced from 70 percent to 54 percent. Yet ironically enough, because the fiscal rate used to value imports lagged behind the market exchange rate in the earlier period, the actual effective incidence relative to the market rate was virtually unchanged between the two dates. Moreover, the 1972 tariff raised rates again, by about 20 percent, or to a point approximately midway between the levels prescribed in earlier legislation.

These results, and others to follow, rest upon new calculations of the Brazilian nominal tariff from 1958 to 1972. For the period 1958-1969, the data for the industrial sectors take as their basic unit the individual sub-chapters of the tariff code, classified to a four digit ISIC level to correspond to the 1960 census information on productio in the preceeding year. (Within tariff sub-chapters, likely to be more homogeneous, simple averaging of tariff rates was performed.) Tariffs were averaged simply within each four digit ISIC class, and these industrial sub-groups were then weighted by 1959 total supply (or imports) to arrive at relevant industry totals. These in turn were

aggregated to an industry-wide average tariff on the basis of 1959 supply (or import) weights. In all, almost 1300 individual product groups were created from the more than 9000 tariff code entries. This large sample assures a representativeness that prior tariff calculations based upon selected products have not always been able to achieve.

For 1972 this same methodology was not feasible. In its stead a sample of more than 200 products was selected representing the principal items making up supply in almost all industrial sectors. 1968 supply weights were used to reach industry totals, and then industry-wide averages. The tariff for 1967 was calculated in the same fashion, both to serve as a link with the earlier series, and also as a check for consistency. The correlation between the alternative methods for 1967 is .83. This permits 1972 levels to be calculated by applying the ratio of the comparable 1972 and 1967 sectoral averages to the previous series.

A different and separate approach was used for agricultural products. Because of the homogeneity of the tariff rates even across tariff chapters, the concentration of production in certain activities, and the limited importance of imports, the focus could more easily be directed to output. Twenty-six different crops were distinguished (including one aggregate for subsistence vegetables), and six animal products. For the latter the relative value of stocks served as the internal sectoral weights since production data were not available; a more conventional definition of supply served for crops.

The extensive disaggregation employed in the earlier period, and the fact of tariff reduction in 1967, permit an estimate of the minimal redundancy inherent in the tariff in prior years. For if, despite the significant reduction in tariff, a product was not imported after the 1967 reform, and had not been imported in 1959, we can infer that the domestic price prior to 1967 was no greater than the potential price defined by the later 1967 tariff. In other words, the latter defines an upper limit for protection in earlier years - on the assumption that domestic and international prices did not move substantially differently over the intervening eight years. Because the period is

short, and because productivity gains in the relevant industries had preceded reasonably comparably with other countries, that seems reasonable. For one variant of the calculations, therefore, the 1967 tariff rate is substituted for earlier rates for products that satisfy this import condition.

In the same variant, we make adjustment for exports. Those four-digit categories in which exports exceeded $6 million in 1959 and $15 million in 1967 - amounting in each year to more than one percent of total manufacturing exports - are assumed to receive no protection at all. The criterion is a regorous one, as it should be: 9 categories qualify in 1959, and 7 in 1967. With a more lenient threshold of $1 million in 1959 and $3 million in 1967, the effects are greater: average tariffs in manufacturing are about two percentage points smaller. For practical purposes, therefore, the adjustment is not terribly important for industrial tariffs in this period, accurately reflecting the trivial importance of manufacturing exports in this period. For agricultural products, it assumes greater significance, of course. For principal exports, there is not only a zero tariff, but also for many years a tax corresponding to the difference between the export and import rates.

Table XIII presents tariffs for manufactures by use category, for agriculture, and for the economy as a whole, for selected years. Different variants are presented. In the first instance there is the simple nominal tariff that excludes all special category and financial surcharges. Its variability between 1958 and 1966 is due largely to the variations in the fiscal rate used to evaluate customs liabilities. Early in the period this rate lagged behind the market rate; as it caught up, the tariff thus automatically tended to increase. Such a measure of protection, weighted by production, essentially captures the intentions of the 1957 tariff law. The resultant duties are not low, by any means, but neither are they exorbitant.

There is a striking difference when one compares them with the tariffs inclusive of all surcharges. The effect of the latter is evident: the average tariff for manufactures is considerably more than doubled in 1962, and raised in the other years as

TABLE XIII

NOMINAL PROTECTION RATES RELATIVE TO BASIC EXCHANGE RATE (PERCENTAGES)

Legal Rates Excluding Surcharges

	1958	1962	1966
Consumer Goods			
Non-Durable	60	80	81
Durable	98	124	133
Intermediate Goods	40	62	56
Capital Goods	40	60	54
Fuel	-46	25	4
Manufactures	52	73	71
Total Industry	44	69	66
Agriculture	37	46	50
Economy	42	63	62

Legal Rates Including Surcharges

	1958	1962	1966	1967	1969[a]	1972
Consumer Goods						
Non-Durable	140	251	152	56	82	72
Durable	198	380	260	116	178	158
Intermediate Goods	75	148	76	36	45	43
Capital Goods	49	97	60	40	40	41
Fuel	-46	25	4	4	4	4
Manufactures	103	193	114	49	67	61
Total Industry	88	176	103	44	61	55
Agriculture	70	128	83	32	32	36
Economy	83	163	98	41	53	50

Rates Corrected For Minimum Redundancy

	1958	1962	1966	1967
Consumer Goods				
Non-Durable	90	144	98	55
Durable	196	376	258	116
Intermediate Goods	57	105	63	36
Capital Goods	44	81	74	40
Fuel	-46	25	4	4
Manufactures	77	133	90	49
Total Industry	66	123	82	45
Agriculture	-32	-8	-6	-9
Economy	22	64	42	21

TABLE XIII (CONT'D)

Rates Corrected for Minimum Redundancy

	1958	1962	1966	1967
Consumer Goods				
Non-Durable	90	144	98	55
Durable	196	376	258	116
Intermediate Goods	57	105	63	36
Capital Goods	44	81	74	40
Fuel	-46	25	4	4
Manufactures	77	133	90	49
Total Industry	66	123	82	45
Agriculture	-32	-8	-6	-9
Economy	22	64	42	21

1959 Import - Weighted Rates Including Special Category Surcharges

	1958	1962	1966	1967	1969[a]
Consumer Goods					
Non-Durable	73	110	83	36	52
Durable	140	187	164	82	86
Intermediate Goods	24	52	32	23	23
Capital Goods	45	70	56	38	38
Fuel	-47	17	7	7	7
Manufactures	42	71	53	33	35
Total Industry	24	60	42	28	29
Agriculture (Wheat)	-65	-4	0	0	0
Economy	16	54	38	26	26

Import and Premium Receipts

	1958	1962	1966	1967	1972
Manufactures	10	14	17	10	11
Economy	7	11	13	8	9

TABLE XIII (CONT'D)

Sources and Methods:

Composition of Categories:

Non-Durable Consumer Goods:
- Furniture
- Pharmaceuticals
- Perfume, Soaps, Etc.
- Plastics
- Textiles
- Clothing, Shoes
- Food Products
- Beverages
- Tobacco
- Miscellaneous

Durable:
- Electric Appliances
- Radio and Television
- Passenger Automobiles

Intermediate:
- Extractives (Excluding Fuel)
- Non-Metallic Minerals
- Metallurgy
- Wood Products
- Leather Products
- Paper Products
- Rubber Products
- Chemicals (Excluding Refining)

Capital Goods:
- Machinery
- Electrical Equipment (Less Consumer Durables)
- Transport Equipment (Less Consumer Durables)

Fuel:
- Crude Petroleum Extraction and Refining. Rates include exchange subsidies and differential fuel tax.

Manufactures:	Sum of preceding exclusive of fuel.
Industry:	Sum of preceding inclusive of fuel.
Agriculture:	Sum of crops, excluding wheat, plus animal products for production weighted series; wheat alone for import weighted.
Economy:	Sum of industry and agriculture, weighted by 1959 supply at world prices. These are production, not value added weights.

TABLE XIII (CONT'D)

All calculations except for actual tariff collections are based on data and methods as described in the text. Actual tariff collections in Cr $ were divided by imports in $ converted at the basic exchange rate. The estimated payment rate for manufactures includes some agricultural products since it is estimated by taking all imports less fuel and wheat.

[a]Refers to period while special rates of Decree-Law 398 were in effect.

well. Especially affected are consumer goods, the largest number of which were in the special category. But many intermediate goods in which domestic productive capacity existed also were so classified as can be seen by their sharply higher level relative to the nominal tariffs in the legislation.

The degree of protection, and its variation, are far different in this extreme variant. By comparing 1966 and 1967 directly, it appears as if tariffs in manufactures have been more than halved by the reform in the latter year, and equally for the economy as a whole. And it seems that protection first rapidly increased and then began to diminish, at least until the temporary reversal in 1969. Yet such conclusions seem to be exaggerated. A correction for minimal redundancy in the tariff structure, as described earlier, reduces the pre-1967 tariff level for manufactures by almost a third in 1962 and by a fifth in 1966. There is little doubt it too provides an overstatement of the effect of special surcharges, but it does usefully limit the rise and decline in manufacturing tariffs over the period to much more reasonable dimensions.

All three variants separate out the extraction and refining of petroleum because it was subject to much different treatment than other parts of industry. Imported crude and refined products received generous exchange rate subsidies until 1961. They were thus purchased at very much lower than average import rates. Then a differential excise tax favoring national production of refined products was established in 1961. These were removed in 1964, and a differential levy on crude was imposed instead. Such a change reflected the increasing dependence of the economy on imports of crude oil to be processed in national refineries, and was an inducement to development of national sources of supply.

The inducement to petroleum production by subsidy rather than tariff is explained by the early nationalization of the sector. Petrobras, as an agent of national policy, was given access to cheap inputs to facilitate its investment in refining capacity. As soon as capacity had expanded, foreign refined products were made subject to the implicit tariff imposed by a differential excise tax. Then subsequently,

when demand for crude began to outrun production by ever larger margins, attention turned to protection - although quite limited - for extraction. In general, the government in this sector has continuously promoted its interests directly and therefore has required no indirect tariff protection. Losses and gains for Petrobras were the consequence of other decisions, including, frequently the desire to keep petroleum prices low.

Attention should also be directed to the results for agriculture. Most agricultural products in Brazil are given tariff protection, and some were also/even placed in the special category in 1957. Indeed, coffee is one of the latter. The provisions of the tariff can therefore be tabulated as they stand. This has been done both for the nominal variant as well as the version inclusive of surcharges. Accordingly, the agricultural tariff mirrors the movement of that of manufactures, except that its level is generally somewhat lower and comparable to the most favored industrial subsectors.

A more meaningful measure is calculated to be comparable to the corrected series for manufactures. Export products are now regarded as taxed by the extent of divergence of the export exchange rate from the general import rate. The magnitude of the tax was quite considerable in 1958 prior to measures to make the export rate more attractive. By 1961 almost all products except coffee had access to a free market rate that itself kept reasonable pace with inflation. The tax paid by the sector after that year largely reflects a continuing contribution quota on coffee receipts to the amount of more than half.

The agricultural tariff might have been still lower if occasional export products in that period, like beef, or even those entirely for domestic consumption, had also been assumed to be efficient at world prices. It too must therefore be regarded as erring on the side of exaggerating Brazilian inefficiency. But even as such it is assuredly a more accurate indication of production potential in the sector than estimates suggesting positive tariffs as high as 50 percent in 1966.[15]

These series all have been weighted by production rather than imports. An import-weighted variant is presented for comparison. As might be expected, the tariff rate for manufactures is now lower because of the inverse correlation between the tariff and quantity imported. Yet because surcharges for the special category are included, the rate itself is not low. Once more appearances are deceptive, as the actual collection of tariffs and premia show. These are calculated as a percentage of imports valued at the basic import rate to be comparable to the tariff rates. For non-wheat, non-petroleum imports here grouped together as "manufactures", the rate is a mere fraction of what it should be, and for all years. Especially when surcharges might have produced a significant increase in cost of imports the divergence between potential revenues and actual receipts is at its greatest. In later years, it increases, but still, for manufactures, amounts to only about 40 percent of the expected level.

The reason for the disparity is the considerable latitude for waiver of tariffs, port charges, surcharges, etc., that has always characterized administration of commercial policy in Brazil. Since the 1957 tariff law, this authority has been vested in the Customs Council (Conselho de Política Aduaneira). It and its predecessor agencies have always acted to assure that essential imports have been exempted from charges. The principal reductions have accordingly come on intermediate and capital goods. Morley's estimates of actual receipts by use category - which are biased toward uniformity because they assume financial surcharges applied evenly - indicate that exchange costs for capital goods were lower than for any other group of manufactures in the 1958-64 period.[16] In particular they were cheaper than intermediate goods, quite opposite to what the import weighted tariff rates in Table XIII suggest. And this includes only the capital goods imported with exchange cover; the others - a majority - were brought in under even more favorable terms as we have already seen.

More recent disaggregated data are available for 1970.[17] They reveal that for textiles and clothing, the average rate actually paid is 31 percent compared to a theoretical 50 percent. For metallic intermediate goods, the corresponding rates are

13 percent and 28 percent; for machines and electrical equipment, again actual payment of but 13 percent against a much larger 35 percent theoretically due. Overall duties are only 40 percent of their supposed value. Administrative waiver both now and earlier have assured that investment goods are available at world prices, while at the same time encouraging continuing selective import substitution. It is no accident that waivers in chemicals, now under internal expansion, should be less than average.

These data put into doubt the wisdom of focusing upon tariff reform as the basic element in the new openness of the Brazilian economy. While the 1967 tariff reform reduced rates somewhat, and while other vestiges of the protective system had been swept away earlier, the decline can be overemphasized. It is quite likely that it has been the margin of redundancy rather than protection that has been eroded. The observed consequences of a reduction of two-thirds in tariffs for consumer non-durables, as is implied by the statutory rates, should have been considerable. Yet there is no evidence, quantitative or qualitative, of such a dramatic change. What there is goes the other way. Domestic relative prices showed none of the expected effects; industrial output began to recuperate under stimulus of increased aggregate demand rather than entering into decline under the impetus of foreign competition. And there is a positive rank correlation of .44 between tariff decline and increased corporate profits in 1966/67 for the industrial sector.

Yet another indirect test is afforded by comparing the changes in Brazilian industrial prices between 1967 and 1972 with those in the United States. Letting the latter be representative of world prices, an estimate of the change in sectoral tariffs can be made by taking the ratio of the change in the sector deflated exchange rate to the change in the corresponding foreign price.[18] Interestingly, for those industries obtaining the largest tariff increases between 1967 and 1972, such an estimate is an understatement. This suggests that new redundancies have been introduced by the recent legislation. Conversely, the predicted value for the majority of sectors significantly

exceeds the actual 1972 tariff, suggesting that the tariff levels of 1967 were likely still redundant.

What is common to all these measures of protection, despite their differing levels, is a hierarchical structure that places minimum tariffs upon agriculture, a somewhat higher level upon capital and intermediate goods, and highest tariffs upon consumer goods, especially durables. The implications of such a structure for the allocation of resources requires calculation of a measure of protection for processes rather than commodities. Although no summary measure can accurately reflect the value added and output effects induced by trade restrictions, an approximate ranking of sectoral distortions is useful information. While there are alternative approaches to this objective, which differ principally in their assumptions about productive conditions in sectors other than that examined, I shall present here measures of sectoral effective protection for ease of comparability with other research on Brazil.

The formula used is:

$$T_j = \frac{t_j - \Sigma a_{ij} t_i}{1 - \Sigma a_{ij}}$$

where T_j is the effective protection rate, t are the nominal tariff levels for output and inputs, and a_{ij} are the input-output coefficients measured in free trade prices. In practice, these coefficients must either be determined exogenously from another country's input-output structure or determined (under the assumption of technical fixity) by adjusting the observed prices of inputs and outputs to free trade values by use of the tariffs. The coefficients here derive from a Brazilian input-output matrix adjusted in the above fashion. But other results, and experimentation with two alternative input-output matrices, confirm that the conclusions are not very sensitive to such substitutions

The formula for effective protection indicates how the rates of protection of value added are levered on the nominal rates. For a process using inputs taxed at less than the final product rate, effective protection is always a multiple of the nominal rate. The greater the importance of purchased inputs, the more protection is afforded to value added. Thus the effective rate of protection measures the shelter provided to inefficient

(or more costly) domestic factors of production that enable them to compete with more efficient (or cheaper) inputs elsewhere.

Table XIV gives estimates of sectoral effective protection for Brazil for specified dates, using for nominal tariffs the series corrected for minimum redundancy. Two sets of results are presented for 1967. The first of these is comparable with earlier years and uses the 1959 input-output matrix; the second uses a 1971 matrix estimated from sales tax receipts.[19] What the series over time describe and intensify is the pattern of the nominal tariff series: an initial increase and subsequent decline in the absolute level of effective protection. The effect of tariff reform in 1967 is considerable. What they also reflect, and equally intensify, is disparity in the nominal rates among consumers goods, intermediate goods, capital goods, and agriculture, a consequence of the leverage inherent in process protection. The most obvious example are those sectors using agricultural inputs, whose product tariffs are much scaled up because the agricultural sector was actually taxed. The results in parenthesis are obtained when it is assumed that such inputs were available at world prices, but not below. For the agricultural sector as a whole, such a treatment seems indicated; if it is assumed that 1959 crop production was indeed undervalued by 25 percent at world prices, then the unit value added in the sector using 1959 Brazil input-output coefficients inadmissably exceeds 1. In deriving the 1959 coefficients, therefore, an assumption of zero tax was used for all variants, and the values tabulated in parentheses are consistent with that procedure. They are perhaps more accurately descriptive of the potential margin provided to agricultural processing activities, which remains considerable.

The method of aggregation used in the table for industry subtotals and the economy wide average adjusts sectoral value added for the degree of effective protection and thus corresponds to weighting by world prices. Its effect is to reduce the weight of high tariff sectors, and thus diminish the averages. That largely accounts for the disparity with Bergsman's earlier calculations of effective protection, in which he indicates a decline for industry from an effective tariff of 151 percent in 1966 to one of 73 percent in 1967; the corresponding economy averages are 118 percent and 48 percent.[20] But

TABLE XIV

EFFECTIVE RATES OF PROTECTION

	1958[a]	1963[a]	1966[a]	1967[a]	1967[b]
Primary Vegetable Products	-47	-15	-13	-14	-14
Primary Animal Products	24	12	16	18	
Extractive	-5	34	24	13	9
Non-Metallic Mineral	73	130	72	45	48
Metallurgy	61	124	63	35	33
Machinery	22	68	30	32	31
Electrical Equipment	83	169	112	67	57
Transport Equipment	82	147	103	84	81
Wood Products	138 (105)	176 (169)	120 (112)	81 (72)	44
Furniture	221	367	251	90	92
Paper and Products	86	169	91	43	42
Rubber Products	139 (114)	221 (215)	158 (152)	126 (119)	182
Leather Products	248	405	174	127	84
Chemicals	56	146	56	29	20
Pharmaceuticals	17	60	1	10	10
Perfumes, Soaps, Etc.	279	453	281	121	74
Plastics	281	489	332	133	117
Textiles	239 (210)	298 (291)	232 (224)	162 (154)	88
Clothing	264	481	321	107	154
F[illegible] Products	502 (387)	678 (652)	423 (394)	252 (218)	71
Beverages	171	243	183	104	76
Tobacco	273 (252)	469 (464)	299 (293)	114 (108)	79
Printing and Publishing	139	305	142	4	8
Miscellaneous	88	175	95	47	45
Total[c]	29.7 (25.8)	75.2 (74.0)	43.7 (42.7)	24.2 (23.0)	13.9
Industry	106.1 (97.2)	183.5 (181.0)	108.0 (105.7)	63.3 (60.7)	47.8
Consumer Goods	242.0 (210.7)	359.9 (352.2)	230.1 (222.0)	122.2 (113.1)	65.7
Intermediate Goods	64.9 (62.6)	130.6 (129.6)	68.0 (67.4)	40.3 (39.7)	38.5
Capital Goods[d]	53.0	112.5	69.1	55.7	52.4

[a] 1959 input-output matrix deflated by 1959 tariffs to approximate free trade values; zero tax assumed in the agricultural vegetable sector in deriving new coefficients.

[b] 1971 input-output matrix, with excise tax effects removed, deflated by 1967 tariff.

[c] All totals and sub-totals are weighted by the tariff-adjusted structure of 1959 value added with vegetable products assumed to have zero tax.

[d] [illegible]ludes consumer durables.

another source of the lesser movements here is the correction for minimum redundancy and the tax ascribed to agriculture. Weighted comparably, these results would still indicate a lesser decline emanating from the 1967 reform of 45 percent for manufactures, and 46 percent for the economy as a whole.

The substitution of a different input-output structure makes relatively little difference to the 1967 results for intermediate and capital goods. In three consumer goods sectors there are significant effects for textiles, clothing, and food, and these reduce that aggregate as well as other totals. The 1967 results corresponding to the later matrix are lower in textiles and food products because of much smaller inputs from agriculture; the effect for foodstuffs is compounded by a much higher value added ratio in the sector. Conversely, the level of effective protection for clothing is magnified by a low value added ratio. In the matter at least of likely value added proportions, the earlier matrix would seem more nearly to be correct. That does not mean the effective tariff in textiles and foodstuffs is necessarily as high as the levels shown. It merely means one cannot accept what may be more reasonable lower values on spurious grounds.

The ranking of effective protection by sector is quite parallel to that given by the nominal rates for the respective dates. Their interpretation, however, is different. Relative effective protection yields an indirect measure of relative technical efficiency in production. Specifically, within a CES production function framework, and assuming for the moment effective protection has accurately measured the surcharge on the price of value added, sectoral relative efficiency is given by:

$$\frac{\gamma_i^*}{\gamma_j^*} = \frac{W_i^*}{W_j^*} \cdot \frac{1 + T_j}{1 + T_i} \cdot \frac{\left[\dfrac{\left(\frac{\delta}{1-\delta}\right)^{\sigma_i}_i \left(\frac{W_B}{r_B}\right)^{\sigma_i - 1}_i + 1}{\left(\frac{\delta}{1-\delta}\right)^{\sigma_i}_i \left(\frac{W_w}{r_w}\right)^{\sigma_i - 1}_i + 1}\right]^{\frac{1}{1-\sigma_i}}}{\left[\dfrac{\left(\frac{\delta}{1-\delta}\right)^{\sigma_j}_j \left(\frac{W_B}{r_B}\right)^{\sigma_j - 1}_j + 1}{\left(\frac{\delta}{1-\delta}\right)^{\sigma_j}_j \left(\frac{W_w}{r_w}\right)^{\sigma_j - 1}_j + 1}\right]^{\frac{1}{1-\sigma_j}}}$$

where γ_i^* and γ_j^* are technical efficiency in Brazil relative to the world in sectors i and j; W_i^* and W_j^* are wages in Brazil relative to the world in sectors i and j; T_i and T_j are the levels of effective protection in Brazil in sectors i and j; $\left(\frac{W_B}{r_B}\right)_i$ and $\left(\frac{W_w}{r_w}\right)_i$ are relative factor prices in Brazil and the world respectively in sector i, and correspondingly for sector j; and δ and σ are the distribution parameter and elasticity of substitution assumed to be shared in common in the two countries for a given sector as indicated.[21]

As can be seen, relative efficiency is positively related to relative wages and inversely to protection. Higher salaries in Brazil compared to the world in one sector than in the other is indicative of higher productivity. Conversely, the greater is relative protection the lesser the presumed efficiency. The term in brackets represents the influence of differing relative factor prices in Brazil and the world upon the observe relative prices of value added. To the extent factor endowments differ, so will the price of value added, quite apart from differences in neutral efficiency. The effect of such movements along the presumed common production function is numerically modest, however. If relative factor prices in Brazil and the world are the same for both sectors and the elasticities of substitution and distribution parameters are equal as well, the term goes to unity. Its values under other plausible parameter assumptions stay within a range that is comparatively narrow compared to the variation in effective protection.[22] Moreover, the substitution effect, when it becomes large, offsets the influence of relative wage differences. The more similar the productive structure of the sector to th average, the less relevant is the substitution term. That being the case, it is then feasible to tabulate alternative estimates of sectoral relative efficiencies in Brazil compared to the average for industry as a whole as a function of relative wages and effective protection together, and of effective protection alone.

The results, using the United States sectoral wage structure as a proxy for an efficient, low tariff producer, are presented in Table XV. Sectors are aligned in descen

TABLE XV

RELATIVE TECHNICAL EFFICIENCY OF BRAZILIAN INDUSTRY
1967

Sector	Relative Protection	Relative Protection Adjusted for Wage Differentials
Food	.51	.41
Textiles	.63	.65
Plastics	.69	.84
Leather	.71	.77
Perfumes, Soaps, Etc.	.72	.75
Rubber	.74	.84
Clothing	.78	.86
Tobacco	.78	.86
Beverages	.79	.66
Furniture	.85	.85
Transport Equipment	.88	1.11
Electrical Equipment	.96	1.19
Miscellaneous	1.10	1.01
Non-Metallic Minerals	1.11	.84
Paper	1.12	1.03
Metallurgy	1.19	1.36
Machinery	1.22	1.32
Chemicals	1.25	1.63
Pharmaceuticals	1.47	1.68
Printing and Publishing	1.54	1.71
Agriculture	1.71	1.04

Source:

Relative Protection: Table XIV

Wage Differentials: Brazil: Producão Industrial, 1967
U.S.: Census of Manufactures, 1967

order of efficiency, the most protected sectors at the top. Regardless of which criterion is used, the general conclusion is manifest. The structure of effective protection indicates relatively inefficient consumer goods industries, and more efficient intermediate and capital goods production. Inclusion of the wage structure adjustment sharpens that distinction. On the whole, the more dynamic sectors are thereby shown to be more efficient. By contrast, agriculture's price efficiency is credited to a considerable degree to relatively lower wages in Brazilian than American farming. After adjustment, the sector is comparable to the industrial average, but not greatly in excess of it. And that ranking derives from the special capacities of Brazilian agriculture to produce certain exports, and conceals a great disparity in efficiency within the sector.

This general conclusion concerning the relative technical efficiency of Brazilian industry remains valid despite a probable bias exaggerating the inefficiency of the consumer goods sector. Those traditional industries that led import substitution even prior to the Great Depression have long been singled out for their obsolescent capital equipment, and limited managerial initiative. They have been highly protected from the beginning, and while domestic competition has made the tariff redundant, it has not led to rapid technological advance in those sectors. Moreover, because their periods of most rapid growth have on the whole coincided with periods of limited access to foreign exchange - like the Depression and wars - modernization has lagged. And in the 1950's, the development strategy involved extension of import substitution to new sectors rather than attention to the problems of the old.

That strategy did result in a relatively efficient group of new industries. The influx of foreign capital and technology meant introduction of a new standard of plant and equipment in which Brazilian productivity could approach the level in developed countries. The nationalized metallurgical and petroleum sectors likewise purchased modern machinery. Local producers of component parts and specialized inputs in these and other sectors were either acquired by foreign firms or, by conforming to the new demands, themselves benefited from the introduction of new techniques.

Other calculations at lower levels of aggregation confirm the relative technical efficiency of the import substitution undertaken in the 1950's. Analysis of the steel sector in 1963 suggests costs competitive with the United States and Europe and a comparative advantage at the going exchange rate of continuing import substitution. A 1967 OECD study of the Brazilian automobile industry confirmed that where economies of scale had been realized, production costs were only 15 percent greater than in the home country, and again the process was worth undertaking. Actual retail prices exceed such a differential both because of higher Brazilian excise taxes and inefficiencies in distribution.[23]

A 1970 AID survey of the prices of Brazilian electric appliance compared to CIF import prices of equivalents found ratios that were favorable to the Brazilian product in 6 of the 15 cases. In only one instance did the price ratio approach the level of tari protection. Its conclusions may be briefly stated: "Tariff protection for the industry is a fact of limited economic significance..... Import substitution seems to have had a successful outcome in most respects."[24]

One may contrast such an assessment with the survey done of the textile industry in 1963 by the Economic Commission of Latin America. It found obsolescent equipment in cotton - as much as 80 percent of the spindles and almost 70 percent of the looms - and only slightly less backwardness in wool. Cotton output on average required more than seven times as many man-hours than in the United States. Production involving synthetic fibers, and employing equipment of more recent vintage, was comparatively more efficient.

But even with a standard of efficiency only one-seventh as great, the observed wage differentials between the United States and Brazil suggest that the effective protection required to make Brazilian production competitive was less than the 154 percent calculated for 1967. For alternative characterizations of the production function, and of relative capital costs, the range of implied effective protection is from about 50 to 125 percent.[25] In turn, because industry as a whole was clearly more comparable in its efficiency to the American, the calculated effective protection of 60 percent in 1967

probably equally errs in exaggerating the bias in favor of import substitution.

What is certain is that the calculated changes between 1958 and 1967 in effective protection, like nominal protection, do not convey accurately changes in that bias. If effective protection in industry had been around 180 percent in 1963, for it to have declined to 60 percent in 1967, implies a relative efficiency gain in Brazil of some 20 percent. That is, exactly when Brazilian industrial productivity was growing least, and that in the United States quite rapidly, its technical efficiency compared to the United States is supposed to have gone from say one-sixth to one-fifth. Conversely, despite presumed maintenance of effective protection after 1967, it is clear that annual industrial output increases per worker in Brazil of 8 percent have reduced the differences technical efficiency and made calculated effective protection quite redundant.

Placing the tariff estimates in effective protection form, and explicitly interpreting them in a production context, thus confirms the need to deal cautiously with the implications of observed changes in tariff policy. Legislation can become an accurate guide to the direction and intent of policy, but a misleading indicator of the magnitude of its allocation effects. These effective protection calculations also have been helpful in differentiating the efficiency of pre-1950 import substitution from that undertaken later. They make clear that the principal objective of the disequilibriu exchange policy of the 1950's was in fact realized, namely, relatively efficient industrialization. That circumstance explains why subsequent, and different, policies could be appropriate and equally successful in the recent period.

Quantitative Restrictions

The attention given to tariff barriers here reflects the extent to which Brazilian commercial policy after 1953 relied on the price mechanism rather than quantitative restrictions. With the adoption of the auction system, and abandonment of licenses, the scarcity of foreign exchange among the different categories was reflected in differential premia. And the tariff system adopted in 1957 used high taxes rather than

absolute prohibitions.

A partial exception has been the law of similars, which has been mentioned earlier, and has been singled out by many as a significant factor governing imports and industrialization. Beginning in 1911, and continuously since, an official "Register of Similar Products" has existed whose purpose has been to protect and encourage domestic manufactures. Until the tariff law of 1957, the force of the register was to assure preference for domestic sources of supply by banning imports of similars by public authorities or private importers granted special exemptions. Private importers retained the privilege of importing similars, but without benefit of waivers or other benefits. The legislation of 1957 introduced two significant modifications to the earlier practices. In the first instance it entrusted determination of similars to the newly created Customs Policy Council, thereby centralizing authority for protective policy. In the second place, it obligatorily led to re-classification of similars to a higher ad valorem tariff rate and almost inevitably placed them in the special category. Both of these measures together implied prohibitive costs of importation, and for all practical purposes, their complete exclusion. Subsequent legislation in 1967 backed away from such penalties - by that time the special category no longer existed - and came closer to the pre-1957 provisions. A registered similar again merely guaranteed that no exemption of duties would be granted on importation. And a more stringent definition of similarity was imposed including competitiveness in price and reasonable time of delivery.

Earlier evidence has been presented suggesting the infrequency with which intermediate and capital goods were classified in the special category, and hence how rarely the Law of Similars was apparently invoked after 1957. Table XVI now provides further information relating to the registration of similars. It tabulates the number of individual products registered as similars in various sub-periods between 1937 and September 1967, and gives information on sector, the number of firms availing themselves of the privilege, and whether they were national or foreign.

TABLE XVI

NUMBER OF PRODUCTS REGISTERED AS SIMILARS

	Period						
	1938-45	1946-49	1950-53	1954-55	1956-60	1961-63	1964-67[a]
Sector							
Food Products			1	1			1
Textile Products	3	4			1		
Lumber & Wood			2	2	1		
Furniture				9			
Paper	42			9	2	1	
Printing & Publishing						1	
Chemicals	37	13	3	43	22	13	12
Petroleum	7		1	1		1	
Rubber	1				1		2
Leather			1				
Non-Metallic Minerals	2		1	8	5		4
Primary Metal	1	4	6	12	19	11	5
Fabricated Metal	29	4	4	12	4	9	3
Machinery	23		2	1	9	32	11
Electrical Equipment	14	2	2	23	13	26	10
Transportation Equipment				4	1	2	
Instruments	8	2	2	13	4	1	1
Miscellaneous					2	7	
Total	167	29	25	138	84	104	49
Number of Firms	16	12	21	46	55	52	35
National Firms[b]	12	10	11	34	22	28	16

Source: Monthly Bulletin of the British Chamber of Commerce in Brazil; BANAS, Eletrica e Electronica; Transporte; Química; Siderurgia; Máquinas e Ferramentas; U.S. Chamber of Commerce, Brazil (1961).

[a]Until September, 1967.

[b]All unidentified firms have been included as national. Because of difficulties of identification, this category may be overstated.

These data must be read with the understanding that the definition of a product is narrow and highly specific - broad classifications are not comprehended. The product was not perhaps always as precise as the following example from 1955: "Machine thread screws, split, diameter 3/32" to 1/2" up to 6" long, Whitworth NC and NF thread, head types: round, flat countersunk, oval countersunk, lentil, pan, Filister, made of brass."[2] But it was invariably quite restricted, leading firms to register many related products at the same time. That is why the number of products registered invariably exceeds the number of firms - sometimes by a considerable margin.

The number of products registered can only be regarded as insignificant under these circumstances. Even as cumulated, and ignoring the occasional delisting, we have over the entire period less than 600 individual items. And the number of firms is trivial as well compared to the 5,285 establishments employing more than 50 persons recorded in the 1960 census. The annual new registrations in the period from 1956 to 1963 are smaller than in the years 1954-1955. After the new tariff law there is no significant increase in activity. Much of the registration in the mid-1950's was directly related to the establishment of the national automobile industry. A rough count suggests that at least half the products registered in 1954-55, ranging from starting motors to seat springs, fall into this category. Since automobile components were to be privileged by a special, more favorable exchange rate to encourage firms to produce in Brazil, prior registration of similar guaranteed against foreign sources of supply. But it is important to note that the products registered were those in which domestic industry could compete relatively efficiently, not sophisticated and costly inputs subject to economies of scale.

Table XVI makes clear the concentration of registration in intermediate goods. The majority of the items classified in the electrical equipment and machinery sectors share this characteristic. The force of the law largely depended upon the withdrawal of potential concessions, and these were irrelevant to consumers goods. And the great specificity of product definition made registration an inadequate device for protection of capital goods. These were subject to continuing modification such that similarity cou

easily be evaded, and was of little value. Thus, large sectors of the economy were exempt from influence of the law of similars.

Nor should the restrictive consequences of registration be exaggerated. The example of a product of some importance, Portland Cement, is revealing. It was first registered in 1937. Yet it was admitted free of all duty in the immediate post-war period when shortages developed. In the multiple exchange rate structure promulgated in 1953, it was accorded significant protection by inclusion in the highest category. The rapid tempo of economic growth, however, led to inadequate domestic supplies, and reclassification in a lower category in 1954, with the proviso that the Foreign Trade Bureau (CACEX) might return it to a less favorable category "wherever supply conditions in the home market so recommend." In the 1957 tariff law, Portland Cement received a 100 percent tariff, after having been re-registered as a similar in 1955. Yet the Customs Policy Council reduced the levy to 10 percent in 1958 when construction requirements imposed the need for imports. Registration as a similar was therefore not an absolute barrier without qualification.

Much more significant as a discretionary element in the protective system than the law of similars, per se, has been the authority to grant waivers and exemptions on imports. Its application is extensive, relating to a majority of items imported rather than the few comprehended in the list of similars. In granting concessions, obviously an informal law of similars obtains: the waiver depends upon the assessment of lack of local availability of the import. On occasion, when import constraints have been more bending, the burden of proof has been shifted to the potential importer who himself has to survey local availability. When the Foreign Trade Bureau of the Bank of Brazil (CACEX) administered the exchange system in the 1950's, this was the case. It traditional has had protectionist leanings. More recently, after 1967, when imports have been more encouraged, the determination has been less stringent. In parallel fashion the authority to grant import licenses, even when supposedly a formality, has been used to discourage imports by lengthening the period until delivery.

These quantitative restrictions as applied in Brazil have thus had the force of reducing the stated tariff rather than enhancing it by cascading additional limitations. An import was never more expensive than the legislation indicated, and most frequently for intermediate and capital goods/much less so. Accordingly, the legal protective structure is the extreme version of the barriers to imports. This helps to explain the frequency of its redundance.

Policy Phases

Despite this limitation, relationships among the various measures of protection over time are helpful in demarcating the phases of Brazilian commercial policy in the post-War period. Table XVII indicates the average implicit exchange rate paid for imports; the average import rate inclusive of surcharges and actual tariff payments; the non-coffee export rate; a set of production weighted, nominal tariff inclusive exchange rates for manufactures and agriculture; and finally, a parity series calculated by extending the pre-War Brazilian exchange rate by relative domestic and United States inflation. No average effective exchange rate for industry is given. Relative to the average nominal tariff for industry it is about a quarter greater, and follows a comparable pattern.

Protection is now dimensioned in units of domestic currency per dollar as a surcharge to the basic exchange rate. It is the combination of legislative tariff percentages and exchange rate policy that determines the price of foreign imports relative to domestic substitutes. Table XVII incorporates both these elements. It does not include, however, a free trade equilibrium rate. Such a construct is useful in its reminder that tariffs discriminate against exports by sustaining an overvalued exchange rate. Yet the assumptions required to fix where it should be located between the protected import and export rates are quite demanding. Quite apart from uncertainties concerning the supply and demand elasticities of imports and exports, it is sensitive to initial conditions in the capital account. Generally the flows are presumed to remain constant, although their actual magnitude was very much the consequence of the exchange policies followed.

TABLE II

NOMINAL PROTECTION, 1953-1972
1000 CR$/$

	(1) Average Effective Import Rate[a]	(2) Average General Category Rate[b]	(3) Export Rate Excluding Coffee[c]	(4) Manufactures[d]	(5) Agriculture[e]	(6) Total[f]	(7) Potential Manufactures[g]	(8) Parity Exchange Rate[h]
1953	20	35	22					42
1954	35	53	27					53
1955	48	75	41					62
1956	60	90	45					74
1957	60	84	53					82
1958	86	164	65	249	105	199	282	93
1959	131	218	114	337	153	272	377	131
1960	153	242	160	399	180	321	463	173
1961	230 (239)	297	245	586	251	468	740	234
1962	387 (417)	453	382	839	360	671	1035	364
1963	584 (643)	654	609	1240	516	983	1552	644
1964	1083 (1172)	1470	1256 (1219)	2888	1194	2297	3632	1165
1965	1951 (2004)	2142	1874 (1946)	3969	1804	3209	4899	1754
1966	2460	2503	2200 (2540)	3907	2109	3263	4396	2389
1967	2796	2903	2643 (3198)	3904	2539	3412	3904	3018
1968	3584	3816	3374 (4136)	4856	3226	4279	4856	3611
1969	4442	4565	4052 (5392)				6562	4139
1970	4996	5069	4564 (7141)					4761
1971	5681	5784	5253 (8208)					5608
1972	6418	6491	5899 (9217)				8984	6314

Source: (1) 1953-1972: Anuário Estatístico.

(2) 1953-1964: IPEA, Diagnóstico Preliminar, Comércio Exterior.
1965: Paul Clark and Richard Weisskoff, "Import Demands and Import Policies in Brazil", for general category rate and financial surcharge; Anuário Estatístico for import duties.
1966-1972: Conjuntura Econômica for exchange rates; Anuário Estatístico for import duties.

(3) 1953-1964: IPEA, Diagnóstico Preliminar.
1965-1972: Conjuntura Econômica.

(4)-(7) Calculated from tariff sub-chapters as discussed in text; 1959 supply structure used.

(8) 1953-1964: Peter Knight, Brazilian Agricultural Technology and Trade, (Praeger, 1971).
1965-1972: Extrapolated forward by ratio of wholesale prices in Brazil and United States.

[a] 1953-1972: Cruzeiro value of imports plus duties divided by dollar value of imports. Numbers in parentheses include estimated incidence of financial charges.

[b] 1953-1957: Average exchange rate from normal auctions plus actual duties paid.
1958-1966: General category rate plus duties plus estimated incidence of financial charges, etc.
1967- : Import rate plus duties.

[c] Values in parentheses are average export rates for manufactures adjusted for subsidy.

[d] "Adjusted" series allowing for partial redundancy.

[e] "Adjusted" series allowing for deviation of agricultural export rate from import exchange rate and coffee tax.

[f] Weights for manufactures and agriculture were derived from 1959 production plus imports; they are .64 and .36 respectively. Domestic industrial production and livestock were deflated by the calculated 1958 tariff, but agricultural crop production (with a large negative tariff) was not correspondingly inflated. Since the industrial tariffs probably overstate the true deviation in prices, the effect of a double adjustment would be to change relative prices in favor of agriculture (and its weight) excessively.

[g] Maximum legal rate for industry as defined by legislation.

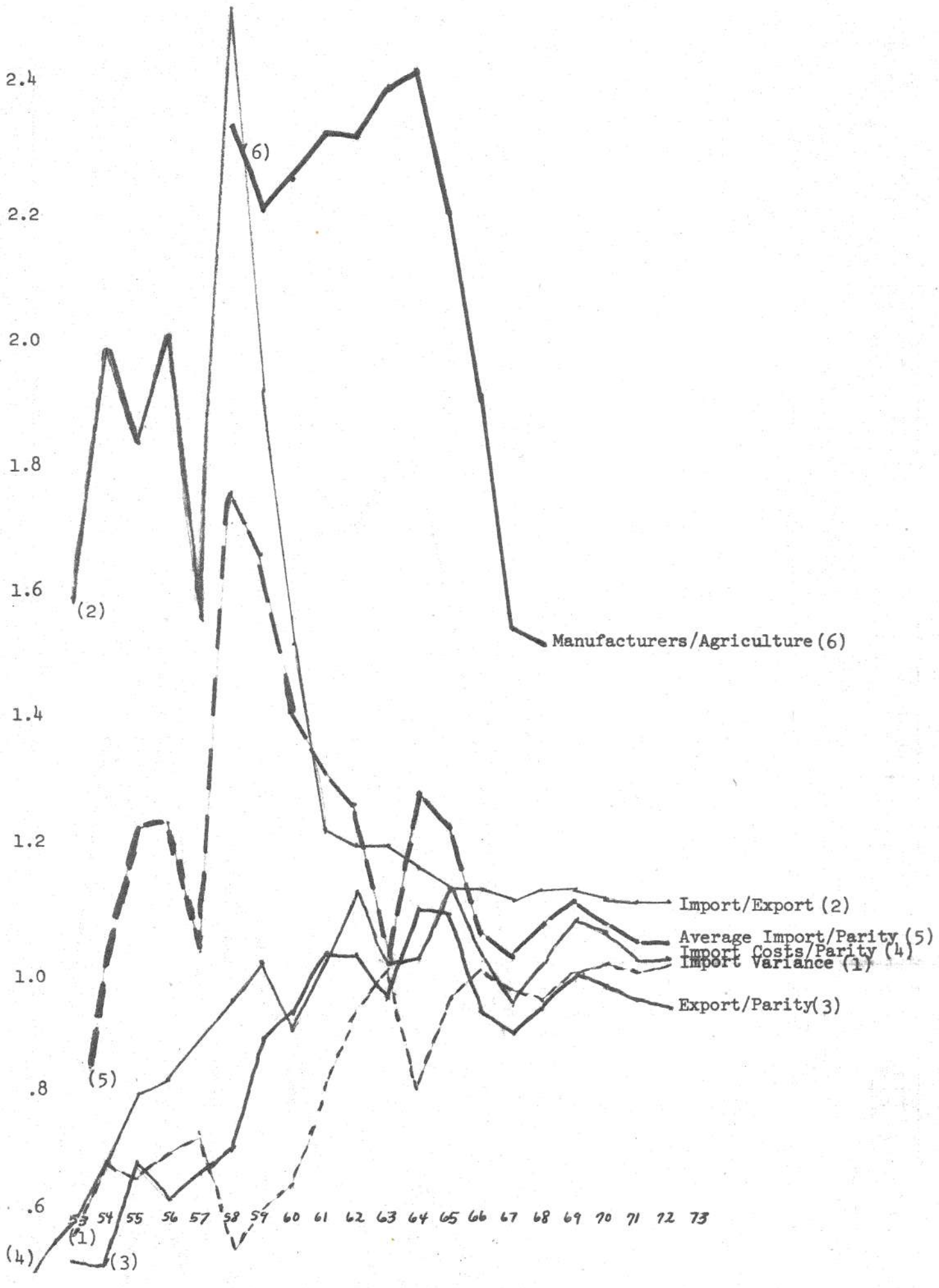
[h] 1938 exchange rate multiplied by ratio of Brazilian wholesale price index (excluding coffee) to that for the United States.

While other assumptions can be made, and other measures derived, they only serve to show the essential arbitrariness of the procedure. One can do just as well by adjusting for differential inflation the 1938 exchange rate relevant to a more open, less industrialized Brazilian economy. The latter is the equivalent of an automatically indexed exchange rate, and deviations roughly measure the consequences of deliberate exchange rate policies.

Chart I graphs several key relationships developed from Table XVII. In the first instance there is the ratio of the implicit average import exchange rate to the general category import average. This is a measure of the variance in the exchange rate system. The lower the value, the more subsidized imports are being purchased at favored exchange rates. A second ratio relates the general category import average to the non-coffee export rate; for 1964 and thereafter the special rate for manufactures is also indicated. It measures the bias against export and in favor of import substitution. A third ratio compares the protection afforded manufactures relative to agriculture, both weighted by the structure of production. This indicates the relative priority set by commercial policy for industrialization. Finally, both import rates and the export rate are shown relative to the parity exchange rate. These show variations in the real cost of imports and profitability of exports.

Taken together, they tell a rather complete story of Brazilian commercial policy after 1953. The Phase II reform initiated in that year which auctioned rather than awarded licenses was successful only in progressively increasing the cost of imports encompassed in the regular auctions. It maintained a large proportion of subsidized imports never part of the regular system, as the low ratio of the implicit average rate to the average general category rate shows. And it continued to discriminate increasingly against exports by adjusting the exchange rate infrequently and belatedly.

Phase II could be sustained only so long as virtually autonomous foreign exchange receipts subsidized the continuing purchase of imports at less than the parity rate. Coffee initially, and then subsequently capital inflows played that role, but it was


2.6
2.4
2.2
2.0
1.8
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1.2
1.0
.8
.6
53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73
(1)
(2)
(3)
(4)
(5)
6)
Manufacturers/Agriculture (6)
Import/Export (2)
Average Import/Parity (5)
Import Costs/Parity (4)
Import Variance (1)
Export/Parity(3)

not a policy easily sustained. Balance of payments pressures always loomed, and partially to obtain official external funding in 1957, a proto-Phase III reform was effected.

The establishment of the tariff in that year, and the effective elimination of auctions by aggregating into a general category along with a negligible special category imports, seemed a step in the direction of unification, and away from the auction multiple rate structure. In fact, however, the policy was remarkably similar to the 1953 changes in its execution. Import prices were again successfully increased to discourage purchases. But simultaneously the quantity of imports admitted under special circumstances at lower exchange rates dramatically increased. As a result much the same potential balance of payments deficit continued to threaten. It was this precarious situation that led, for the first time in the post-War period, to attention to the export rate and the need for increased foreign exchange receipts. Thus in 1959 and 1960, as progressively more exports were permitted to exchange their earnings of foreign currency at favorable free market rates, the relationship between the import and export rate altered significantly. And the export rate began to approach the parity rate.

A true Phase III liberalization occurred in March, 1961, because the modestly increasing export earnings were quite inadequate to the payments liabilities Brazil faced for prior debt and profits remittances. It maintained and extended the focus on export profitability, but also definitively came to grips with the favorable treatment of petroleum, wheat, and capital goods imports. While the average general category imports did not rise in real cost, the effect of the elimination of the subsidy was to increase the average price of imports as a whole: wheat and petroleum represented about a quarter of total imports at this time.

This attempt at liberalization failed, as has been discussed earlier. The need to rely upon continuing capital inflows because export receipts were not elastic in the short run came at a time when private foreign investment was increasingly disenchanted

with political and economic conditions both. Official lending agencies were equally perturbed by the absence of domestic restraint and accelerating inflation fueled by larger public deficits. Commercial policy remained surprisingly faithful to the principles of the 1961 reform, however. Subsidization returned only for brief intervals, most prominently in the beginning of 1964 in a desperate effort to slow internal price rises. The exchange rate, however, was allowed to lag behind inflation in 1963 for the same reason, thereby diminishing the attractiveness of exports.

A third and successful liberalization began in 1964. It eliminated the subsidization of imports that had recurred at the beginning of that year. And it began to dismantle the elaborate system of special category surcharges, prior deposits, and the like that had accumulated since 1957 in an effort to equilibrate the balance of payments on the import side. Combined with less frequent devaluation of the exchange rate than prescribed by domestic inflation, the real price of imports declined. This circumstance, associated with slower domestic growth, differentiated the post-1964 liberalization episode from earlier attempts at reform. In those the cost of imports had to rise to discourage imports. The tariff protection granted industry declined significantly from 1964 on, particularly as measured by statutory provisions alone. Although some considerable part of the reduction was elimination of redundant protection, even in the adjusted series, the reform did usefully eliminate some of the slack in the system, and did thereby impose stricter potential discipline upon manufactures.

Through 1967 the emphasis of liberalization was directed to imports. Although some concessions for indirect tax rebates and tariff drawbacks on exports had been granted, and a new administrative agency to stress exports had been established in 1966, the thrust of policy was to eliminate the distortions that had accumulated in sheltering domestic industry. Exports did increase in this period, aided in the industrial sector by excess capacity and in agriculture by larger crops, but not as a consequence of policy. Indeed, as can be seen, the real stimulus to exports provided by the now unified exchange rate actually diminished; after 1961, there was no longer much divergence between the import and export rate. Only for manufactures did the various rebates

compensate and counteract the trend.

The period beginning in 1968 ushered in a new phase of commercial policy stressing exports. It might be regarded as a proto-Phase IV in which the discrimination against exports implicit in a protected industrial sector were eroded, not by further reduction of tariffs but by subsidies to exports. First utilizing rebates of indirect taxes, and subsequently using profit tax reductions and outright subsidies, the attraction of industrial exports was progressively increased. By 1970 sales could be made abroad at a price less than two-thirds the domestic price, while yielding the same profit. For primary product exports, individual states like São Paulo and Rio Grande do Sul also exempted value added taxes. Equally relevant the crawling peg exchange rate adopted in 1968 braked, although it did not completely reverse, the tendency for real prices of exports to fall after 1964.

Over the post-War period Brazil has therefore progressed from a crude system of direct licenses in 1947 to a highly sophisticated commercial policy seeking to stimulate exports and regulate import demand in a progressively more open economy. These phases of commercial policy have reflected differing domestic objectives. Through at least the end of the 1950's, the primary goal was national industrialization through import substitution. Exports were taxed to subsidize the imports necessary to establish a modern industrial sector. When less bouyant international prices for coffee dictated an end to such a policy, and required increased exports of other products, the response was too little and too late. Brazil foundered in an almost continuing balance of payments crisis from 1957 to 1963, compounded in the latter stages by an import substitution induced downturn in the real economy.

After 1964 the balance of payments improved, and gave greater degrees of freedom to policy makers. They had been willing to accept domestic recession as part of the price for their efforts to stop inflation - as no previous government had been willing or able to do in 1958, 1961 or 1963. So too were they able to take advantage of the cumulative changes in the economy that had led to the creation of a relatively large, and efficient industrial sector. The evolution to an export economy was much easier in the latter

1960's than it ever could have been in the latter 1950's.

Commercial policy thus not only acts, but also depends for its success, upon the stage of economic development. Early industrialization may require disequilibria that commercial policy should accentuate to facilitate inter-sectoral transfer of resources, as did the Brazilian. But it is not easy to convert from an inward to an outward looking strategy, especially when there was an inherent bias against openness of the economy as a continuing legacy of the Great Depression. That successful transformation is one of the cardinal accomplishments of recent years.

V

The Transition to Exporting

Significantly increased exports, more than any other circumstance, differentiates recent Brazilian economic performance from the earlier post-War experience. Neither the high rates of industrial growth nor even the massive capital inflows since 1969 are equally unique: both had partial analogues in the surge of import substitution in the latter 1950's. Now for the first time in more than a half-century, rapidly growing exports have become central to the present strategy of economic development. The Brazilian achievement is special in another sense. Brazil is the first of the large countries whose industrialization had previously been based exclusively on the domestic market to make the transition to an economy increasingly integrated into international markets.

Table XVIII summarizes the growth and altered composition of export receipts since 1947. It shows how export earnings first rose in the immediate post-War period, owing to favorable world prices for primary products that offset the fixed, and progressively overvalued exchange rate. An accurate barometer of the effect of the latter is the almost unchecked fall of "non-traditional" agricultural exports even while total earnings increased. The only exception was in 1951 when a special export bonus was provided through linked access to import licenses. As a consequence, Brazilian exports of coffee became progressively more important in determining total import capacity. Geographically, the reflection of this increasing dependence upon coffee was greater concentration of exports to the United States market.

TABLE XVIII

BRAZILIAN EXPORTS
(Mill. $)

	Exports (FOB)	Coffee	Traditional Ag. Products[a]	Principal Minerals	Others	Manufactures[b]	
1947	1157	423	299	2	374	57	
1948	1183	492	343	4	315	29	
1949	1100	634	226	8	209	23	
1950	1359	868	266	9	205	11	
1951	1771	1059	383	16	300	13	
1952	1416	1043	150	33	184	6	
1953	1540	1090	271	27	143	9	
1954	1558	948	442	25	134	9	
1955	1419	844	365	35	160	15	
1956	1483	1030	234	43	163	13	
1957	1392	846	273	86	174	13	
1958	1244	688	276	70	198	12	
1959	1282	744	235	74	216	13	
1960	1270	713	279	83	171	24	
1961	1405	710	334	92	231	38	
1962	1215	643	278	97	164	33	
1963	1406	747	332	95	195	37	
1964	1430	760	299	101	200	70	
1965	1596	707	296	132	351	110	
1966	1741	774	364	127	379	97	
1967	1654	733	339	117	322	143	
1968	1881	797	411	129	414	130	180[c]
1969	2311	846	562	164	557	182	252
1970	2739	982	501	241	708	307	374
1971	2904	822	493	275	878	(436)[e]	531
1972	3991	1060	813	259	1236	(623)[e]	842
1973	6198	1343	1088	382	2447	(938)[e]	1366

Source: Reports of Bank of Brazil and Central Bank; Conjuntura Econômica: IPEA, Diagnóstico Preliminar

[a] Sugar, cocao, cotton, tobacco, sisal, pine.
[b] NBM classes 5, 6, 7, 8.
[c] New and broader definitions of manufactures now used to characterize industrialized products in Brazilian statistics.
[e] Estimated.

Exports reached a peak in 1951 with the Korean War boom, but remained high until 1954. That year also coincidentally marks the lowest point for other agricultural exports. For at the end of 1953, a somewhat more favorable, but still highly discriminatory, system of export exchange rates was introduced to complement the new auction arrangements for imports. The course of export earnings from this source did not compensate for the decline in coffee sales. From 1954 to 1958 total exports moved steadily lower, provoking ultimately a definitive change in exchange rate policy beginning in 1959.

By significantly devaluing the export rate, the government hoped at that time to stimulate larger exports. Such a policy was not universally favored. Some suggested instead a policy to market aggressively Brazilian surpluses at whatever price necessary to sell them. Instead of a single unified exchange rate, a range of commodity-defined rates would be established according to need. Such a policy alternative implicitly assumed that the external market would never justify substantial production increases *per se*, and that domestic surpluses would be sufficient to earn the necessary foreign exchange.[27] It is illustrative of the pessimism with which many Brazilian officials regarded export possibilities.

This ideology was explicitly and definitively rejected by the initiatives begun in 1959.[28] The intent of previous policy had been to tax agriculture in order to finance industrialization. It had been successful, particularly for coffee. But declining world prices and continuing import requirements made imperative a change. What policy-makers sought to do after 1959 was to restore greater sectoral balance to the economy and to generate the required import capacity by reducing the bias in exchange rate policy.

That effort failed, as has been noted earlier. Table XIX helps to explain why by presenting price and quantity indexes for agricultural exports. Between 1958 and 1961 aggregate exports increased in quantity by 12 percent annually, but price declined by 7 percent, thereby offsetting much of the effect. Much more impressive was the response of non-coffee exports. They almost doubled between 1958 and their peak in 1961. But

TABLE XIX

QUANTITY AND PRICE INDEXES FOR AGRICULTURAL EXPORTS
(1955 = 100)

	Quantity			Price		
	Total	Coffee	Agriculture Excluding Coffee	Total	Coffee	Agriculture Excluding Coffee
1953	99.5	113.6	80.8	109.0	113.5	98.7
1954	87.1	79.7	126.1	126.1	140.9	110.9
1955	100.0	100.0	100.0	100.0	100.0	100.0
1956	107.8	122.7	92.1	96.6	99.4	83.5
1957	99.3	104.6	66.9	98.3	95.8	92.0
1958	95.6	94.1	63.4	91.1	86.6	95.9
1959	119.3	127.3	74.6	75.4	68.2	77.7
1960	119.6	122.8	84.4	74.3	68.8	72.4
1961	133.1	123.9	122.0	73.9	67.9	70.4
1962	122.0	119.6	107.8	70.1	63.7	70.9
1963	142.3	142.5	126.4	69.5	62.2	74.5
1964	126.7	109.1	128.1	79.3	82.5	72.5
1965	134.2	98.4	156.3	83.3	85.1	65.2
1966	164.3	122.9	176.4	74.6	73.7	69.0
1967	160.9	122.2	169.6	72.1	68.3	69.6
1968	177.3	134.8	(213.4)[a]	74.4	68.1	(67.6)[a]
1969	210.5	136.5	(272.3)	76.7	70.6	(71.8)
1970	238.2	117.1	(288.7)	80.3	95.0	(73.2)
1971	(253.9)[a]	125.8	(278.7)	(79.9)[a]	73.0	(85.9)
1972	(297.1)	127.7	(369.0)	(93.8)	93.4	(96.8)

Source: IBGE, Números Índices Anuais dos Preços e das Quantidades no Comércio Exterior e de Cabotagem; Anuário Estatístico.

[a]Figures in parentheses are extrapolations based on series of Table XX.

a decline in price paralleled the rise in quantity; the index of prices fell by 27 percent. Non-coffee agricultural export earnings wound up higher, but by an insufficient margin both to sustain import capacity and a rising burden of debt amortization and interest payments. These exports, moreover, had to be the basis of growth. Neither sales of ores nor of manufactures were yet significant enough to matter.

Export pessimism thus was partially confirmed by the actual short-term experience with exchange rate liberalization. Yet policy remained committed to more favorable market signals, although accelerating inflation lead to appreciating exchange rates. Exchange rate bonuses were introduced to compensate, and even a scheme to encourage exports of manufactures, but they did little to influence overall performance. The rise in export receipts in 1963 was largely the result of increased coffee shipments and sales of traditional products.

Beginning in 1964, exports once more increased, sufficiently to the previous match post-War peak by 1966. This early post-1964 resurgence must be differentiated from later gains. Until 1968, the composition of export growth was highly vulnerable. Nor did total export earnings increase without interruption. Thus, although exports of manufactures rose dramatically at first, they fell back in 1966. Ore exports, largely under direct governmental control, generated increased revenues initially, but failed to maintain their momentum. The most encouraging response came in non-traditional agricultural exports where value rose sharply in 1964; but even here, the increases were not sustained In 1967 aggregate exports fell by 5 percent.

Pronouncements of the new government unequivocally stressed exports after 1964. Posters proclaimed: "To export is the solution." The initial systematic policy document of the government stressed the need for more remunerative exchange rate policies, simplification of export procedures, extension of special incentives, and adequate credit to finance sales abroad.[29] Surprisingly, the government moved slowly to implement policies in all these spheres. The exchange rate, as we have seen, did not in fact keep pace with the rate of internal inflation from 1965 to 1967. Nor was it until May, 1966, that a new National Council for Foreign Trade (CONCEX) was created, and it in

turn waited until March of 1967 even to exempt most industrial products from the requirement of prior export licenses. Credit facilities were made available, to finance exports of manufactures, in part utilizing external resources, particularly in 1965 and 1966, but then declined both absolutely and as a percentage of exports. Brazil was sufficiently laggard as late as 1967 to evoke criticism from at least one international lending agency for its conservatism in export promotion!

The principal reason for this delay can be traced to the favorable evolution of the balance of payments and debt structure after 1964. Foreign exchange shortages no longer threatened domestic development, but continuing inflation and lagging industrial growth did. Priorities therefore centered on internal policies. Even when export incentives were granted, they were largely designed to help alleviate the excess capacity in manufactures, as exemplified by the credits made available to finance steel exports to Argentina. And the focus was solely industrial. The industrial value added tax was rebated on exports; state value added taxes were similarly rebated by the provisions of the Constitution of 1967. Still, the pressing trade issues focused on lagging imports. The international lending agencies were partially responsible. AID was much more vigorous in pursuing import liberalization than export promotion. American officials were concerned by the diversion of program loans to pay off foreign creditors rather than finance imports from the United States.

Another element in the limited extent of governmental involvement, however, was export pessimism. The Plano Decenal published in 1967 was considered bold - and incorrect - for its assumption that exports would grow at a rate of 8.5 percent until 1970. (Although only 3 percent thereafter.) A projection by the World Bank made at approximately the same time estimated annual increases of only 5 percent between 1966 and 1971. As a consequence, an aggregate growth rate of 5.5 percent was considered the maximum consistent with needed external finance of the resource gap. Official optimism regarding Brazilian growth prospects is relatively recent, and ex post.

Accordingly, the continuing basic assumption on which the government relied, at least through 1967, was modest export expansion. By the end of 1968 that view had been significantly modified. The economic recovery in progress since early 1967 had begun to produce tangible results. Gross national product was increasing at rates in excess of 9 percent, and capital formation still more rapidly. As a consequence, imports in 1968 virtually doubled from their low 1965 level. While capital inflows successfully financed the current account deficit in that year, it became apparent that still more rapid export growth than had been achieved between 1964 and 1968 - an annual average increase in earnings of 7 percent - was necessary to sustain continued aggregate expansion at anything like those high rates.

A new series of policies deliberately intended to stimulate exports was undertaken beginning in 1968. The "crawling peg" exchange rate, although directed proximately against speculative foreign exchange remissions and imports, also guaranteed exporters of continuing adjustments in the exchange rate to compensate for internal inflation. Revaluation of the exchange rate such as had accompanied current account surpluses in 1964-1966 was thereby ruled out. Legislation was also passed in mid-1968, and implemented thereafter, to grant not exemptions, but actual subsidy credits based on the industrial excise tax. A new law in March of the following year codified and significantly extended that authority.

During 1968 as well, individual states were pressured to exempt primary products from state value added taxes. Several in the South-Central region of the country did so in that and the following year. Rio Grande do Sal reduced its tax by about half for a series of selected products; Paraná and Rio de Janeiro granted exemptions of 40 percent for corn, rice and soybeans; São Paulo granted total exemption for all exports except coffee. In 1970 most states gave a full credit on state valued added taxes parallel to that previously extended by the Federal Government.

Credits available to finance export of manufactures also show significant increase in 1969 and 1970, compared to what they had been in previous years. In addition the centr

Bank had in the interim established a special line of credit, increasingly used to rediscount commercial bank loans to finance production for export. During a period of tight finance, this meant advantageous access to working capital for firms producing for the export market. Subsequently, many primary products became eligible.

Symbolic of this altered conception of the importance of exports is an article written for the 1971 annual economic review of the Jornal do Brasil by the finance minister, Antonio Delfim Netto.[30] Its title alone - "International Trade as an Instrument of National Power" - is indicative of the new significance then attached to the external sector. Even more striking is its conclusion: Brazilian exports had to grow between 15 and 17 percent a year until 1976 to sustain an aggregate growth rate of 9 percent. And governmental policy was committed to assuring that they would.

The structure of the export incentives and their quantitative increase over time as the new policy evolved can be illustrated by the privilege conceded to industrial exports. Table XX provides the relevant information. It expresses the effect of the incentives in two alternative ways: as the maximum difference possible in the price of the same product sold domestically, and sold abroad; and as the differential profit created by sale as an export, assuming that the incidence of all indirect taxes is reflected in domestic price. Both measures derive from accounting identities relating profits to sales minus costs of production minus taxes plus subsidies.

Thus we can express the profits to be earned in the domestic market as:

$$\Pi_d = QP_d - t_1QP_f + t_1a_1QP_f - t_2a_2QP_f - t_3a_3QP_f - a_4QP_f - t_4gQP_f - ia_{5d}QP_f - C,$$

and profits on sales abroad as:

$$\Pi_x = QP_x + \bar{t}\,QP_x + \bar{t}_2\,QP_x + t_1a_1QP_f - \frac{a_4}{1+t_5}QP_f - r\,a_{5x}QP_x - C,$$

where Π_d and Π_x are the profits from domestic and export sales; P_f, P_d and P_x are factory, domestic, and export prices respectively; Q is the quantity of production; t_1 is the rate of federal industrial tax; $\bar{t}$ is the rate of credit granted on export sales;

TABLE XX

EXPORT QUANTUM AND PRICE INDICES
(1965 = 100)

	Coffee	Mineral Products	Traditional Agriculture	New Agriculture	Manufactures	Total
			A. Quantum			
1964	110.9	76.4	86.3	54.8	56.8	84.3
1965	100.0	100.0	100.0	100.0	100.0	100.0
1966	122.6	98.0	112.6	102.7	84.3	111.9
1967	121.9	98.4	99.8	92.8	127.1	110.0
1968	134.5	115.0	111.7	131.6	112.3	126.0
1969	136.2	148.3	145.2	165.1	149.6	145.6
1970	116.9	204.6	130.6	200.3	238.6	151.7
1971	127.9	226.1	117.0	203.2	320.3	161.7
1972	129.9	210.4	141.1	283.8	423.7	189.2
			B. Price			
1964	97.0	100.1	116.7	94.1	111.3	106.3
1965	100.0	100.0	100.0	100.0	100.0	100.0
1966	88.2	98.0	106.4	106.8	104.3	97.5
1967	81.8	90.1	112.2	98.6	102.1	94.3
1968	81.6	84.9	122.5	89.5	105.2	93.6
1969	84.5	83.7	127.2	97.2	110.4	99.4
1970	113.9	89.2	126.0	105.5	116.5	113.1
1971	85.5	92.1	139.9	130.0	123.5	112.5
1972	107.8	93.2	167.2	142.1	133.3	132.0

Source: See Table XVIII.

Method: With the exception of manufactures, Paasche price indexes were first constructed for all categories from value and quantity indices. Coverage was complete for coffee and traditional agriculture, and virtually so for mineral products. For new products, a sample of the 13 most important exports was selected, representing a little less than 40 percent of 1965 total value and approximately the same in 1972. These price indexes were then applied to actual value of exports to obtain Laspeyres quantity indexes.

For manufactures, the price index in Conjuntura Econômica was used until 1970, and extrapolated on the basis of the UN index for manufactured products for 1971 and 1972.

Weights from 1965 were used to weight within groups and to compile the total index.

t_2 is the state value added tax rate, t_3 are the sum of rates of various other taxes like the tax on financial operations, petroleum excise, etc.; t_4 is the income tax rate on gross profits; t_5 is the average tariff on imported inputs; g is the rate of gross profits expressed as a percentage of sales at factory prices; a_1 is the proportion of inputs that are manufactures; a_2 is the proportion of value added to output; a_3 is the relative importance of minor indirect taxes; a_4 is the proportion of imported inputs measured in post-tariff prices; a_{5d} and a_{5x} are the proportions and terms of sales financed in the domestic and export markets; i and r are the interest rates on sales financing in the domestic and export markets; and c are other costs of production. Thus domestic profits are the value of sales less the industrial tax plus a rebate on industrial tax paid in previous stages of production - this is what makes it a value added tax - minus the state value added tax minus other indirect taxes minus the cost of imported inputs minus income taxes minus costs of financing sales. Foreign profits are the value of proceeds plus a credit on federal tax liability plus a state value added tax credit plus the rebate on tax paid on purchases of industrial inputs minus the cost of imported inputs without duties minus the cost of financing minus other costs. Note that industrial exports pay no federal industrial excise tax, no state value added tax, no miscellaneous indirect taxes, receive a drawback on duties, and obtain a more favorable interest rate on financing.

Supposing that the domestic price equals the factory price plus all indirect taxes,

$$P_d = P_f \left(1 + t_1 + a_2 t_2 + \frac{t_5}{1+t_5} a_4 + t_3 a_3\right),$$

and that exports are made at the factory price, what are the differential profits per unit of output to be earned by exporting? They amount to $\bar{t}_1 + \bar{t}_2 + t_4 g + (i-r)a_5$, where the extent and term of financing is assumed the same in both markets.[31]

This is the pure subsidy component of the incentive

program. Conversely, assuming profits are equalized in domestic and export markets, what is the ratio between the export and domestic prices, P_x/P_d? It is equal to the wedge between domestic and factory prices, as above, $\frac{P_f}{P_d}$, times the differential between factory and export prices made possible by subsidies, or

$$\frac{1 - t_4 g}{1 + \bar{t}_1 + \bar{t}_2 + a_5 (i-r)} \times \frac{1}{1 + t_1 + a_2 t_2 + \frac{t_5}{1+t_5} a_4 + t_3 a_3} .$$

Turning to the table itself, it should be emphasized that the principal determinants of the magnitude price differential prior to 1969 are the rebates on federal and state value added taxes. Thereafter, the credits granted for each of these taxes assume an equivalent role. The privilege of drawback on duties, lower cost credit, and exemption from federal income tax amount to comparatively little. Correspondingly, the sharp rise in profitability of export in 1969 and 1970 reflect the respective credits for the federal and state value added taxes. Manipulation of these taxes, therefore, have been the prime means of altering the incentives. Both the use of credit and drawbacks have been increasing rapidly in recent years, but are still numerically small. By 1971, they had become twice as important as the exemption from profits in determining the price differential.

The results portrayed in Table XX convey a discontinuity in the magnitude and means of incentives during and after 1968. They may somewhat understate its full magnitude, moreover. There is conflicting information concerning the extent to which rebates from the federal industrial tax were fully granted before October 1967 when a more organized system of refunds was established. And for the latter part of 1968, credits for the federal tax seem to have been granted, but again, not completely systematically. Table XX assumes the rebates to have begun in 1965, and gives no allowance for credits until 1969.[32]

By the early 1970's, then, industrial enterprises could profitably sell abroad at prices less than two-thirds their domestic level. Firms could count on unit subsidies of as much as 25 percent to divert their interest to foreign sales. While not as lavish, and more difficult to quantify because of the variation among states and products, there were parallel reductions in price - although no subsidies - for agricultural exports in 1968 and beyond. These policies had a measurable impact. Between 1968 and 1973 export receipts increased at an annual rate of 27 percent.

Table XXI provides newly calculated price and quantity indexes for the period after 1964 to permit closer examination of the sources of growth. With the exception of coffee, every component of the total quantity index is higher in 1972 than in 1968. Exceptional increases have occurred for non-traditional agriculture, manufactures, and mineral exports. Considerable product diversification has resulted. In 1960, 59 principal export products accounted for 91 percent of the value of non-coffee exports; in 1972, the most important 59 individual entries, a quite different list, represent barely more than 80 percent. And, of course, the participation of coffee was radically altered.

Another decisive change has been the rise of price, particularly for non-traditional agricultural exports, increased at an average annual rate of more than 12 percent a year between 1968 and 1972. Such favorable developments continued unabated, and actually accelerated, thereafter. Soybean exports, for example, which alone represented in the latter year 15 percent of total export value, experienced a price increase between 1972 and 1973 of 137 percent! The improved terms of trade apply with almost equal force to the traditional agricultural exports whose prices have likewise soared. Sugar, cotton, and cocoa have all participated in the commodity price explosion that carried into 1974.

While much attention has rightly riveted on the vigorous export promotion efforts of recent years, this contribution of buoyant international prices has been somewhat slighted. Fortuitously, the foreign market became much more attractive just when serious

TABLE XXI

INCENTIVES TO INDUSTRIAL EXPORTS

	Maximum Price Differential P_x/P_d	Maximum Profit Differential $\frac{\Pi_x - \Pi_d}{P_f Q}$
1964	.99	0
1965	.93	.02
1966	.86	.03
1967	.82	.03
1968	.80	.02
1969	.75	.08
1970	.64	.25
1971	.64	.24

Method: $$P_x/P_d = \frac{1 - t_4 g}{1 + \bar{t}_1 + \bar{t}_2 + a_5 (i-r)} \cdot \frac{1}{1 + t_1 + a_2 t_2 + \frac{t_5}{1+t_5} a_4 + t_3 a_3}$$

$$\frac{\Pi_x - \Pi_d}{Q} = \bar{t}_1 + \bar{t}_2 + t_4 g + a_5 (i-r)$$

Sources: $\bar{t}_1$, $\bar{t}_2$ and t: 1971 values reported in José Savasini, et al, "O Sistema Brasileiro de Promocão às Exportacões", Discussion Paper No. 11, IPE, Universidade de São Paulo, adjusted upward by exclusion of food products, wood and mineral sectors. This was done better to reflect incentives received by manufactures in a narrow sense and eliminates many processed exports that are subject to low industrial excise tax if at all. The 1971 values were extrapolated to other years on the rate of excise tax collections to value of industrial production.

t_2: Average tax on factory price, equal to average tax on final price, t_2, divided by $1-t_2$. Average tax on final price was taken at 16.5 percent; a_2 at .494 based on Producão Industrial. For part of 1964, 1965, and 1966, while state turnover tax was in effect, the states of São Paulo and Minas Geraes granted exemptions for export of manufactures. The effect is assumed to have been a reduction in price of 3 percent in each.

TABLE XXI (CONT'D)

$t_4 g$: Average value of income tax exemption in 1971, taking into account other tax shelter possibilities, as calculated from a sample survey in "O Sistema Brasileiro" for 1971 extrapolated back on share of gross profits in industrial value added.

$\frac{t_5}{1+t_5} a_4$: Average tariff on imported inputs, t_5, obtained from "O Sistema Brasileiro", excluding certain sectors as above. a_4 was calculated by reference to actual applications for drawbacks as a percentage of industrial exports, as narrowly defined, for 1971, 1970, and 1964-1966 from unpublished data of the Conselho de Política Aduaneira. Other years interpolated.

$a_5 (i-r)$: Actual credits for exports, as given in the Annual Report of the Central Bank, times the difference between the actual real rate of interest, and 8.5%, the real rate charged for export finance (assuming devaluation at the same rate as internal inflation.)

$t_3 a_3$: Assumed to take on the value of .005 in 1965, and .01 thereafter.

export promotion efforts were made, and when export expansion was necessary. Current policy makers designed their strategy to seize upon the new opportunities. Their success is laudable, but perhaps also biases the evaluation of earlier policies. Recent international market conditions obviously contrast with the diametrically opposite circumstances in 1959-1962, and even with the earlier years, 1964 to 1968. Indeed, the difference in non-coffee export performance in the two segments of the post-1964 period considerably narrows when exports are reckoned in quantity rather than value units. One can exaggerate the role of policies, and thereby obscure the contribution of the market.

Decomposition of Market Penetration and Demand Contributions to Growth

One additional dimension of recent export experience has been diversification not only of export products, but also of export markets. In the 1950's the United States market absorbed almost half of total Brazilian exports, and the West European only about a third. In 1970 the West European share was 41 percent, the American 25 percent. The largest absolute gains were attained by the Common Market countries which altogether in 1970 purchased more than the United States. By 1973, accompanying the significant rise in the export of agricultural products, the United States participation declined to a new low of 20 percent.

The relative increase in sales to Europe has been matched by a greater importance of exports to the Latin American market. While intra-Latin American trade as a whole has increased relatively since negotiation of the Montivideo pact setting up the Latin American Free Trade Area, Brazilian participation has gone up more rapidly. Only 7 percent of Brazilian exports were directed to Latin America in 1960, but more than 11 percent in 1970. At the latter date, Brazil accounted for about a fourth of total zonal exports, more than any country except Argentina, with which it is approximately equal. This increase in trade has occurred principally in manufactures and principally with Argentina. From 20 percent of industrial exports in 1960, Latin America in 1970

became the destination for 50 percent. In turn, something like half of Brazilian exports of manufactures to Latin America in 1970, narrowly defined, went to that single country. An important factor in this penetration of the Argentine market has been the credit facilities made available to Brazilian exporters. Two-thirds of the total credit granted to exporters of manufactures in 1970 was intended to finance exports to Argentina.

Table XXII goes to the structure of trade in a more analytic fashion by decomposing changes in observed exports into demand and market penetration effects. Specifically, we can write the change in exports, by commodity and by region, as the consequence of changes in overall world import demand and of market shares: $\Delta X_{ij} = \alpha_{ij}\Delta M_{ij} + \Delta\alpha_{ij}M_{ij}$, where X_{ij} is Brazilian exports of i to market j, and α_{ij} is the share of Brazilian exports in total imports, M_{ij}. In turn, under the assumption that $\alpha_{ij} = \alpha_{i\cdot}\alpha_{\cdot j}/\alpha_{\cdot\cdot}$, the variation in market share can be attributed to changes in total trade participation, to relative changes in individual commodity participation, and to relative changes in regional participation. Thus, we have:[33]

$$\Sigma\Sigma_{ij} X_{ij} = \Sigma_i \Sigma_j \frac{\Delta\alpha_{\cdot\cdot}}{\alpha_{\cdot\cdot}} \alpha_{ij} M_{ij} \left[\left(\frac{\frac{\Delta\alpha_{i\cdot}}{\alpha_{i\cdot}}}{\frac{\Delta\alpha_{\cdot\cdot}}{\alpha_{\cdot\cdot}}} - 1 \right) + \left(\frac{\frac{\Delta\alpha_{\cdot j}}{\alpha_{\cdot j}}}{\frac{\Delta\alpha_{\cdot\cdot}}{\alpha_{\cdot\cdot}}} - 1 \right) + 1 \right] + \Sigma_i \Sigma_j \Delta M_{ij} \alpha_{ij}$$

The first and more complicated, summation measures the effect of changing market shares, holding demand constant; the second, the change in imports attributable to changes in demand. There are three components that contribute to the effect of changing market share. The first, outside the bracket, is the percentage change in total participation in international trade; the second inside the bracket, is the excess in percentage change in market share for commodity i relative to total trade; and the third is the same relative difference between region j and the total. If each commodity and regional market share experienced the same relative change as the weighted total share in world trade, their contributions would be nil. The commodity and regional effects thus measure specific

TABLE XXII

DEMAND AND MARKET SHARE EFFECTS ON EXPORT GROWTH
(MILLION DOLLARS)

(a)

1953-1964

	Market Share				Demand	Total	
	Trade	Commodity	Region	Total		Estimated	Actual
Coffee	-650.8	264.9	28.7	-357.2	101.3	-255.90	-328.6
Manufactures	-5.3	22.1	.8	17.6	15.4	33.0	61.0
Other	-264.4	-90.3	34.2	-320.5	412.1	91.6	158.0
Total[a]	-920.5	196.4	63.7	-660.4	528.8	-131.6	-109.5
Latin America	-64.0	4.0	48.5	-11.5	8.5	3.0	32.1
EEC	-204.2	34.3	-6.2	-176.1	230.2	54.1	31.3
EFTA	-122.0	13.8	21.0	-87.2	103.0	15.8	4.8
COMECON	-6.2	-.6	.8	-6.0	110.9	104.9	77.9
U.S.	-445.7	144.7	-20.7	-321.7	-63.1	-384.8	-271.0
Canada	-14.8	3.8	4.3	-6.7	9.2	2.5	-2.8
Japan	-24.4	-7.0	-7.5	-38.9	85.0	46.1	-13.0
Other	-38.9	3.4	23.1	-12.4	45.1	32.7	31.8
Total[a]	-920.5	196.4	63.7	-660.4	528.8	-131.6	-109.5

TABLE XXII (CONT'D)

(b)

1964-1967

	Market Share				Demand	Total	
	Trade	Commodity	Region	Total		Estimated	Actual
Coffee	-52.0	51.5	-48.1	-48.6	-51.7	-100.3	-55.0
Manufactures	-4.8	43.0	-4.6	33.6	31.4	65.0	72.8
Other	-41.0	146.1	-5.7	99.4	108.1	207.5	206.4
Total[a]	-97.8	240.5	-58.4	84.3	87.8	172.1	224.2
Latin America	-9.5	43.5	-16.4	17.6	53.5	71.1	22.0
EEC	-25.5	67.2	24.2	65.9	31.2	97.1	79.2
EFTA	-14.3	29.2	-26.4	-11.5	6.3	-5.2	-2.8
COMECON	-6.0	13.0	1.0	8.0	1.7	9.7	8.7
U.S.	-32.4	62.3	-58.3	-28.4	-28.0	-56.4	73.3
Canada	-1.5	2.8	-8.8	-7.5	-.8	-8.3	-5.6
Japan	-1.9	7.7	12.2	18.0	11.8	29.8	28.2
Other	-6.6	14.8	13.8	22.0	12.1	34.1	21.2
Total[a]	-97.8	240.5	-58.4	84.3	87.8	172.1	224.2

TABLE XXII (CONT'D)

(c)

1967-1970

	Market Share				Demand	Total	
	Trade	Commodity	Region	Total		Estimated	Actual
Coffee	96.4	-103.4	-34.2	-41.2	256.0	214.8	234.6
Manufactures	19.5	36.4	15.3	71.2	81.5	152.7	164.2
Other	110.3	218.7	-9.4	319.6	266.6	586.2	686.1
Total[a]	226.2	151.7	-28.3	349.6	604.1	953.7	1084.9
Latin America	22.5	36.1	34.1	92.7	61.7	154.4	147.1
EEC	61.8	52.8	-39.1	75.5	192.2	267.7	318.5
EFTA	28.2	5.7	19.9	53.8	122.4	176.2	145.9
COMECON	13.2	9.1	-19.8	2.5	43.6	46.1	25.6
U.S.	74.9	27.6	-170.0	-67.5	149.9	82.4	128.5
Canada	2.2	0	13.0	15.2	5.0	20.2	24.3
Japan	7.7	13.6	30.4	51.7	32.4	84.1	88.9
Other	15.8	6.8	103.2	125.8	-3.1	122.7	219.5
Total[a]	226.2	151.7	-28.5	349.6	604.1	953.7	1084.9

Source: U.N. Monthly Statistics; U.N., Yearbook of International Trade; U.N., Commodity Trade Statistics; OECD, Trade by Commodities; FAO , Trade Yearbook; Pan American Coffee Bureau, Annual Coffee Statistics; Brasil, SEEF, Comércio Exterior do Brasil por Paises.

[a]May not add to total because of rounding.

deviations from changes in the total participation of Brazil in world trade. The latter is labeled in Table XXI as the trade effect. This simple model replicates fairly accurately the changes in Brazilian exports between 1953 and 1970, both by major commodity group and by region. Differences between estimated and actual values are typically sufficiently small as to leave little doubt about the sources of change.

Between 1953 and 1964 Brazilian exports clearly declined not because of insufficient total world demand, but because the participation of Brazil in total world trade fell drastically. This total trade effect, taken by itself, would have reduced exports by $920 million. It was offset, however, by a lesser percentage decline in the share of coffee exports, as the positive commodity effect indicates. The changing regional composition of trade also compensated. Although Brazilian trade participation in the Common Market, the United States, and Japan declined more than average, it did not fall to the same extent elsewhere. Demand effects are unequivocally positive except for declining coffee demand by the United States. The importance of that market notwithstanding, had Brazil maintained its initial high share in the European market, total sales would have increased.

The net outcome in the 1953-1964 period was a significant decline both in coffee exports, and in sales to the United States. The consequent diversification of Brazilian exports in this period was therefore not a conscious objective of trade policy, but rather the result of erosion of established positions in traditional products and traditional markets. Had Brazil maintained its 1953 shares in all markets intact, its exports in 1964 in response to shifts in demand would have been more than $500 million greater. Diversification, both in products and markets, would have occurred also, but would have reflected the rapid growth of Europe and Japan in the 1950's and early 1960's.

After 1964, the previous decline in market share ceased. Until 1967, however, total Brazilian exports continued to grow more slowly than world trade as a whole. The total trade effect between 1964 and 1967 was therefore negative. Each of the commodity

effects, however, was positive - meaning that Brazilian participation in all products improved relative to the overall average. This apparent paradox reflects the fact that the Brazilian share in total trade is a weighted average of its shares in specific products, with the weights determined by the relative intensity of world trade: $\alpha.. = \sum_i \frac{M_{i\cdot}}{M} \alpha_{i\cdot}$. Because world trade growth between 1964 and 1967 was greatest in manufactures, in which the Brazilian share was smallest, but negative in coffee, in which the share was largest, the decline in the weighted share was greater than for each of the components. Both for manufactures and non-coffee agricultural exports this commodity specific change in market shares was the largest positive factor explaining increased growth.

Conversely the net effect of changes in regional shares was negative. The prime reason is the predicted relative decline in the United States market in coffee. But other countries also contribute. Altogether, the Brazilian share in four markets, Latin America, the seven EFTA countries, the United States, and Canada declined more than the general average. For all these regions except Latin America this effect was large enough to cause the predicted total market share to fall, despite the improvement in commodity performance. Latin America was an exception because of the commodity gains in manufactures in which the Latin American participation was relatively large.

In this 1964-1967 period, demand effects were positive except for coffee, and therefore also for all regions but the United States and Canada in which the share of coffee exports remained quite high. Overall, increased world demand and altered market shares evenly divided the credit for increased export growth. In fact, actual Brazilian performance exceeded the predictions of the decomposition. Coffee exports did not decline as much because the continuing reduction in Brazilian market shares averted some of the negative consequences of lesser world trade in the commodity. A smaller market share in this instance produced a desirable outcome. In addition, because exports to the United States of primary products other than coffee increased

substantially, the predicted decline in that market was converted to growth, and an actual small rise in the United States importance as an overall market for Brazil.

Between 1967 and 1970 the first signs of sustained export growth became apparent. There was for the first time in the post-War period an increase in Brazilian participation in total world trade. Manufactures and non-coffee agricultural exports, moreover, continued to perform better than average, and significantly augmented the change in market shares specific to those products. The share of Brazilian coffee in world exports continued to decline, however, and produced adverse consequences. Pure regional effects taken as a whole were again negative, owing to renewed reduced importance of the United States market. It is the only region in which the composite market share declined. Interestingly, participation in Common Market imports also rose less rapidly than trade overall. It is the vigorous expansion of demand, and less the gain in market shares, that lead the increase in exports to the six EEC countries to outstrip those to any other region.

What is impressive is the force of these demand effects in the 1967-1970 period. In these three years, the influence of expanding world trade, admittedly in current dollars, exceeded by a considerable margin its earlier stimulus. One result was a positive contribution by coffee exports to total earnings, thereby reversing their previous stagnation. Another was to match the contribution of considerably improved market shares to increased exports of manufactures and non-coffee agricultural products. Finally demand effects directed trade to the especially rapidly growing European market, a tendency that has been maintained in subsequent years.

The effects of the more vigorous export promotion strategy after 1968 are apparent in the qualitatively different performance in the 1967-1970 period. Brazilian trade participation as a whole increased as exports were progressively directed toward the dynamic sectors of world trade. New markets and new products became increasingly important. Fully 20 percent of the realized growth in export receipts between 1967-1970 came from greater market penetration in countries which had previously not figured much at all in Brazilian trade. Countries like Spain, Yugoslavia, Taiwan, and Algeria began

to assume increased importance in this period, while entirely new markets in Africa were entered. Many new industrial products like alcolids, enzymes, sewing machines, lamp bulbs, etc., that had hardly been exported, if at all, in 1964 became principal sources of subsequent growth. More than half the increment in aggregate exports of manufactures between 1965 and 1970 derived from products that did not figure measurably in the earlier year.

Export Supply

This dramatic reversal in export performance after 1964, and especially after 1968, meant significant change in the relative importance of internal and external markets. For many products, and many firms, the expanded opportunities afforded by foreign sales were novel. It is of some interest, therefore, to gauge the mechanism by which this transformation was effected. Table XXIII provides some partial answers. It tabulates for both agricultural exports and manufactures relevant elasticities estimated both from regression supply functions and direct calculation.

These supply functions take the general form $X/O = f\ (P_f/P_d, \frac{O}{Cap})$, where X/O is the ratio of exports to production; P_f/P_d is the ratio of foreign price to domestic, and $\frac{O}{Cap}$ is a measure of capacity utilization. One additional variable appears in the function for manufactures, cumulated past exports, to measure the learning experience of domestic producers whose output is overwhelmingly for internal consumption. Such a variable is inappropriate for agricultural exports where the export tradition is of longer duration and quantitatively more important. The logic of this specific formulation requires that the division between foreign and domestic sales reflect the profitability of each as measured by their current average prices; excess capacity, or stocks, imply that further sales would depress domestic profitability and make exports more attractive. A linear form is used for estimation.

The price ratio for manufactures is measured by the exchange rate for manufactures adjusted for incentives, deflated by an internal industrial price index. No price index for variation in export price over time is used. For agriculture, it is, since

TABLE XXIII

EXPORT SUPPLY FUNCTIONS[a]

Dependent Variable	Price Elasticity Pre-1964	Price Elasticity Post-1964	Excess Capacity Elasticity	Cumulative Exports Elasticity	R^2	D-W
Non-Coffee Agriculture	-.38 (.56)	-.01 (.03)	.03 (.25)	-	.35	.95
	-3.6[b] 5.3[c]	-6.1[d] 8.9[e]				
Manufactures	.99 (1.06)	.49 (1.63)	.20 (2.00)	.47 (3.70)	.95	2.02

[a]"t"-values of original coefficients in parentheses; elasticities calculated at point of means.

[b]Arc elasticity, 1957-58/1953-56.

[c]Arc elasticity, 1959-63/1957-58.

[d]Arc elasticity, 1964-67/1959-63.

[e]Arc elasticity, 1968-70/1964-67.

the fluctuation in price tended to be more important; in addition, the exchange rate for 1968 through 1970 is corrected to allow for incentives of 10 percent, reflecting the exemptions from state value added taxes for selected exports. Capacity utilization in industry is measured by deviation of current output from a level of capacity estimated by applying a three-year moving average of growth rates to initial capacity; that is, $Cap_t = Cap_{t-i} \sum_{t}^{t-2} r/3$. This estimate is in default of actual information. It is based on the assumption that capacity adapts to historical output experience over a three-year period. An even cruder version is used for agriculture where capacity is a less meaningful concept. There the deviation of current growth from a three-year moving average is designed to capture the likelihood of excess or deficient supply.

Table XXIII indicates small, statistically insignificant, and indeed negative price elasticities for agricultural exports, both before and after 1964. Nor is the proxy for excess supply very satisfactory. The limited degree of explanation is provided almost entirely by the statistically significant change in price elasticity between the two periods. It is apparent from the considerable auto-correlation that the specification is inadequate.

This is due partly to the high degree of aggregation involved. One has both traditional exports like cocoa and sugar grouped together with rice, beef, etc. But the results also have a valid interpretation: the inability of year to year movements in the price ratio to influence exports in a stable fashion. The calculated arc elasticities show why. In both periods there are intervals in which the sign of quantity and price changes are reversed: exports did not respond favorably to rises in the price ratio between 1953-1956 and 1957-1958; nor did they fall when policy from 1965 to 1967 led to appreciating exchange rates.

Such perversity indicates that a more complex explanation, or more accurate measure of stocks and prices, is called for.[34] Thus it may be that the post-1964 recession affected domestic agricultural prospects sufficiently to accept exportation at less favorable prices. And the apparent increased profitability in 1957-1958 may have been

discounted as of short-term duration while the import substitution strategy still held full sway and taxation of exports remained one of its principal instruments.

What is striking is that relatively small, but consistent improvements in the foreign price during periods of deliberate policy aimed at evoking exports were quite effective. The elasticities in the periods following both 1959 and 1968 share this characteristic. Moreover, in both periods relative internal terms of trade for the agricultural sector improved, an indication of altered priorities attached to agricultural production. In such a context, production could occur with an eye toward export and with some confidence in future profitability. The years 1959 through 1962 especially show strong responsiveness in agricultural output as well as an increased ratio of exportation.

Increased agricultural exports thus seem to derive from a combination of exchange and domestic price policy rather than the former alone. They depend not only upon proximate profitability of export but also upon the apparent commitment of government to the agricultural sector.

For manufactures, the statistical explanation of the direct role of price, and of the results of export promotion, is more adequate. The price elasticities have the correct sign, and the variance of the influence of the real exchange rate is distinctly smaller after 1964 as serious incentives to exportation were progressively enacted. Price responsiveness, although on average smaller, was also more certain. Exports responded as expected to excess capacity and especially to the past export experience. The elasticity of each, as calculated at the point of means, is somewhat deceptive. During the period of peak excess capacity, 1964-1967, the elasticity was 25 percent greater, while the variability of capacity under utilization itself was wide. Thus between 1960-1963, and 1964-1967, the variation in underutilization itself explains more than a fourth of the increased ratio of exports to output. Conversely, as cumulative exports increased less rapidly at the end of the period compared to current flows, their influence - as might be expected - declined. For that reason, as exchange rates after

1970 did not fully keep up with internal industrial prices, the estimated function when extended does not capture the full extent of the continuing rise in the percentage of manufactures exported in 1971 and 1972.

Thus in the case of manufactures, also, and despite the inclusion of substantial incentives in the exchange rate, price elasticities are only part of the story. The total context within which exchange rate changes occur is equally central. After 1964, but especially 1968, a new strategy of progressively opening the economy became apparent to all. Incentives were provided in sufficient magnitude to overcome initial inertia and lack of information. In such circumstances, production for sale abroad could become a regular and profitable activity.

The rapidity and extent of the transformation is made apparent by the quadrupling of the number of firms exporting manufactures in 1970 compared to 1967. While in the latter year only 5 percent of firms engaged in exports, in the former close to 20 percent did. This widened participation actually reduced concentration. In 1967 3 percent of the firms accounted for 70 percent of exports; in 1971, for 58 percent.[35] This diffusion process has presumably continued. In particular, one may note the very large increases in 1972 and 1973 in exports of cotton textile products and footwear, industries in which there are limited economies of scale inhibiting broad participation. They are also products sold outside of Latin America. These developments may therefore also have lessened the participation of foreign firms who at the beginning of the export boom tended to take especial advantage of the Latin American market.[36]

Brazil's conversion to export status has thus required, and received, more than favorable manipulation of foreign prices relative to domestic. It has involved nothing less than a complete realignment of development strategy that has provided the same assurances of policy consistency that the import substitution impetus of the 1950's satisfied. One cannot stress such certainty and commitment too strongly.

The Efficiency of Export Activities

Indeed, the question may be raised whether the attention, and subsidies, granted to exports may not have now led to a misallocation of resources. This is nothing more than the reverse of inefficient import substitution behind tariff and other protective barriers. Such suspicions are especially aroused because the mechanics of the subsidy system have depended to a large extent upon manipulation of indirect taxes, themselves originally designed for very different ends.

This dependence has been the result of GATT provisions limiting export subsidies to exemption from indirect taxes, to which Brazil has nominally conformed. The extension of the principle to encompass not merely rebates, but also credits, has been controversial. Brazil has defended the policy as a necessary offset to higher costs of domestic inputs created by extensive social security tax contributions, and to the discrimination against exports inherent in the non-free trade exchange rate. It has maintained that the level of subsidies is therefore justified.

In the aggregate, there is economic, if not legal, merit to the Brazilian claims. The level of actual subsidy in recent years for manufactures has averaged about 20 percent, close to the margin of overvaluation implied by current levels of tariff protection.[37] For such purposes the rebates on excise and state-value added taxes are irrelevant, since their exemption is actually required to avoid distortions in comparative advantage among countries solely because of internal taxes.

Yet the issue hinges more upon the variability of the export subsidies and tariffs among sectors than the average level. A flat 20 percent tariff, say, plus an undifferentiated export subsidy at the same level, is equivalent to a devaluation of the same magnitude. To that no one could object. Such a combination would permit full rein for international market signals to guide resource allocation.

Table XXIV speaks to this question of sectoral variability. It presents estimates of domestic resource cost of exports, the intensity of labor input, the degree of subsidization, and the actual level of export. The estimates of domestic resource cost

TABLE XXIV

EXPORT INCENTIVES AND DOMESTIC RESOURCE COST, 1971

	Subsidies[a] Per Cr $ of Net Exports	Labor Input Man-Years Per 1000 Cr $	Domestic Resource Costs Relative To Market Exchange Rate	Exports Mill Cr $
Agriculture	-.196	.1235	.79	5540.3
Extractive	.095	.0196	.94	128.9
Non-Metallic Minerals	.232	.0284	1.18	93.1
Metallurgy	.284	.0116	1.31	374.5
Machinery	.375	.0123	1.30	405.8
Electrical Equipment	.357	.0260	1.26	152.2
Transport Equipment	.342	.0209	1.12	142.6
Wood Products	.085	.0277	.85	562.7
Furniture	.367	.0247	1.30	14.8
Paper Products	.305	.0203	1.44	70.3
Rubber Products	.372	.0297	1.41	24.8
Leather	.195	.0228	.96	90.0
Chemicals	.179	.0121	1.11	189.1
Pharmaceuticals	.164	.0140	1.20	4.9
Cosmetics, Soaps, Etc.	.319	.0123	1.01	61.4
Plastics	.379	.0126	1.24	7.4
Textiles	.351	.0268	1.34	276.7
Clothing & Shoes	.375	.0417	1.28	207.3
Food Products	.122	.0264	1.06	2713.4
Beverages	.382	.0261	1.60	8.1
Printing & Publishing	.259	.0264	1.00	31.0
Miscellaneous	.369	.0203	1.45	72.2

Source: José Savasini, et. al., "O Sistema Brasileiro de Promocão às Exportacoes", Discussion Paper No. 11, 1974, IPE, University of São Paulo.

[a]Excludes indirect tax rebates which are neutral among activities.

at the sectoral level are no doubt questionable, because average input-output coefficients have been applied to export activities that need not reflect such averages. In this instance, the possible errors are compounded because the primary factor coefficients are probably least well founded in the matrix.[38] Nonetheless, the rankings by domestic resource cost convey some indication of the gross differences among sectors. The rankings also reflect, and presume, continuing inefficiencies in other processes since no correction is made for shadow prices of tradeable inputs.

Two conclusions are directly apparent from Table XXIV. The first is the positive association between domestic resource costs and the magnitude of subsidy granted by the incentive system. The coefficient of rank correlation is .75. This means that incentives have been granted inversely to the potential economic gains from engaging in export. This perverse consequence owes itself to the structure of the subsidy system. The level of indirect taxes is typically highest for luxury products, which in turn are the most likely to be capital intensive in production. Since labor inputs are relatively cheap compared to the rate of return on capital, domestic resource cost tends to be lowest, and therefore more favorable, when labor input is higher. This is most obvious in the favorable ranking of the agricultural sector where the tax on exports also figures. For this very reason the credit system has been designed to pay up to a maximum subsidy of 15 percent upon federal excise liabilities. In the absence of such a maximum, the perverse consequences would be even greater.

But a second observation partially counters this first. Actual exports are positively related to comparative advantage, a result that would emerge even more clearly were the ranking of textiles and clothing and footwear more favorable.[39] That is, even at this level of aggregation, it does not appear the incentive system has induced inefficient exports. Accepting the shadow price of foreign exchange as 20 percent above its market level, and counting the two labor intensive sectors as more efficient than that critical dividing point, 80 percent of industrial exports, and 90 percent of total exports respond to Brazil's comparative advantage. The problem of diversion of resources to inefficient production does not appear to be serious, therefore.

Nor should one forget the fundamental reasons for favoring exports of manufactures vis-a-vis agriculture in the first place. And this favortism is in many ways the most fundamental issue raised by the present incentive system. The differences within industry as a whole pale by comparison with the apparent advantages derived by encouraging agricultural exports. Yet, both because of their greater variability of price, and the further constraints posed by low income elasticities for primary products, diversification of Brazilian exports has long been an appropriate and desirable objective. At the margin, international prices might well not repay continuously the much greater specialization of Brazil in primary exports suggested by Table XXIV. Moreover, recent diversification has certainly contributed to the attraction of international capital inflows by providing assurances concerning long-run payments potential. It is not entirely by accident that Brazilian authorities have progressively widened the definition of manufactures in successive years. Brazilian industry has now reached a stage of development where it can respond efficiently to external market opportunities afforded by expanding international demand. That potentiality justifies the subsidy to overcome the initial considerable barriers to export.

Industrial exports, moreover, serve another highly important purpose. They expose Brazilian manufactures to a discipline of international competition lacking in the domestic market. Brazilian ability to sell abroad in the long run will depend upon relative costs of production. They in turn will be determined by the growth in productivity of industry. The incentive to maintain market shares elsewhere will considerably enhance the likelihood of such continuing progress. The fixed level of the subsidy pales to insignificance in comparison with such on-going change.

The key question, then, is the capacity of Brazilian policy makers subsidies, and indeed to reduce them as the initial disadvantages associated with export are overcome. Already there is evidence that the subsidy may be greater than necessary for some industrial sectors. In this case there is a pure transfer that unnecessarily augments profits. Maintenance of subsidies in these circumstances inevitably arouses claims of dumping and counter-measures in recipient countries.

Ultimately, of course, it would be best not to liberate the subsidy mechanism from the restrictive GATT rules, thereby making it respond to economic rationality. Differentiation among sectors could then be based upon legitimate differences in externalities, or economies of scale. Even this second-best of all possible worlds where such a course may be impossible, inefficiency is not inevitable. The government has sufficient means to influence the allocation of resources among sectors such that any deleterious tendencies of the subsidy system can be countered. It is necessary to view export promotion policy in a holistic context, exactly because it has now become so central a part of the total development strategy. The actual exports appear precisely to reflect such a total context.

Current export promotion efforts thus parallel interestingly the previous import substitution efforts. Although in principle, the costs in efficiency in both circumstances might have been considerable, they in fact have not been. Each strategy has utilized commercial policy in a way that has influenced economic development well beyond immediate exports and imports. And each has accommodated to the very different potentialities latent in the domestic economy.

VI

Epilogue

This successful transition to a significantly more open economy - by 1973 exports amounted to about 10 percent of gross product compared to 5 percent in 1967 - has met with considerable acclaim. Reactions in the private financial community have been enthusiastic: "Brazil's economic accomplishments in the past six years and its prospects for the future bear testimony to the effectiveness of the export-promotion strategy. Overall economic growth, led by industrial output, has been sustained above 9 percent a year. The GDP reached $62.5 billion in 1973, about $625 per capita".[40] It is indeed tempting, in view of the now widespread recognition of the defects of the import substitution strategy, to regard the Brazilian experience as an example of what freer rein to

international market signals can yield in quickened growth.

Some qualifications are in order, however. The consequences of absorption into international capital markets, which has proceeded in tandem with export promotion, have not been uniformly favorable.[41] The facts of such an involvement are not in dispute. At the end of 1973 the gross Brazilian debt stood at $12.9 billion, and had quadrupled since the end of 1967. The net debt, after subtraction of reserves, exceeded $6 billion, and had doubled over the 6 years. The disparity between these two measures reflects the extent to which increased debt in the intervening years had been applied to the accumulation of reserves. More than two-thirds of the currency loans, largely from the Euro-dollar market, went to that end. Thus borrowing went far beyond required finance for imports - as is reflected by the increasing importance of currency loans through banks relative to suppliers credits in total capital inflow.

Such a result was neither entirely foreseen nor completely welcome, even to the Brazilian officials who subsequently rationalized it. Beginning in 1970, and until the first part of 1973, interest rates fell dramatically in the Euro-dollar market because of an excess of funds seeking application. It is exactly then that the participation of Brazil and other developing countries sharply increased, quite obviously in response to the favorable interest rate differential available to investors. Rapid economic growth was an attractive factor, but by no means the only influence in determining the sudden ascension of Brazil in international capital markets.

So substantial was the volume of inflow that Brazilian authorities progressively controlled and discouraged it. A minimum duration that eventually reached 10-12 years and a maximum interest rate were imposed on all commitments; internally, a differential reserve offset - amounting to a 40 percent reserve requirement in 1973 - was imposed on these external resources. The capital inflow in fact became an embarrassment of riches, exceeding import needs by a considerable margin and therefore contributing to an expansion of domestic currency unmatched by a corresponding supply of goods. In 1971 and 1972 the foreign currency transactions of the Central Bank were the principal single factor responsible for the increase in high-powered money. To avoid such inflationary

consequences the Central Bank engaged in offsetting open-market operations, selling large quantities of debt to sterilize the accumulation of reserves.

The success in managing such transactions confirmed the technical capacity of the new policy makers. Even earlier in 1969 the Central Bank had demonstrated the "ultimate" in technocracy - a computer model that could define an optimal debt policy depending upon assumptions regarding exports and imports and continuing foreign supply of capital. These achievements helped to persuade Brazilian officials that integration into the international money market could be turned to advantage without great cost. The term structure of the debt could be lengthened, interest rates lowered, and above all, external resources could guarantee non-inflationary finance for internal investment. Under these circumstances the money supply, and inflation, could be controlled without raising interest rates and threatening industrial expansion. Moreover, the added reserves assured the continuing capacity to confront ever higher import and savings requirements, and thereby eliminated potential limits to growth. The Brazilian model thus was significantly modified in the early 1970's to incorporate debt-sustained growth in which present balance of payments deficits, invested at high domestic rates of return, would yield self-cancelling future surpluses.

Some of these objectives were in fact attained, but not costlessly. In the first instance, the large capital inflow, coupled with offsetting domestic monetary policy, produced a new species of costly and biased financial intermediation. Essentially, it was the holders of government debt who were granting loans to foreign debtors by providing the domestic currency counterpart to the influx of foreign exchange. This had a double cost. There was the loss to Brazil in unnecessary interest on foreign loans; the interest received on reserve assets fell short of the charges on the loans that had made possible the reserve accumulation. This has been estimated in 1973 as amounting to between $60 million and $100 million.[42] And there was the further internal transfer from taxpayers to holders of Treasury bills, obviously hardly likely to improve the distribution of personal income.

The domestic distribution of finance as channeled through such intermediation was not neutral. Foreign firms tended to receive the largest amounts of such loans, and thus were provided favorable access to working capital, both in quantity and cost. To be sure, the utilization of the banking system as a mechanism for channelling the currency loans improved the position of domestic firms compared to the provisions of Instruction 289 which had authorized direct loans to enterprises. Still, while the participation of the Brazilian private sector increased with currency loans, it was still substantially in the minority. Only 21 percent of the loans registered in 1971 went to national firms. The importance of such external finance can be crudely gauged by comparing its magnitude to the volume of bank loans; in 1971-1973, net foreign currency loans amounted to more than 40 percent of the total new bank credit made available to the private sector.[43]

Inherently, the policy also exaggerated the apparent need for foreign capital both by inducing larger imports and reducing domestic savings. Because the real exchange rate appreciated against the dollar by 29 percent between 1969 and 1973, and by some 10 percent taking into account American inflation, imports became cheaper. The abundance of foreign exchange, moreover, permitted wide-ranging exemptions from tariff duties, and a growth of imports, not all of which could be regarded as essential. In 1973 such luxury items accounted for about 10 percent of imports and had been increasing their relative share; the same tendency can be observed in the service account. More important quantitatively, the exchange rate artificially favored investment in import-intensive activities in a way that reminds one of the early 1950's, although without the same bias against exports.

The increased imports widened the current account deficit which in turn apparently fully justified foreign finance of the resource gap. In a national accounting sense, moreover, this entire current deficit is registered as an increment to total savings. In fact, the influx of such resources inevitably partially went to increase domestic consumption and not entirely to finance investment.[44] The simple ratio of foreign

savings to total investment thus exaggerates its causal significance in making possible high rates of capital formation. Rather, foreign capital also permitted consumption to accompany growth and avoided any need to pursue policies that might have checked market demands.

The added feature of financial and large-scale growth thus has facilitated rapid growth at limited domestic sacrifice and aided the effort to contain inflation, but not without special implications for the character of such growth. It also has imposed an increasing future obligation for interest and amortization payments that constitute a first claim against export earnings. For while the ratio of debt-service to exports has turned considerably more favorably in recent years, as average maturity has been lengthened, the effect is only temporary. Even with continuing export growth, the ratio will turn up significantly in the next few years and amount to more than 40 percent.

Debt-sustained growth in fact requires even increasing amounts of indebtedness to produce continuing constant net transfers. If foreign capital is available in unlimited quantities, there need be no concern: one can always roll over the debt by new and increased obligations. The ever-present uncertainty is the notorious instability and fickleness of foreign capital. When it is most needed, it is unavailable; but when redundant it competes most vigorously for application. The accumulation of a good part of the debt through 1973 thus traded potentially burdensome future obligations for temporary advantages that alternative and more fundamental policies directed to internal financial markets might better have accomplished.

Note, however, that an export promotion strategy of development does not necessarily imply dramatically larger capital inflows of the kind Brazil in fact experienced. Quite to the contrary. A policy oriented to exports actually reduces requirements for external finance and reliance on debt by virtue of its larger present earnings of foreign exchange. As a result, imports can be financed on current rather than capital account. The Brazilian transformation to greater openness in the product market should not be wrongly blamed for the very excesses which it was designed to obviate.

Nor should openness bear the burden of explaining the disappointing progress in the distribution of the benefits of Brazilian growth.[45] An export promotion strategy neither depends upon, nor imposes, income inequality. Larger exports do not require that internal demand be repressed, but rather that production be increased. The issue is the efficient allocation of resources to maximize the availability of goods for internal use, not bias against domestic consumption. In fact, to the extent that industrial export activities are more labor intensive, and to the degree that efforts are made to assure that the benefits of rising agricultural demands reach the rural poor, an export intensive style of growth can prove quite compatible with equalization.

What counts in the long run for the distribution of income is the equitable allocation of continuing productivity gains. These dominate surprisingly rapidly under conditions of rapid growth. Government wage policy and the state of labor markets have more to do with that outcome than the destination of production. To the extent that the latter has influence, an export orientation can be favorable. Realistic exchange rates and a program of export incentives permit, rather than restrain, higher money wages. Income transfers required to maintain competitiveness then come from importers and taxpayers rather than at the expense of labor's share.

While it is certainly appropriate, therefore, to question the distribution of benefits accompanying recent growth, and a more recent 1972 survey suggests increasing concentration, it is essential not to confound the issue by laying the blame upon the export promotion strategy. More generally, the dichotomy between efficiency and equity has been overplayed. Phases of initial growth do not require, nor necessarily lead to, substantially increased inequality. The villain in the Brazilian piece has not been the surge in greater openness of the economy nor in accompanying growth, but rather a systematic policy environment in which the propelling thrust has consciously been incentives and advantages to those better off, while maintaining restraint upon the assertion of power by those less well off. Market forces, as they may have operated to differentiate the labor force and thereby increase inequality, have been intensified rather than

corrected by public intervention. Export promotion, however, can be pursued quite independently of such tendencies and vice versa. One can recall that the period of greatest real wage deterioration between 1964 and 1967 antedated the present export orientation.

Such a distinction assumes special significance in the present context. For in the last year there have been dramatic developments that decisively mark an end to the 1968-1973 policy phase, and will require new responses. In 1974, while exports increased by less than 20 percent, imports more than doubled. The current account deficit as a consequence is now estimated at between $6 and $7 billion. Of this vast sum, new capital inflow financed the largest part. Reserves were drawn down by less than a billion dollars, leaving the residual to be financed abroad. Earlier restrictions on currency loans were repealed by February, and the rest of the year was spent in active pursuit of increased loan commitments. The net debt thus doubled in a single years to now represent approximately $12 billion. All the indicators of the Central Bank measuring debt vulnerability, in which officials had taken such pride, tumbled.

Petroleum needs were an important factor in this sudden imbalance. Brazil has imported almost 80 percent of its petroleum needs in recent years, and it is the principal source of energy in the economy. Estimates indicate that increased cost and volume of oil imports added slightly more than $2 billion to the total import bill. But while obviously significant, such oil imports are far from the entire story. More generally, price increases accounted for some 60 percent of the larger import bill, and volume, about 40 percent. There was thus a considerable rise in imports quite apart from world inflation.

This strong demand for imports in real terms was very much a result of accelerating internal inflation accompanied by continuing overvaluation of the cruzeiro. During 1974 wholesale prices rose by about 33 percent, while the crawling peg adjustments only amounted to little more than half as much, although increasing in frequency and magnitude

after May. Even with inflation at double digit levels elsewhere, this implied further appreciation of the currency and relatively cheaper imports. With uncertainty about future developments, there was a strong tendency to anticipate future requirements. Stockpiling, not unreminiscent of 1968 but obviously much more intensified, was the result.

The government responded by seeking to curtail imports. At the end of June, a series of new restrictions was imposed. Tariff waivers that had been made widely available during the previous period of foreign exchange surpluses were subject to cancellation. In addition tariff levels were raised by 100 points on a selected group of 500 luxury products. Simultaneously, previous acquisition of foreign exchange was required for all imports subject to tariffs greater than 55 percent; this action was designed to eliminate foreign purchases based on internal credit. In addition, commercial banks were prohibited from extending finance for trips abroad.

These protective measures, while directed to visible sumptuary outlays, could hardly begin to cope with the problem, which was far more basic than that limited category of imports. In November, therefore, more far-reaching decisions were taken. Cognizant of the role that administrative reduction of duties had played in facilitating imports, new and more exacting qualifications were imposed on waivers. A new, and now broader, list of 2,000 products was made subject to tariff increases of between 55 and 100 percentage points. Still more potent was the absolute prohibition applicable to the entire public sector, including mixed enterprises, against purchases of imported consumer goods. In addition, and likely to be still more important quantitatively, prospective public sector imports of capital goods have been made subject to a new and more rigorous acquisition process.

While authorities grappled with soaring imports, Brazilian exports experienced a disappointing year. Coffee exports were adversely affected by Brazilian efforts to withhold coffee from the market in the first part of the year in the hope of counteracting

price declines. Domestic producers of soybeans reacted in much the same way, provoking local shortages (and higher internal prices) and an eventual limit to exports. Beef exports were also made subject to quotas. The only compensating factors were the rise of sugar prices to record levels, and the very considerable - in excess of 50 percent - gain in exports of manufacturers. There is clear anxiety in Brazil lest weakening world prices, recession in the industrialized countries, and heightened restrictions elsewhere against imports, further curtail near term export prospects at this critical juncture.

The present crisis in many ways poses the most serious challenge to the economic development strategy progressively evolved since 1964. For instead of increased imports and accelerated growth, attention must now be turned to reduced domestic expenditures and sharply curtailed access to foreign supply. Yet a continuing substantial capital inflow will still be necessary to bridge the interval until exports can overtake imports, and to compensate for ever-increasing debt service. In addition, changes in the international scene have now led to a deterioration in the terms of trade, after several years in which real Brazilian income has benefitted from the rise in commodity prices.

The key question is whether the required adaptations can occur without provoking either internal inflation or recession or their combination, and without creating new distortions in the allocation of resources by foresaking the recent outward-looking policies. It is a large but not impossible task. In its favor, Brazil has the advantage of substantial international reserves, and prior exposure to the international capital market. To some extent, the crisis has vindicated, for the wrong reason, earlier policies. Ironically, prior debt imposes an obligation on creditors to respond more positively to new Brazilian needs.

Brazil's export prospects continue to be favorable. The market for agricultural products, while less buoyant, is still more favorable than even a few years ago. Minerals continue to be in demand. Manufactures have succeeded in penetrating many new markets, and their growth has survived the present recession. There is no need to dispair on the side of direct foreign exchange earnings.

Still imports will have to be considerably reduced, and domestic austerity imposed. The former is facilitated by the advances in industrialization in the last decade. Import substitution accordingly can occur without significant loss, and without the large subsidies that characterized the industrialization phase of the 1950's. Of course, if it should turn out that the off-shore oil funds reported last December are indeed extensive, this will directly alleviate one pressing need for foreign exchange, and permit less drastic curtailment.

At issue is how such reduction is to be accomplished, and at whose expense. Real domestic expenditure will have to fall, and with it, therefore, real standards of living. One can seek to conceal this necessity by avoiding devaluation, and by imposing a variety of direct controls. Complicating the problem is the accumulated and legitimate demands of those who have thus far benefitted least from the Brazilian miracle. Deprived of some of the gains, they can hardly be expected also to absorb the inevitable losses.

One feasible solution is reduced growth and profit rates in import-intensive activities, compensated by more rapid growth of exports and labor intensive activities. Exchange rates can be used to induce the re-allocation, accompanied by policies that re-allocate income and demand to the poorest groups. Distributional objectives therefore need not be ignored in the required transition, but rather can even be emphasized. Nor need the new priorities exclude a continuing open economy.

Success in such efforts will also be dependent upon events beyond Brazil's control. If there is continuing recycling of petro-dollars, and world markets experience renewed expansion, then one can be more optimistic about Brazil's prospects. In their absence, the constraints imposed upon policy makers may well exceed their apparent degrees of freedom and lead to policies that become progressively more self-contradictory. Examples have been abundant in previous post-war Brazilian foreign trade regimes. The Brazilian near future, both economically and politically, may thus depend as much upon evolution of the international economy as the skills of policy makers to modify the strategy of openness to accommodate to declining imports. It has happened more than once in the past.

FOOTNOTES

1. For a fuller discussion of this early period of import substitution, see my "Origins and Consequences of Import Substitution in Brazil", Parts I and II, in Luis de Marco, ed., International Economics and Development (Academic Press, 1972).

2. Thus since $x_i + m_i = f_i + \sum_j a_{ij}x_j$, where x is gross production, m is imports, f is final demand, and a_{ij} the requirements of i per unit of output of j,

$$x + [1-A]^{-1}m = [1-A]^{-1}f.$$

A natural measure of import substitution than substitutes m*, the total production equivalent of imports. See for this measure, Samuel A. Morley and Gordon W. Smith, "On the Measurement of Import Substitution", American Economic Review, 60, No. 4 (September 1970).

3. Joseph A. Kershaw, "Postwar Brazilian Economic Problems", AER, 38, No. 2 (May 1948).

4. This calculation understates the gain obtained by importers but likely overstates the deadweight economic loss. By ignoring the implicit demand price importers would have been willing to pay, we exclude the consumer surplus they obtained. The economic loss was in turn quite limited to the extent export supply and import demand were inelastic.

5. Ivan Lakos, "Effects of Brazil's Foreign Exchange Policy", unpublished Ph.D. thesis, Harvard University, 1962.

6. This result is based upon an elasticity of between one and two for export quantity as a function of real export price. The actual arc elasticity between 1948 and 1952 is 1.1. A unitary elasticity applied to exports incrementally yields a loss of $160 million, and an elasticity of two twice as great a loss. By applying the price effects to changes in price on a piecewise basis, one allows other factors - like resumed exports from industrial countries also to play a role.

7. The data on concession and utilization of export licenses is to be found in the Relatório of the Banco do Brasil for 1952, p. 57.

8. This is the account of consultations held by the Fund in November, 1957. "Among the constructive aspects of the economic policy followed in Brazil, the visiting Delegation emphasized the orientation adopted with reference to bilateral trade and payments agreements, in the sense of their reduction in scope and discriminatory nature, and still further, the simplification of the exchange system relating to imports, resulting from the implementation of the new Tariff Legislation." SUMOC, Relatório, 1957, p. 91, translation mine.

9. As estimated from Paul G. Clark and Richard Weisskoff, "Import Demands and Import Policies in Brazil", mimeo, 1966, Table B-26.

FOOTNOTES

10. This significant venture into export promotion is discussed in more detail in Section V.

11. For a fuller discussion of domestic policies and consequences, see my "Observations on Post-1964 Economic Policy in Brazil", in Alfred Stepan, ed., Authoritarian Brazil (Yale, 1973).

11a. For the definition of net government loans in this period, I have taken total central government loans, eschewing the IMF classification into long-term and compensatory. Only by taking totals does one bring out the essential quality of the post-1964 experience compared to the earlier liberalization.

12. Paul Clark, "Brazilian Import Liberalization", mimeo, 1967, p. 2.

13. See the survey on comparative tariffs in Latin America done by the Economic Commission for Latin America, "Customs Duties and Other Import Charges and Restrictions in Latin American Countries: Average Levels of Incidence", E/CN, 12/554, 1961.

14. Joel Bergsman and Arthur Candal, "Industrialization: Past Successes and Future Problems", in H. Ellis, ed., The Economy of Brazil (California, 1969), p. 45.

15. Joel Bergsman, in Brazil: Industrialization and Trade Policies (Oxford, 1970) uses product protection of 35 percent in the agricultural crop sector in 1966, and 137 percent for animal products.

16. S. Morley, "Import Demand and Substitution", in Ellis, ed., Economy of Brazil, presents purported actual exchange rates for different use categories. They seem to include financial surcharges, however, from which some products were exempt, and therefore obscure relative protection. The estimated total tariff exceeds collections, although Morley has intended his sectoral levels to be consistent with them.

17. These are unpublished data gathered by the Conselho de Política Aduaneira.

18. We can write the basic relation between domestic and world prices, in the absence of redundancy, as

$$Pd_0 = (1+t_0)\, Pw_0 \cdot Xr_0$$

where Pd_0 is the domestic price in the base period; t_0 the initial tariff level; Pw_0 the world price in the base period; and Xr_0 the initial exchange rate. Then from a similar equation for the subsequent period we have,

$$\frac{1+t_1}{1+t_0} = \frac{\dfrac{Xr_0 \cdot Pw_0}{Pd_0}}{\dfrac{Xr_1 \cdot Pw_1}{Pd_1}}$$

FOOTNOTES

Even if the exchange rate is adjusted for differential inflation, so that the average tariff is the same, price variation in individual sectors can deviate from that average.

19. The 1959 matrix was estimated from 1960 Census sources and can be found in W. van Ryckegham, "A Model for Economic Planning", in Ellis, ed., Economy of Brazil. The 1971 matrix is presented in Antonio Leão, et al., "Matriz de Insumo-produto do Brasil", in Revista Brasileira de Economia, 27, No. 3, (July/September, 1973). It is based on indirect tax data. Note, however, that the matrix is inconsistent with the sectoral production totals presented in the independent production census.

20. For the Bergsman results, see his Brazil, Chapter 3 and Appendix 3.

21. The formula is derived from the relative prices of value added in a CES production function:

$$\frac{P_a}{P_b} = \frac{W_a}{W_b}\frac{\gamma_b}{\gamma_a}\left[\frac{\left(\frac{\delta}{1-\delta}\right)^{\sigma}\left(\frac{wa}{ra}\right)^{\sigma-1}+1}{\left(\frac{\delta}{1-\delta}\right)^{\sigma}\left(\frac{wb}{rb}\right)^{\sigma-1}+1}\right]^{\frac{1}{1-\sigma}}$$

where P is the price of value added; W is wages; W/r is the relative price of labor to returns on capital; α is the neutral efficiency parameter; and δ and σ are the distribution and substitution parameters. For this derivation, see K. Arrow, et al., "Capital-Labor Substitution and Economic Efficiency", Review of Economic Statistics, 43, No. 3 (August, 1961).

Since the effective rate of protection relates the domestic price of value added to the world price, we then have:

$$\frac{P_b}{P_w} = 1+T_b.$$

22. Thus for distribution parameters of .2 and .3 and elasticities of substitution of .2 and .4 for two sectors whose relative factor prices differ between 10 and 13, the value of the ratio is .82. The greater the elasticities in absolute magnitude the more variable the ratio. For values of .7 and .9, for example, the value of the substitution term is .76. What is important is that its value work in the same direction as the wage ratio, thus permitting the two alternative estimates.

23. For further details see Bergsman, Chapter 6.

24. Francis Masson, "Protection, Prices and Efficiency in the Brazilian Electrical Appliance Industry", mimeo, 1970, p. 1.

25. For equal capital costs, a distribution parameter of .2, and an elasticity of substitution of .8, the implied effective tariff is 49 percent. For capital costs in Brazil twice as great, δ = .3 and σ = .8, the implied level is 124 percent.

26. This description is that contained in the official notice of registration as reprinted in the Monthly Bulletin of the British Chamber of Commerce in Brazil.

FOOTNOTES

27. The author of this plan was Tosta Filho, director of CACEX, the trade division of the Bank of Brazil, and therefore intimately involved in exchange rate policy. It is described extensively by Lakos, "The Effects of Brazil's Foreign Exchange Policy".

28. Nathaniel Leff, Economic Policy-Making and Development in Brazil, 1947-1964, (Wiley, 1968), fails to appreciate this distinction and presumes constancy in export policy when in fact there was decisive change in 1959, reinforced by the 1961 liberalization.

29. Ministério do Planejamento e Coordinacão Econômica, Programa de Ação Econômica do Governo, 1964-1966, pp. 47-49.

30. Jornal do Brasil, March 26, 1971.

31. It is quite likely such finance is greater for exports and for a longer term, and hence the true contribution to differential profits overstated from this source. However, the effects of credit facilities for production have been completely excluded. The total incentives from the side of credit are quite probably understated as a consequence.

32. Exemption from the industrial products tax is said to have been officially implemented only in October, 1967, although the initial enactment dates from November, 1964. This dating is given in a publication of CACEX and updated in Conjuntura Econômica, April, 1973, p. 107. Other sources, including William Tyler, "Obstacles and Incentives in Brazilian Industrial Export Promotion", mimeo, point to August, 1965. I have accepted this latter dating. The delay is improbable in view of other intervening measures to exempt the state value added tax.

    Conversely, Tyler dates the income tax waiver as taking effect only in February, 1967, while the Conjuntura Econômica, following CACEX again, places it in June, 1965. I have taken the latter date.

    Tyler also claims that all incentives based on the federal industrial tax were briefly suspended during the first quarter of 1969 because new legislation superceded the old but had not yet been implemented. Yet there is no evidence of widespread complaint, which surely would have been forthcoming from the already considerable number of exporters of manufactures. I have, therefore, assumed continuity, but have not made allowance for the initial credits which were apparently introduced in July, 1968.

33. The formula for the market share term derives from the definition, $\alpha_{ij} = \frac{\alpha_{i.}\alpha_{.j}}{\alpha_{..}}$

$$\text{Then } \Delta\alpha_{ij} = \frac{\alpha_{..}\Delta(\alpha_{i.}\alpha_{.j}) - \Delta\alpha_{..}(\alpha_{i.}\alpha_{.j})}{\alpha_{..}^2} = \frac{\alpha_{..}(\Delta\alpha_{i.}\alpha_{.j} + \Delta\alpha_{.j}\alpha_{i.}) - \Delta\alpha_{..}(\alpha_{i.}\alpha_{.j})}{\alpha_{..}^2}$$

    With the substitution of the definition of α_{ij} and rearrangement, we obtain the formula in the text.

FOOTNOTES

Brazilian Agricultural Technology and Trade

34. Peter Knight, reports high elasticities for statistical supply functions for corn, beef, and rice - but not soybeans. However his statistical specification is suspect since it excludes output altogether and relates exports directly to the price ratio. Also that more favorable result may partially come from the years before 1953 which saw declining exports in response to fixed exchange rates.

José de Barros, Exportacões de Produtos Não-Tradicionais, IPE Monographs, v. 4, also obtains high elasticities, but derives them arithmetically from estimates of domestic supply and demand elasticities: $\varepsilon_x = \frac{O}{X} \cdot \varepsilon_d - \frac{D}{X} \eta_d$, where ε_x equals the supply elasticity of exports; $\frac{O}{X}$ is the inverse of the ratio of exports to output; ε_d is the domestic supply elasticity; $\frac{D}{X}$ is the inverse of the ratio of demand to exports; and η_d is domestic demand elasticity. Since O/X and D/X are large for non-traditional exports, and η_d is negative, it follows that the export supply elasticity ought to be very large - although direct estimates do not confirm them.

35. Conjuntura Econômica, May 1973, pp. 72-74.

36. Fernando Fajnzylber, "Estudio de Algunos Aspectos Basicos para la Formulacion de una Estrategia de Exportácion de Productos Manufacturadox en Brasil", Rio, 1969. Fajnzylber shows a much greater percentage of foreign than domestic firms engaging in export.

37. The simplest measure of overvaluation, assuming perfectly elastic demand for non-coffee imports and perfectly elastic supply of imports is $R = \frac{t\left(\frac{M}{X}\right)\left(\frac{\eta_m}{\varepsilon_x}\right)}{\frac{M}{X}\left(\frac{\eta_m}{\varepsilon_x}\right) - (1+t)}$

where R is the proportional overvaluation; t is the level of the nominal tariff; M is imports, X is non-coffee exports; η_m is the demand price elasticity of imports; and ε_x is the supply elasticity of exports. Assuming a value of 1 for η_m and 1 for ε_x, and a level of the tariff of 40 percent, say, in 1972, we have $R^m = .18$.

38. The 1971 input-output matrix factor estimates were derived from studies of the structure of costs of firms applying to the Inter-ministerial Council for price increases. They are highly irregular and do not correspond to presumably more correct production censuses.

39. Note that both textiles and clothing are quite labor intensive, as measured in man-years. But because the latter has such a low ratio of value added, and the former has relatively high capital costs (because of depreciation), their domestic resource costs come out high.

FOOTNOTES

40. First National City Bank, Brazil: A New Economic Survey (April, 1974), p. 32.

41. For a useful discussion, replete with empirical analysis, see José Eduardo Pereira, Financiamento Externo e Crescimento Econômico no Brasil: 1966-1973, Research Report No. 27, IPEA/INPES, 1974. I have drawn on it extensively.

42. These estimates are based upon estimates of holdings of reserves in different assets and their average interest rates. They are reported in Financiamento Externo, p. 100.

43. Since external loans to public authorities were relatively limited in this period, such a ratio is more meaningful than one based upon total loans. Also, since other domestic intermediaries are more specialized in their lending, primarily to consumers or for housing, the legitimate comparison is with commercial banks.

44. See, for a summary of the arguments surrounding this issue, Gustar Papanek, "The Effect of Aid and Other Resource Transfers on Savings and Growth in Less Developed Countries", Economic Journal, 82 (September 1972).

45. For a recent debate in this subject, featuring contribution by Carlos Langoni and myself, see Dados, No. 11, Rio de Janeiro, 1973.

TABLE A-I

Basic Economic Series

	GDP mill current Cr$	GDP mill 1949 Cr$	% Growth real GDP	Population (mill.)	Per Capita Income 1949 Cr$	% Growth Per Capita Income
1947	164.9	200.7		48.4	4.1	
1948	194.6	215.6	7.4	49.6	4.3	4.7
1949	229.9	229.9	6.6	50.8	4.5	4.3
1950	272.1	244.8	6.5	52.0	4.7	4.0
1951	322.7	259.3	6.0	53.5	4.8	2.8
1952	397.3	281.9	8.7	55.1	5.1	5.6
1953	469.5	289.0	2.5	56.8	5.1	-0.5
1954	627.4	318.2	10.1	58.5	5.4	7.0
1955	783.4	340.0	6.9	60.2	5.6	3.7
1956	995.9	350.8	3.2	62.0	5.7	0.2
1957	1218.0	379.1	8.1	63.1	5.9	4.9
1958	1457.5	408.3	7.7	65.8	6.2	4.6
1959	1989.6	431.1	5.6	67.8	6.4	2.4
1960	2755.7	472.9	9.7	69.8	6.8	6.6
1961	4052.1	521.6	10.3	71.8	7.3	7.2
1962	6601.4	549.0	5.3	73.9	7.4	2.3
1963	11928.6	557.5	1.5	76.0	7.3	-1.3
1964	23055.0	573.8	2.9	78.2	7.3	0
1965	36817.6	589.5	2.7	80.5	7.3	-0.1
1966	53724.1	619.6	5.1	82.8	7.5	2.2
1967	71486.3	649.2	4.8	85.2	7.6	1.8
1968	99879.8	709.7	9.3	87.6	8.1	6.3
1969	133116.9	773.6	9.0	90.2	8.6	5.9
1970[b]	174624.1	847.2	9.5	92.8	9.1	6.4
1971[b]	223996.3	942.8	11.3	95.4	9.9	8.2
1972[b]	302323.2	1040.8	10.4	98.2	10.6	7.3
1973[b]	392358.1[a]	1159.5	11.4	101.0	11.5	8.3

Source: Conjuntura Econômica. Report of Central Bank, 1973.

[a] Estimated from real growth and increase in wholesale price index.

[b] New Series, published October 1974:

1970	206564.7
1971	274267.4
1972	359132.7
1973	477163.1

TABLE A-II

Sectoral Output and Price Indexes

	Output		Wholesale Prices, Aggregate Supply Weights	
	Industry	Agriculture	Industry	Agriculture
	1949=100		1965-67=100	
1947	81.5	89.5	.93	.77
1948	90.7	95.7	.93	.92
1949	100.0	100.0	.97	1.05
1950	111.3	101.5	1.01	1.26
1951	118.4	102.2	1.20	1.51
1952	124.3	111.5	1.29	1.73
1953	135.1	111.7	1.49	1.96
1954	146.8	120.5	1.96	2.54
1955	162.4	129.8	2.22	2.84
1956	173.6	126.7	2.76	3.29
1957	183.5	138.5	3.24	3.57
1958	213.2	141.3	3.79	3.87
1959	238.5	148.8	5.44	5.13
1960	261.4	156.1	6.71	7.09
1961	289.2	167.9	9.56	9.56
1962	311.8	177.1	13.9	15.3
1963	312.4	178.9	25.4	25.3
1964	328.5	181.3	46.6	50.5
1965	313.0	206.3	75.2	71.9
1966	349.6	199.8	99.5	102
1967	360.0	211.1	125	127
1968	415.8	214.0	163	149
1969	460.5	226.8	196	181
1970	511.8	239.5	229	233
1971	569.1	266.8	269	292
1972	647.5	278.8	312	357
1973	744.6[a]	288.6	358	425

Source: Conjuntura Econômica; Report of the Central Bank, 1973

[a]Estimated

TABLE A-III

Financial Statistics

	Money Supply mill Cr $ end of year balance	Implicit GDP Deflator 1949=100	% Change GDP Deflator	Treasury Cash Deficit[a] mill Cr $	Exchange Rate[b] Cr $ per $
1947	43	82.2	--	- .5	.0187
1948	47	90.3	9.9	0	.0187
1949	55	100.0	10.7	2.8	.0187
1950	72	111.2	11.2	4.3	.0187
1951	84	124.5	12.0	-2.8	.0187
1952	97	140.9	13.2	-2.3	.0187
1953	115	162.5	15.3	2.9	.0429
1954	143	197.2	21.4	2.7	.0624
1955	166	230.4	16.8	7.6	.0986
1956	202	283.9	23.2	32.9	.112
1957	267	321.3	13.2	32.9	.087
1958	329	357.0	11.1	30.7	.166
1959	470	461.4	29.2	42.4	.221
1960	652	582.7	26.3	63.6	.229
1961	994	776.9	33.3	125.2	.279
1962	1631	1202.4	54.8	280.9	.387
1963	2685	2139.7	78.0	504.7	.617
1964	4875	4018.0	87.8	728.2	1.234
1965	8750	6245.6	55.4	592.9	1.893
1966	9959	8670.8	38.8	586.6	2.220
1967	14513	11011.4	27.1	1224.7	2.663
1968	20174	14073.5	27.8	1226.7	3.409
1969	26735	17207.5	22.3	755.8	4.076
1970	33638	20611.9	19.8	738.8	4.595
1971	44514	24819.3	20.4	672.3	5.287
1972	61550	29047.2	17.0	516.1	5.934
1973	90490	33840.0[c]	16.5[d]	-295.1	6.126

Source: Conjuntura Econômica; A Economia Brasileira e suas Perspectivas. Report of the Central Bank, 1973.

[a] Negative values indicate surplus.

[b] 1947 - Jan. 1953 - Official rate
Feb. 1953 - Sept. 1953 - Free market rate, Rio de Janeiro
Oct. 1953 - Aug. 1957 - Weighted average of 5 auction rates
Sept. 1957 - Jan. 1961 - General category rate
March 1961 - July 1968 - Average of daily quotations of commercial banks
Aug. 1968 - Feb. 1970 - Buying rate of Bank of Brazil
March 1970 - Buying rate of Central Bank

[c] Estimated from change in wholesale price index

[d] Change in wholesale price index

	1947[a]	1948[a]	1949[a]	1950	1951	1952	1953	1954
A. Merchandise Account	130	278	153	425	68	-288	424	148
Exports (FOB)	1157	1183	1100	1359	1771	1416	1540	1558
Imports (FOB)	-1027	- 905	- 947	- 934	-1703	-1702	-1116	-1410
B. Net Services	- 299	- 323	- 274	- 531	- 539	- 424	- 442	- 383
Investment Income	- 55	- 105	- 102	- 110	- 157	- 121	- 165	- 137
C. Balance on Current Account (A + B)	- 169	- 45	- 121	106	- 471	- 710	18	- 235
D. Long-Term Capital	27	- 65	37	- 30	39	96	85	139
Direct Investment	55	68	44	39	63	94	60	51
Net Loans to Private Sector	- 13	- 7	--	- 9	- 2	- 3	36	53
Net Loans to Government	- 27	- 123	- 7	- 60	- 22	5	- 11	35
E. Total: (C + D)	- 142	- 110	- 84	76	- 432	- 614	103	- 96
F. Private Short-term Capital	5	20	- 12	- 2	21	- 31	14	- 29
Resolutions 289 and 63	--	--	--	--	--	--	--	--
G. Net Errors and Omissions	- 58	14	110	- 51	106	30	- 75	15
H. Total: (E + F + G)	- 195	- 76	14	23	- 305	-615	42	- 110
I. Swaps & Deferred Import Payments	82	34	28	- 104	30	564	- 398	- 98
J. Other Official Monetary Movements	113	42	- 43	81	275	51	356[b]	208
Changes in Asset Holdings and Gold	46	17	- 60	51	- 109	- 4	35	38

Source: IMF Balance of Payments Yearbook; for 1973, International Financial Statistics, Jan. 1975, (Direct investment from Report of the Central Bank, 1973).

[a] 1947-1949 Converted from old cruzeiros at rate of 18.5.

[b] includes $300 million Ex-Im Loan originally classified under deferred import payments.

[c] Calculated as exports minus trade balance.

[d] Total capital inflow.

TABLE A-IV
Balance of Payments
(mill $)

1956	1957	1958	1959	1960	1961	1962	1963	1964
437	107	65	72	- 23	113	- 89	112	344
1483	1392	1244	1282	1270	1405	1215	1406	1430
1046	-1285	-1179	-1210	-1293	-1292	-1304	-1294	-1086
445	- 406	- 311	- 404	- 494	- 374	- 463	- 283	- 263
140	- 128	- 114	- 150	- 194	- 184	- 199	- 144	- 190
8	- 299	- 246	- 332	- 517	- 261	- 452	- 171	81
244	250	216	270	111	400	224	140	167
137	178	128	158	138	147	132	87	86
98	17	138	153	- 3	130	6	- 45	- 42
9	- 74	- 50	- 41	- 24	123	86	98	123
252	- 49	- 30	- 62	- 406	139	- 228	- 31	248
12	32	27	- 59	81	- 115	49	26	24
--	--	--	--	--	--	--	--	--
58	- 141	- 180	48	10	49	- 138	- 76	- 217
206	- 158	- 183	- 73	- 315	73	- 317	- 81	55
20	- 24	- 31	98	178	- 74	210	- 16	5
186	182	214	- 25	137	1	107	97	- 60
185	161	41	12	41	120	112	40	0

1965	1966	1967	1968	1969	1970	1971	1972	197
655	438	213	26	318	232	- 364	- 232	12
1596	1741	1654	1881	2311	2739	2882	3630	619
- 941	-1303	-1441	-1855	-1993	-2507	-3246	-3862	607
- 372	- 471	- 490	- 552	- 654	- 793	- 949	-1140	
- 259	- 284	- 297	- 312	- 366	- 402	- 466	- 603	- 63
283	- 33	- 277	- 526	- 336	- 561	-1313	-1372	-131
71	187	207	315	723	1009	1423	3175	386
128	149	93	150	252	145	215	365	98
- 49	- 24	63	79	281	202	486	1519	
- 18	72	51	86	190	679	744	1364	
354	154	- 70	- 211	387	448	110	1803	255
20	- 16	- 77	359	278	77	457	26	
136	124	- 41	298	--	--	--	--	--
- 31	- 19	- 35	- 1	- 20	38	- 9	403	- 186
343	119	- 182	147	645	563	558	2232	
- 372	- 155	+ 20						
29	36	202	- 147	- 645	- 563	- 558	-2232	-2366
- 229	54	256	- 98	- 481	- 552	- 529	-2286	-2368

TABLE A-IV
Balance of Payments
(mill $)

50	1951	1952	1953	1954	1955	1956	1957	1958	1959	1
25	68	-288	424	148	320	437	107	65	72	-
59	1771	1416	1540	1558	1419	1483	1392	1244	1282	
84	-1703	-1702	-1116	-1410	-1099	-1046	-1285	-1179	-1210	-
31	- 539	- 424	- 442	- 383	- 352	- 445	- 406	- 311	- 404	-
10	- 157	- 121	- 165	- 137	- 114	- 140	- 128	- 114	- 150	-
96	- 471	- 710	18	- 235	- 32	8	- 299	- 246	- 332	-
00	39	96	85	139	161	244	250	216	270	
59	63	94	60	51	79	137	178	128	158	
9	- 2	- 3	36	53	70	98	17	138	153	-
10	- 22	5	- 11	35	12	9	- 74	- 50	- 41	-
76	- 432	- 614	103	- 96	129	252	- 49	- 30	- 62	-
2	21	- 31	14	- 29	- 84	12	32	27	- 59	
-	--	--	--	--	--	--	--	--	--	
1	106	30	- 75	15	52	- 58	- 141	- 180	48	
3	- 305	-615	42	- 110	97	206	- 158	- 183	- 73	-
4	30	564	- 398	- 98	- 26	- 20	- 24	- 31	98	
1	275	51	356[b]	208	- 71	- 186	182	214	- 25	
1	- 109	- 4	35	38	- 12	- 185	161	41	12	

onal Financial Statistics,
ral Bank, 1973).

deferred import payments.