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DISEQUILIBRIUM SYSTEMS, INDUSTRIALIZATION, AND INFLATION: THE BRAZILIAN CASE

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Disequilibrium Systems, Industrialization,  
and Inflation: The Brazilian Case\*

I. Introduction:

In the postwar period, the developing countries have generally adopted disequilibrium exchange systems as the best means of dealing with balance of payments pressures.<sup>1</sup> Contrary to the advice and leverage exerted by the International Monetary Fund and the Western Establishment,<sup>2</sup> import restrictions, exchange control, etc., have not only persisted, they have multiplied. Two general factors help explain this preference for disequilibrium systems: first, it is widely believed that devaluation will accelerate strongly the rate of inflation. The fear of inflation per se, and the negative implication of inflation for balance of payments relief, make devaluation an unpopular as well as possibly ineffective remedy. Second, developing countries typically view exchange control as one of the few "effective" instruments which is available for influencing development. In contrast, the I.M.F. stresses that such instruments cause distortions in the economy and are usually ineffective in bringing about a forced equilibrium in the balance of payments.<sup>3</sup> Thus,

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<sup>1</sup>In the year 1963, ninety-one countries had restrictions of various types--thirty-five had quantitative restrictions on imports, ten had multiple exchange rates, and forty-six had restrictions of other types. By 1965, seventy-five countries were still using Article 14, Section 2 in the I.M.F. Charter. Source: International Monetary Fund Annual Report on Exchange Restrictions, various dates.

<sup>2</sup>The Western Establishment refers to the governments, economists, and other organizations in the developed countries.

<sup>3</sup>Cf. I.M.F. Staff Papers, various issues, and I.M.F., The Fund and Bank Review: Finance and Development, in addition to the Charter. "

according to the I.M.F., even though inflationary, devaluation is to be preferred to multiple exchange rates, quantitative controls, and other restrictions except during a short-run transition period.

The present article suggests that devaluation may be non-inflationary under conditions prevailing in numerous developing countries. A disequilibrium system, on the other hand, may be either "appropriate" or "inappropriate." Clearly, there is not just one disequilibrium system. It is true that one typically "inappropriate" system--overvalued exchange rates and non-price rationing--has predominated in the postwar period.<sup>4</sup> This concession, however, is not tantamount to the recommendation that all developing countries should seek devaluation as a means for adopting and maintaining a system with a unitary exchange rate, tariffs, and a completely free market.

In what follows, the case of Brazil is used to illustrate some of the conditions under which conventional notions may be in error. Brazil has experimented with widely differing forms of exchange control which have incorporated both price and non-price adjustment mechanisms. Between 1947 and 1953 overvaluation and non-price import rationing were the mainstays of the disequilibrium system, while between 1953 and 1961 fluctuating, multiple exchange rates were central. Not only did the two disequilibrium systems have vastly differing effects on the economy, but the large-scale devaluation involved in the transition from non-price rationing to price rationing of imports had a very unexpected impact on domestic prices. In the next section each of the systems is described briefly. Section III attempts to provide an explanation

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<sup>4</sup>This has been demonstrated in numerous studies of individual countries too numerous to quote. One descriptive study of recent vintage is: I.S. Friedman, Foreign Exchange Control and the Evolution of the International Payments System (Washington, D.C., mimeo, 1953).

of two seemingly paradoxical facts: 1) that the sizeable devaluation in Brazil was deflationary; and 2) that the fluctuating, multiple exchange-rate system induced more rapid GNP growth while holding the balance of payments in (forced) equilibrium. The final section discusses the choice between an I.M.F.-type system and appropriate disequilibrium systems.

## II. Background and Description:

Shortly after the Second World War Brazil established a fixed, unitary exchange rate with few controls. But an overvalued exchange rate caused increasing balance of payments deficits and forced the government to choose between a sizeable devaluation and some combination of import and exchange restrictions. Fear of inflation and a skepticism that devaluation would improve the purchasing power of exports led to the choice of exchange control. Although these controls were at first mild, they became more extensive as imports continued to increase relative to the capacity to import.

The system of import licensing and rationing which supported the exchange rate overvaluation was clearly "inappropriate." In a previous article it was shown that the large and increasing gap between the official exchange rate and the scarcity value of foreign exchange led to widespread short-circuiting which reduced allocative efficiency, equity in the distribution of foreign exchange, and balance of payments control.<sup>5</sup> In short, exchange licenses were allocated via bribes and personal favoritism to importers who then sold the imported goods at their scarcity value. As a consequence, low priority luxury imports, chiefly consumer durables, which were more profitable than

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<sup>5</sup> See D. Huddle, "Furtado on Exchange Control and Economic Development: An Evaluation and Reinterpretation of the Brazilian Case," Economic Development and Cultural Change, April, 1967.

imports of equipment and intermediate products, became a high proportion of total imports.<sup>6</sup> Within several years these illegal means of dispensing imports became so widespread that the authorities lost control of the licensing system and large short-term debts accumulated rapidly. With an external crisis at hand, the weakness of the control system was self-evident by 1953 and the government began to search for radically new means of meeting its objectives.

After some experimentation, the Aranha Plan was adopted in October 1953.<sup>7</sup> Its basic features were fluctuating, multiple exchange rates for more than half of total imports; a free market for capital and invisibles; and adjustable multiple export rates which distinguished between prime and non-prime exports. In effect, the new system constituted a large-scale devaluation, and discriminatory taxes and subsidies for imports and exports, which constantly depreciated-appreciated according to the supply and demand for foreign exchange.

The official exchange rate remained unchanged at cr. \$18.5 per U.S. dollar. But no transactions took place at this rate. Differential exchange bonuses were added to the official rate for exports, and the weighted average of the official plus bonus rates for exports constituted the "cost of exchange" rate. This rate applied to all imports of the government, certain petroleum and machinery products, remittances of interest and earning on foreign capital, and loans registered with the Superintendency of Money and Credit (the SUMOC).

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<sup>6</sup>Consumer durables, as well as other consumables, were a high proportion of high absolute imports during the period. Cf. ibid., Tables IV, V.

<sup>7</sup>Officially instruction no. 70 of SUMOC as ratified by laws 2145 and 2410 of December 1953 and January 1955.

All other imports were sold at auction in competitive markets.<sup>8</sup> Foreign exchange was sold at auction in five basic categories each of which was graded according to the supposed essentiality of the import to the domestic economy. Category I was "highly essential," category II was less essential, etc., to category V which was comprised of luxuries and imports similar to goods producible domestically. The rate structure for imports, exports, and other transactions is shown in Table I. Selected major imports are noted in Table II. With few exceptions these categories closely paralleled those established, but not implemented under the earlier direct rationing system.

The apparently complex multiple-rate system was greatly simplified by the operation of market forces.<sup>9</sup> Administrative discretion was limited to the choice of imports for each particular category. Within each category the composition of imports was determined by the competitive bidding of importers in the auctions. Although the authorities moved imports from one category to another over time so as to adjust the import structure to the changing requirements of the economy, there was on the whole a great deal of stability in the system.<sup>10</sup>

The objectives sought through the fluctuating, multiple-rate system were numerous. One important objective was to provide a smooth flow of import-

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<sup>8</sup> Foreign exchange was auctioned in the stock exchanges of each major city once a week at a specified time. Stock brokers acted as auctioneers for a small commission and were not themselves allowed to purchase exchange. Other brokers acted as agents for importers in the bidding and they also received a small commission for this service. Importers were not permitted to bid but could be present to observe the bidding.

<sup>9</sup> Individual currencies were auctioned separately, but this complication is ignored for the purpose of the present paper.

<sup>10</sup> The category changes were enumerated in numerous SUMOC instructions. Usually the changes were minor.

TABLE I  
THE TOTAL RATE STRUCTURE AND RELATIONSHIPS BETWEEN  
AUCTION RATES: OCTOBER 1953

(Weighted Averages, all currencies, to nearest 1/100  
Cruzeiro per U.S. dollar)

Type of Category	Government Buying Rate	Government Selling Rate	% Spread from Weighted Average	Category Allocation to Total
(1)	(2)	(3)	(4)	(5)
Official	18.3	18.7	--	--
Coffee	23.2		-56.9	
Other Exports	28.2		-29.1	
"Cost of Exchange"	25.0		-45.6	
Category I	--	31.1	-17.0	40%
Category II	--	35.3	- 3.1	30%
Category III	--	36.7	.8	20%
Category IV	--	44.7	17.3	8%
Free Market	46.3	46.3	27.2	
Category V	--	55.5	52.5	2%

Source: Computed from data of Superintendencia de Moeda e Credito, Rio de Janeiro.

<sup>1</sup> Note that auction rates in the table equal auction premia plus the official rate.

TABLE II

Summary of Principal Commodities Mentioned in Instruction 70

Category I	Petroleum products with the exception of ordinary gasoline. Coal Barbed wire Fertilizers Insecticides Some drugs, chemicals, and pharmaceutical products Agricultural machinery Machinery for mining and tanning industries Airplane engines Equipment for oil well drilling, oil production and refining and mining of coal and ores. Turbines and hydraulic generators Other
Category II	Ordinary gasoline Scrap metal and metal ingots Mineral ores Some drugs, chemicals and pharmaceutical products Spare parts for road-building machinery, and railroad rolling stock. Many raw materials. Other
Category III	Railroad rolling stock Wool Industrial vehicles Textile machinery Aircraft Internal combustion and diesel engines Some drugs and chemicals Machinery for the industries of textiles, shoes, paper, glass rubber, as well as for road building Paper other than newsprint Other
Category IV	Nylon yarn for stocking industry Machinery for the industries of cigarettes, Vegetable oils, sugar, knitted goods Some drugs and chemicals Other
Category V	All other commodities not included in the other categories

Source: Instruction 70, Superintendencia de Moeda e Crédito, Rio de Janeiro, Brazil



inputs of capital and intermediate products for domestic producers. Long delays and red tape were typical in the previous licensing system, and these had hindered normal production. Auctions greatly reduced both delays and red tape. A second objective was to force equilibrium in the balance of payments by auctioning to importers only currently earned foreign exchange; any change in supply and demand functions would be accommodated by automatic exchange-rate adjustments. Licensing was used only to insure that imports were matched with the category in which exchange was purchased. Third, in conjunction with the "law of similars," the multiple categories were designed to offer protection-subsidies to chosen infant industries.<sup>11</sup> Domestic producers could petition the Council of SUMOC to transfer competing imports to lower categories.<sup>12</sup> Added protection was typically granted if the producer convinced the SUMOC that he could satisfy domestic demand at a fairly competitive price. In addition, favored domestic producers were able to import inputs in the more essential categories. Essentiality depended partly also upon presumed effects of category classification of a product upon the domestic cost of living. Faced with the continuing inflationary pressures, the government attempted to hold down the cost of wage goods. A fourth major objective was to generate revenue for the government which could be used to promote development.

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<sup>11</sup>The "law of similars" referred to all types of measures to protect domestically produced similars to imports. A typical example was the re-classification of penicillin imports from category II to V. When the I.N.F. expressed displeasure with this change, the Brazilians showed that domestic firms were supplying the home market at a "competitive price." Source: Unpublished material from the SUMOC (Rio de Janeiro, Brazil).

<sup>12</sup>The Council of SUMOC judged all requests for category changes. It was comprised of officials of the Bank of Brazil, the SUMOC, and outside appointees of the President.

These major objectives were by no means always consistent with one another. For instance, subsidizing infant industry inputs and cost of living imports produced less revenue for the government, and sometimes conflicted with creation of new infant industries. These and other inconsistencies were resolved pragmatically. However, for the most part, the authorities were able to reconcile these problems reasonably well.<sup>13</sup>

### III. The Impact of the New Exchange System:

An evaluation of the auction system must take into account the unfavorable conditions under which it operated. First, exchange reserves and gold had been exhausted.<sup>14</sup> Moreover, the large commercial arrears and foreign debt were predominantly short term;<sup>15</sup> there was, therefore, scant leeway for exceeding current exchange earnings. Secondly, the previously rising commodity terms of trade took a sudden turn for the worse in late 1954.<sup>16</sup> Third, the rate of inflation began to accelerate prior to the reform, and placed additional pressures on the exchange system (see Table III).

Despite these disadvantages the GNP growth rate (in real terms per capita corrected for terms of trade changes) averaged 3.2 per cent yearly post-reform as compared to only 1 per cent pre-reform (1947-1953). Manufacturing industry--the leading sector--averaged 9 per cent product increase yearly in

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<sup>13</sup> See D. Huddle "Multiple Policy Objectives and Exchange Auctions" (mimeographed working paper), October, 1966.

<sup>14</sup> Gold and foreign exchange reserves fell from U.S. \$760 million in January 1946 to only about U.S. \$100 million by January 1948. Source: Boletim SUMOC (Rio de Janeiro), various issues.

<sup>15</sup> Total arrears and debts reached over U.S. \$1 billion by 1953. Ibid.

<sup>16</sup> They fell from an index of 100 in 1954 to 89 by 1955, and then to 87 by 1957. Ibid.

TABLE III

## ANNUAL ECONOMIC INDICATORS

Year	Import Exchange Rate 1 (% Δ)	Average Money Supply 2 (% Δ)	Cost of Living 3 (% Δ)	Wholesale Prices (ex. coffee) (% Δ)	Industrial Wages 4 (% Δ)	Minimum Wages 5 (% Δ)	Exchange Revenue/ GFCF 6 (%)	GFCF/ Government Revenues (%)
1951	0	24.3	7.7	18.5	8	0	--	--
1952	0	15.3	25.0	12.5	14	216 (Jan.)	--	43.
1953	100	16.9	20.0	16.7	3	0	--	39.
1954	30.	20.6	19.0	26.2	46	100 (Aug.)	41.8	39.
1955	50.	19.6	20.0	18.9	32	0	23.9	46.
1956	25	19.1	21.7	20.6	23	50 (Aug.)	42.0	49.
1957	13	31.9	19.2	14.5	15	0	50.6	65.9
1958	45	21.4	15.0	14.4	12	0	56.8	69.
1959	55	41.8	37.6	42.8	40	58 (Jan.)	57.1	77.
1960	10	38.2	34.7	31.5	n/a	60 (Oct.)	82.6	70.
1961	54	43.7	38.3	40.3	n/a	40 (Oct.)	--	--

1. Auction import rate after 1952; includes ad valorem tariffs after 1956.

2. Defined as currency and demand deposits in the hands of the public.

3. Sao Paulo (capital).

4. Refers to median wage in industrial establishments with annual sales above 200,000 cr.'s until 1958 thereafter it refers to hourly wage for production workers.

5. The minimum wage has not been previously raised since December 1943.

6. The percentages of exchange revenue used to purchase coffee stocks were: 1954 (36.5); 1955 (103.); 1956 (9.8); 1957 (44.2); 1958 (64.); 1959 (93.2); 1960 (43.3)  
GFCF refers to government fixed capital formation.

Source: Money Supply: Boletim, Bank of Brazil, various dates; wages 1958-59 Yearbook of Labor Statistics

ILO (Geneva) 1966; all other: Conjuntura Economica, Fundacao Getulio Vargas, various dates.

real terms between 1953 and 1961.<sup>17</sup> Moreover, domestic prices were stabilized between 1954 and 1959 while a rough equilibrium was forced in the external sector.

A. Effects of the Exchange Reform on Domestic Prices

One of the primary reasons for maintaining the previous disequilibrium system was that devaluation was expected to greatly accelerate the already high rate of domestic inflation.<sup>18</sup> It is indeed true that a devaluation which increases the domestic prices of importables and exportables relative to other prices in the economy is certain to raise a price index that includes importables and exportables as well as non-traded goods. In fact, this is the fundamental mechanism which initiates the first positive effect of devaluation. Arnold Harberger has shown that a devaluation in Latin American countries can usually be expected to result in price inflation of approximately one-half the percentage of the devaluation in the short run, even though the wage rate does not increase.<sup>19</sup> Moreover, Harberger demonstrates that countries anticipating a large-scale devaluation cannot depend upon fiscal and monetary policy to negate a devaluation's price impact without causing a serious lapse in the rate of economic growth.<sup>20</sup>

Since Harberger's estimate of devaluation-induced inflation was purposely conservative and since lapses in growth have been typical rather than

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<sup>17</sup> Source: calculated from data of Fundacao Getulio Vargas, Rio de Janeiro, Brazil.

<sup>18</sup> Cf. Carteira de Exportacao E Importacao, Bank of Brazil (Rio de Janeiro, Brazil, 1953) for a statement on why Brazil did not want to devalue the cruzeiro.

<sup>19</sup> "Some Notes on Inflation" in Baer and Kerstenetsky (eds.), Inflation and Growth in Latin America (Irwin Co., Homewood, Illinois, 1964), pp. 319-352.

<sup>20</sup> Ibid., pp. 348-349.

unusual in instances where standard stabilization policies have been applied, it would appear that inflationary devaluations will have to be lived with in the future.<sup>21</sup> Fortunately, however, this conclusion may not hold in cases where depreciation is undertaken from a position of both overvalued currencies and non-price import rationing for the following reason:<sup>22</sup> if a fixed overvalued exchange rate is maintained by non-price rationing (import licensing), the price of imports to final users will tend to rise because buyers of the underpriced import licenses will find it profitable to resell imports at their scarcity value rather than at the official price plus some normal mark-up. Only if the government is able to fix the prices of all final imported consumption goods and all domestically produced goods with an import content will the inflationary impact of a rising scarcity value of foreign exchange be avoidable. But governments clearly lack the means of implementing a comprehensive set of price controls. Hence, although some importers might be partially constrained from charging full scarcity value, the tendency would be in this direction.<sup>23</sup>

A similar process occurred in Brazil. The large-scale devaluation was expected to accelerate the rate of inflation, but after the export exchange rate depreciated instantaneously by almost 40 per cent and the weighted average import rate by over 100 per cent within a few months, there was no

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<sup>21</sup>Cf. Harberger, ibid., pp. 330-335 for comments on earlier stabilization efforts in Chile. Also see Carlos Diaz Alejandro, Exchange Rate Devaluation in a Semi-Industrialized Country (MIT Press, Cambridge, Massachusetts, 1965) for a summary of the stabilization effort in Argentina. Brazil's experience has been similar since 1964. The economy has been operating at a low capacity and low growth rate during the stabilization efforts.

<sup>22</sup>Harberger, ibid., pp. 349-351, mentions the same possibility.

<sup>23</sup>They may, for example, charge old customers a lower price. Also, the government can successfully hold down the price of some more easily homogenous and identifiable goods. See note 33.

apparent inflationary impact. Although domestic prices increased in 1954 relative to 1953 (see Table III) the difference was negligible and may be explained by the following factors: 1) an increased budget deficit of the Federal government; 2) increased lending by the Bank of Brazil to the states; 3) transfers to the coffee sector after the collapse of the market in September 1954; and 4) the sizeable increase in the minimum wage prior to the reform (see Table III). Government deficits were partly supported by the printing of money--the money supply increased by over 20 per cent in 1954. However, both these deficits and the money supply would have increased by far more--approximately 60 rather than 20 per cent--if government revenues from buying and selling foreign exchange had not risen so dramatically.<sup>24</sup> In any event, the primary sources of inflation in 1954 were completely unrelated to the devaluation per se, and should have accelerated the rate of price increase far above what was observed.<sup>25</sup> Thus, it would appear that the devaluation and transition from overvalued rates and non-price rationing to multiple, fluctuating rates were, on balance, deflationary.

That the devaluation-exchange reform was deflationary is explained partly by the behavior of importers during the pre-devaluation years. Rather than charging the official rate overvalued plus some normal markup, they

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<sup>24</sup> Government purchases of coffee stocks totaled about \$10 billion cruzeiros; stabilization loans to state governments were about \$6 billion; and the budget deficit was about \$4 billion. Source: Boletim SUMOC (Rio de Janeiro).

<sup>25</sup> Government deficits had been typically financed primarily by emission of money previous to auctions. But after the October 1953 reform, money emissions financed only about 25 per cent of the deficits whereas the difference in the government buying and selling rate of exchange financed from 46 per cent (in 1956) to 90 per cent (including tariffs in 1960) of the deficit. Source: Ibid.

charged approximately the scarcity value of the import. In Brazil, any tendency to charge much less than the scarcity value was offset by widespread illegal selling of exchange licenses by minor officials.<sup>26</sup> Importers had to pay a "bonus" to minor bureaucrats which itself varied with the scarcity of import licenses.<sup>27</sup> The new system removed these illegal opportunities by shifting the sale of foreign exchange to an open, competitive market. Once on the market, the price of foreign exchange depreciated sharply and resulted in a de facto transfer of the windfall subsidies of formerly favored importers and bureaucrats to the government. The latter then transferred a part of this revenue to exporters--via the 40 per cent depreciation of the export exchange rate--and to importers of "so-called" essential commodities--either via preferential treatment in the auctions or total exclusion from the auctions. What is worth noting here is that auctions greatly hindered any further attempts by minor bureaucrats to engage in illegal, profitable sales of exchange.<sup>28</sup> Nor could importers (already charging scarcity value to their customers) presumably gain by increasing their mark-up on imports post-devaluation. By removing these leakages auctions greatly reduced "unintended" subsidies.<sup>29</sup>

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<sup>26</sup>This point and the evidence are discussed in D. Huddle, op. cit.

<sup>27</sup>Ibid.

<sup>28</sup>Since the distribution of exchange among the various categories was set by the Council of SUMOC--presumably a group immune to bribery--and was openly known by all importers, malfeasance was kept to a minimum.

<sup>29</sup>Although the scarcity values of individual imports changed quite significantly after the devaluation, this was much less the case for imports in toto. For example, while the scarcity value of consumer's luxuries no doubt increased, that of essential imports of raw materials and capital goods diminished, parri passu, with lesser and greater quantities of exchange, respectively, channeled to each class of imports. As a consequence, domestically produced goods which had heavy import-inputs did not rise greatly in price in

(continued on following page)

The devaluation-exchange reform systematically redistributed subsidies derived from the exchange system. Windfalls were transferred from bureaucrats and favored importers to the government, importers of "essentials," and exporters. Because the latter groups had higher propensities to save and invest out of these funds (lower propensities to consume) than the former groups, the multiple auction system was deflationary.<sup>30</sup> Government revenue from exchange operations, for instance, was tied by law to uses which had a relatively high investment content--social overhead capital and loans to agriculture. Largely as a consequence of the added revenue, the government's investment coefficient increased substantially in 1954 and remained high thereafter relative to pre-1954 years (see Table III). In contrast, the saving-investment coefficient of previous recipients of subsidies was probably very low.<sup>31</sup> Thus

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(continued from preceding page)

price in most instances, and in some cases actually fell. Cf. Conjectura Economica Fundacao Getulio Vargas (Rio de Janeiro), various issues for individual commodity import price indices for the years 1953-1963. See D. Huddle, op. cit., p. 22, Table VII, for an estimate of bribes and windfall profits between 1948 and 1953.

<sup>30</sup>E. Sohlmen, Flexible Exchange Rates, University of Chicago Press (Chicago, 1961), argues that the price level may fall after devaluation and the removal of quantitative restrictions, because production according to comparative advantages will ameliorate price rises. This is true assuming that devaluation to a new level of prices will reflect the true, dynamic comparative advantages better than did the overvalued rates. This problem is analyzed in a following section.

<sup>31</sup>The evidence on this proposition is cited in: D. Huddle, op. cit. Although net receipts from auctions were used also for purchases of excess supplies of coffee from domestic producers, revenues after these purchases were sizeable except in 1955 and 1959. The remainder of the revenue went almost exclusively to investment. Moreover, it can be argued that coffee producers were discriminated against because they had a less favorable export exchange rate than other exporters. The revenues returned to them by purchase of excess production merely provided a partial offset to this discrimination. However, the purchase of excess stocks had the unfortunate effect of encouraging production in the more fertile new areas while just maintaining uneconomic producers in Sao Paulo.



aside from the more "equitable" distribution of imports and incomes after the reform, the devaluation had powerful and desirable re-allocation effects which raised the investment coefficient and helped stabilize domestic prices.<sup>32</sup>

A final, though perhaps less important, reason why the devaluation tended to be deflationary was that non-luxury consumption imports which constituted general cost-of-living goods were treated very favorably in the multiple-rate structure. For instance, wheat was imported at the cost-of-exchange rate and essential drugs and pharmaceuticals at the category I rate.<sup>33</sup> At the same time, domestic production of many cost-of-living commodities was encouraged by import-input subsidies in the auctions. Fertilizers, insecticides, and agricultural machinery were included in category I at first, and later shifted to an even more favorable special auction category.<sup>34</sup> In addition, workers had less incentive to demand wage increases immediately after the reform.<sup>35</sup> Thus, the expected rise in the cost-of-living price index was ameliorated both directly and indirectly.

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<sup>32</sup>The reform unquestionably led to a more equitable distribution of imports. In fact, the reform was necessitated to a great extent just in order to quell domestic discontent regarding the old system. Reaction of the public and importers to the new system was generally very favorable. Of course, those who lost windfalls were in no position to complain since they could have been prosecuted for their previous illegal activities.

<sup>33</sup>Domestic price controls on these products were evidently fairly effective and prevented scarcity-value windfalls to direct importers. Cf. Mario Henrique Simonsen Os Controles de Preços na Economia Brasileira, Consultec (Rio de Janeiro, 1961).

<sup>34</sup>Surveillance was evidently fairly effective here also in controlling the end use of the import. Ibid.

<sup>35</sup>Note that the minimum wage had not been raised for almost a decade prior to the sizeable increase granted in 1953. Nevertheless, no increases were granted in 1954 (see Table II). Housing and apartment rents had been frozen earlier and constituted another important constraint on the cost of living in the cities.

In succeeding years the continuously depreciating exchange rate had a greater impact on the rate of domestic price inflation than during the transition (see Table II) but still less than predicted by Harberger's model. That the inflationary impact was larger post-transition is not surprising--most of the slack from the old system had been removed. The fact that the inflationary impact was less than could have been expected, however, is explained in large part by the success of the protective-subsidy rate structure in raising the domestic supply coefficients far above those assumed to be reasonable by Harberger.

#### B. Incentives for Import-Substitution Industrialization

The rate structure of the multiple auction system was probably the major incentive for industrial growth in Brazil between 1953 and 1961. To demonstrate that the broad import categories and discriminatory subsidies and taxes fostered by the multiple auction system was "correct," however, is clearly beyond the scope of the present paper.<sup>36</sup> In my opinion the choices made were fairly good ones during the 1953 and 1958 period, although not without exception; but several important errors were made beginning in 1958 which ultimately led to stagnation.

The response of the economy to the new exchange system was quite striking. Contrary to experiences in Argentina and elsewhere during the 1950's a

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<sup>36</sup> A full evaluation of the optimality of the industrialization will have to await findings which may not be available for some time. Although an input-output table is now in process of construction for the year 1959, there are as yet no comparative cost data for Brazilian industries. Individual industry studies are being completed, however, for some key sectors. Werner Baer is completing a study of iron and steel, and a study is now available on the capital goods sector. Cf. Nathaniel Leff, The Capital Goods Industries in Brazil, unpublished Ph.D. dissertation, MIT (Cambridge, Massachusetts, 1966).

recession did not follow the devaluation.<sup>37</sup> The rate of industrial growth almost doubled in 1954 as compared to 1952; and the agricultural sector recovered very strongly from its poor showing in 1953. The Brazilian case suggests that the effects of an appropriate tailor-made devaluation on domestic supply both in its direct impact and from the redistribution of income may be positive and large. In other cases, where the redistribution effects were negative and larger than the direct impacts on exports and import-competing goods, as in Argentina, either the devaluation may have been inappropriate, or there were no potential sources of dynamic expansion in the economy.<sup>38</sup>

The available evidence attests to the powerful effects of the protection-subsidy rate structure. Tables IV and V show the growth rates and the sources of growth, respectively, of individual ISIC manufacturing sectors for three periods--1948-1953; 1953-1958; and 1958-1962. Table IV demonstrates that gross output in manufacturing industry (the dynamic sector in the economy) grew very rapidly, especially during the multiple-rate, auction period (1953 to 1961). In Table V the growth of the supply of manufacturing products is apportioned among three sources--domestic demand, export demand, and import substitution. Domestic demand was always the dominant growth source; import substitution was negative between 1949 and 1953, but positive and rising in the final two periods. Export demand was a very limited source of growth in all periods, but it was relatively stronger in the second period and poorest

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<sup>37</sup>Cf. Carlos Diaz Alejandro, op. cit.

<sup>38</sup>Cf. ibid., pp. 187-199, for an example of an inappropriate devaluation.

<sup>39</sup>These three sources account for total supply change, i.e., for any sector, given the period, the sources total to 1 (100 per cent).

TABLE IV  
GROWTH RATES OF MANUFACTURING INDUSTRY

ISIC No.	Industry Sector	1948-53	1953-58	1959-63
Consumer Goods				
20-22	Food, beverages and tobacco	8.9	7.1	2.4
24	Clothing	5.1	9.3	0.9
25-26	Wood Products	6.6	2.8	0.8
28	Printing	10.5	7.5	3.7
29	Leather Products	2.4	5.4	0.3
Intermediate Goods				
23	Textiles	4.1	2.4	3.1
27	Paper	9.2	7.5	11.0
30	Rubber	14.5	5.7	1.1
31-32	Chemicals, petroleum and coal products	10.7	9.6	7.3
Investment and Related Goods				
33	Non-metallic minerals	12.7	4.4	1.2
34-38	Metals, machinery and equipment	4.1	13.9	21.0
Total Manufacturing		5.3	7.0	8.0

Source: United Nations, The Growth of World Industry, National Tables 1938-1961, Table 2B; data for 1959-1963 were calculated from IBGE/Conselho Nacional De Estatística, Anuario Estatístico Do Brasil, 1966, Rio de Janeiro, Brazil, p. 130. ISIC No.'s 23-26, 31-32, and 34-38 were not listed in Table 2B, United Nations; these were calculated from value added data above and deflated by price indices from International Financial Statistics, wholesale prices excluding coffee; and Conjuntura Econômica, sectoral price index series for years after 1944.

TABLE V

## SOURCES OF GROWTH

ISIC No.	1949 - 53			1953 - 58			1958 - 63		
	Domestic Demand	Exports	Import Substi- tution	Domestic Demand	Exports	Import Substi- tution	Domestic Demand	Exports	Import Substi- tution
Consumer goods	1.0232	.0115	-.0350	.9417	.0270	.0311	.9902	.0117	-.0019
20-22	1.0223	.0157	-.0380	.9181	.0405	.0416	.9879	.0154	-.0033
24	1.0005	.0003	-.0009	.9995	.0000	.0006	1.0000	.0000	.0000
25-26	1.0114	.0028	-.0142	.9903	-.0006	.0104	.9944	.0056	.0000
28	1.0564	.0001	-.0566	1.0080	.0000	-.0084	.9912	.0000	.0088
29	1.0618	-.0054	-.0563	.9745	-.0062	.0317	1.0000	.0000	.0000
Intermediate goods	1.1057	-.0018	-.1041	.9311	.0270	.0400	.9227	.0119	.0654
23	1.0047	-.0207	.0160	.9202	.0445	.0353	.9811	.0231	-.0042
27	1.0715	.0014	-.0730	.9659	-.0003	.0345	.9003	.0000	.0994
30	1.0052	.0002	-.0055	.9941	-.0001	.0060	1.0284	.0017	-.0303
31-32	1.1759	.0155	-.1914	.8329	.0204	.1468	.8497	.0081	.1423
Investment and Related goods	.8666	.0006	.1328	.8429	.0028	.1544	.9105	.0018	.0877
33	.9613	.0000	.0387	.8859	.0000	.1141	1.0278	.0000	-.0277
34-38	.8767	.0008	.1224	.7819	.0034	.2156	.8880	.0020	.1097
Total	1.0220	.0045	-.0265	.9403	.0185	.0413	.9467	.0082	.0447

Source: See Appendix A; the methodology for the growth source calculation is adapted from H. Chenery, "Pattern of Industrial Growth" American Economic Review, September 1960, pp. 624-54, and S. Lewis and R. Soligo, "Growth and Structural Change in Pakistan's Manufacturing Industry, 1954-64," Pakistan Development Review, Spring 1965, pp. 94-139.

in the first. Thus, the manufacturing sector as a whole performed much better after 1953 in terms of output growth, substitution for imports, and export promotion under relatively unfavorable conditions.

These findings also weaken considerably the arguments frequently found in the literature that the growth of import-competing industry was misguided and poorly directed. Celso Furtado, for instance, has asserted that incentives were given to the wrong industries and resulted in "...the concentration of investment in 'less essential' industries."<sup>40</sup> In contrast, "...investments in infrastructure and the basic industries, e.g., iron and steel, lagged behind badly."<sup>41</sup> It is implied, therefore, that the rapid growth rate of over-all manufacturing was largely superfluous and wasteful. But Furtado's generalizations are inconsistent with the individual sectoral data in Tables IV and V. Investment and related goods had the highest growth rate of the three basic sectors in all periods, and metals, machinery and equipment drastically accelerated in growth after 1953. In fact, in the later periods it was the consumer goods sector which lagged behind badly. At a more disaggregated level, it is also clear that the basic, and not less essential, industries played the dominant role--chemical and chemical products and iron and steel were exceeded in value-added growth between 1950 and 1960 only by the motor vehicles industry.<sup>42</sup>

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<sup>40</sup>"Political Obstacles to Economic Growth in Brazil," International Affairs, Vol. 41, No. 2, April 1965, p. 255. Cf. also Diagnosis of the Brazilian Crisis, University of California, Berkeley (translated by S. Macedo), 1965, Part II, for Furtado's extended discussion of these same points.

<sup>41</sup>"Political Obstacles...", op. cit., p. 256.

<sup>42</sup>These sectors were followed by electrical machinery, other metals, non-metallic and metallic working machinery, paper and paper products, other manufacturing, non-ferrous metals, non-metallic mineral products, food, beverage, tobacco, and textiles, respectively. Cf. W. Baer and I Kerstenetsky, "Import Substitution and Industrialization in Brazil," American Economic Review, May 1964, p. 419.

It is an incontestable fact, therefore, that the dynamic growth sectors were mainly import-substitution industries.<sup>43</sup> The multiple-rate structure clearly gave incentives to these industries. Motor vehicles, iron and steel, chemicals, etc., were favored not only by protection from foreign competition, but by exchange subsidies on capital, intermediate, and raw material import-inputs.<sup>44</sup> Moreover, these and other essential sectors received sizeable negative interest rate loans from the government.<sup>45</sup> Thus, although most manufacturing industries were partially protected and subsidized, the dynamic import-substitution sectors were given additional incentives in the form of cheap credit and higher import-input subsidies.<sup>46</sup>

One further criticism of the penalty-subsidy rate structure clarifies a final issue. The Economic Commission for Latin America diagnosed the recent

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<sup>43</sup>The close general correlation between value-added growth in individual manufacturing sectors and substitution for imports can be seen in Baer and Kerstenetsky, op. cit., p. 419, Table 5.

<sup>44</sup>Subsidies in the motor vehicle industry are clearly explained in L. Gordon and E. Grommers, op. cit. Also, machinery imports were much lower in terms of exchange cost for iron and steel and chemical industries than for other sectors.

<sup>45</sup>Between 1952 and 1962 the metallurgical industry received 25.6 per cent of all BNDE loans; chemical industries received 4.5 per cent; and motor vehicles 2.1 per cent. They were the most favored sectors. There is not available any sectoral breakdown of loans of the monetary authorities. Source: ECLA "Fifteen Years of Economic Policy in Brazil," Economic Bulletin for Latin America, November 1964, Table 26, p. 179.

<sup>46</sup>Fuels were the most heavily subsidized import class at approximately two-thirds the exchange price of capital equipment for agriculture--the second most favored--and two-fifths that of construction materials--the most heavily penalized. Metallic intermediate goods were below the weighted average total import rate until 1958 and thereafter exceeded it by a wide margin. Fuels comprised 15 to 20 per cent and metallic intermediate goods 5 to 8 per cent of total import by value from 1957 to 1961. Source: Boletim SUMOC, various dates, and Bank of Brazil.

stagnation in Brazil as primarily a problem of incentives having lost their power. "The whole problem...lies in the fact that restriction in absolute terms should not last too long, so the economy can advance through various stages of diversification."<sup>47</sup> It is implied here that large-scale changes in the industrialization program were not undertaken. This is certainly mistaken. As early as 1957-1958 the government shifted a large share of its protection-subsidy incentives away from many traditional and previously favored infant industries to the automotive and related sectors. Through numerous inducements, foreign and domestic investors increased the domestic coefficient of total supply of motor vehicles from .42 in 1958 to .98 by 1963.<sup>48</sup> In fact, continued growth in manufacturing after 1958 was largely dependent upon the motor vehicle industry and its suppliers. The direct importance of motor vehicles production between 1959 and 1963 is evident from data in Tables IV and V. Metals, machinery, and equipment subsume motor vehicles in the ISIC classification. This category was by far the most dynamic after 1959 both in terms of absolute and relative growth rate, as well as "direct" import substitution, and within this category motor vehicle production alone, exclusive of its suppliers, provided roughly over one-fourth of the growth in value added between 1959 and 1963.<sup>49</sup>

The massive promotion of the motor vehicle and related industries was probably an error which had serious repercussions on the economy. The shift

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<sup>47</sup>"The Growth and Decline of Import Substitution in Brazil," Economic Bulletin for Latin America, Economic Commission for Latin America (Santiago, Chile, March 1964), p. 51.

<sup>48</sup>Calculated from production data in Gordon and Grommers, United States Manufacturing Investment in Brazil (Harvard University, 1962), p. 63; and Anuario Estatístico, IBGE (Rio de Janeiro), various dates.

<sup>49</sup>Ibid., and Anuario, op. cit., 1958 and 1965.



of subsidies from traditional and early infant industries to motor vehicles after 1957 lessened the profitability and liquidity of the former sectors at a time when they were already facing worsening domestic terms of trade.<sup>50</sup>

Second, overall import requirements may have been only marginally reduced, for not only were many imported accessories still required, but domestic inputs were required from those industries which were pressing on capacity, e.g., basic metals, machines and equipment, and rubber.<sup>51</sup> Third, the growth of investment and goods production between 1959 and 1963 was much less favorable than the ISIC classification indicates because included in it are passenger autos which made up almost half of the value of motor vehicle production.<sup>52</sup>

The consumption of an expensive product with a relatively low social value was encouraged at the expense of more traditional products; moreover, the latter typically had excess capacity and experienced stagnation after 1953 (see "consumer goods" in Table IV). Thus, the government's reaction to anti-growth factors in terms of new economic policies in 1957-1958 was unfortunate. If policy instruments had been developed to remove the many dis-incentives which constrained agriculture and exports, while maintaining incentives in the more traditional manufacturing industries, the stagnation might have been averted.

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<sup>50</sup>The terms of trade between agriculture and industry remained fairly constant between 1948 and 1954, began to rise slightly in favor of agriculture up to 1958, and then turned very unfavorable for industry thereafter (from 117 in 1953 to 133 by 1962 from a base of 100 in 1953). Source: Plano Trienal Presidencia de Republica (Rio de Janeiro, 1963) and Conjuntura Economica, op. cit., May 1965.

<sup>51</sup>Cf. Economic Commission for Latin America, op. cit., p. 52, specifies these industries which had overages and shortages of installed capacity.

<sup>52</sup>Calculated from Gordon and Grommers, op. cit., p. 63.

Instead, the restriction of manufactured consumer goods, many of which were traded to rural sectors (food, beverages, tobacco, clothing, wood, and leather products) in exchange for rural primary inputs further accentuated the fragmented, dualistic structure of the economy. It also had the unfortunate consequence of exacerbating the "cost-push" inflation in agriculture.

### C. Export Performance and the Balance of Payments

The authorities pessimism regarding rapid export growth during the 1950's was justified by actual performance. Manufacturing production went almost exclusively toward satisfaction of domestic demand (Table V). Only a very small proportion of several manufactured products was exported.<sup>53</sup> As during earlier periods, traditional primary products earned the bulk of foreign exchange;<sup>54</sup> However, the growth in exchange earnings from these sources was practically nil.<sup>55</sup>

A large part of the explanation for export stagnation can be attributed to slow increases in international demand for Brazil-type exports. But Brazil also constantly lost ground in her share of the world market. Two facts help explain this loss in market shares. First, because the authorities wanted to insure that the domestic market was adequately supplied at a low price,

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<sup>53</sup> For example, only about 6 per cent of total consumer goods (mainly wood products), less than 2 per cent of intermediate goods (chemical, petroleum and coal products) and about 4.5 per cent of investment and related goods (metals, machinery, and transport equipment) were exported. Source: Boletim Superintendencia de Moeda e Credito (Rio de Janeiro), various dates.

<sup>54</sup> Primary exports earned 86 per cent of total exchange in 1949 and 73 per cent by 1953. In the manufacturing sector, only food, beverages and tobacco exports increased appreciably: from less than 3 per cent in 1953 to almost 7 per cent of domestic production by 1953. Ibid.

<sup>55</sup> Iron ore was the only major exception and it was not a traditional primary product export. Total exports in U.S. dollars fell by about 6 per cent between 1950 and 1960. Ibid.

quantitative restrictions were placed on the export of various commodities.<sup>56</sup> Although it is difficult to assess just how important these restrictions were, they undoubtedly weakened the incentive to export. Second, export exchange rates were devalued only after rising domestic costs had cut deeply into the profitability of exporting.<sup>57</sup> Typically, export volume had already declined before the authorities acted.<sup>58</sup> Brazil was pessimistic regarding export opportunities and officials were preoccupied with the problems related to import substitution and the appropriate taxation of coffee. The problem of finding the desirable exchange rate for non-coffee exports was largely ignored. Brazilian export volume and earnings would have improved if the competitive position of producers had been maintained in the face of rapidly rising domestic costs. Rather than a devaluation every year or two which barely restored the profitability of exporting, which was then quickly reduced by cost inflation, the exchange rate for exports should have been depreciated daily (weekly) either by tying it to an appropriate cost index, or some

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<sup>56</sup> Export licenses could be prohibited to the quantity consumed in or processed in Brazil during the preceding year plus 7 per cent. Major exports which were prohibited from time to time included corn, cotton, textiles, tobacco and castor beans.

<sup>57</sup> Export exchange rates were devalued in August 1954 (about 30 per cent depreciation) and then again in mid-1956 (about 40 per cent depreciation) prior to the introduction of the new auction system in August 1957. During the entire period domestic costs rose by over 30 per cent according to the cost of living and wholesale price indexes; by over 150 per cent according to the minimum wage index. This understates the need for devaluation because international prices for Brazilian-type exports were also falling.

<sup>58</sup> Export volume fell off sharply prior to each export rate devaluation, partly due not only to non-profitable export prices, but also because coffee producers applied a great deal of pressure on the exchange authorities by withholding stocks. Cf. Ivan Lakos, The Effects of Brazil's Foreign Exchange Policy on Her Export: 1946-60 (Harvard University, unpublished Ph.D. dissertation, 1962).

similar arrangement.<sup>59</sup> Since even successful import-substitution industrialization cannot be expected to continue to lower the import coefficient--especially once non-essential imports have been squeezed out of the import bill of goods (by mid-1950's in Brazil)--an export rate of growth close to that of the growth rate of the gross domestic product may be necessary to avoid a balance-of-payments induced stagnation.<sup>60</sup>

In Brazil, the available alternative to increasing export earnings was a large influx of foreign capital. Favorable exchange treatment for imports of equipment, repatriation guarantees, etc., produced a sizeable influx of foreign investment between 1957 and 1962. However, as mentioned earlier, these funds were partially misdirected and eventually did not help forestall the balance-of-payment bottleneck which helped foster the post-1962 stagnation.<sup>61</sup> In fact, the increased dependence upon foreign investment and the instability which resulted from servicing profit remittances, debt payment, and potential capital

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<sup>59</sup> A second possibility would have been to over-devalue, but then set an adjustable tax on exports which could be reduced pari passu with rising costs.

<sup>60</sup> Cf. Chenery and Strout, "Foreign Assistance and Economic Development," American Economic Review, September 1966, pp. 679-733. Successful import substitution is unlikely to substantially lower the over-all import coefficient due to the necessity of importing larger quantities of import-inputs as domestic industry grows; moreover, the income elasticity of demand for imports in the less developed countries is probably much higher and growing more rapidly than the income elasticity of demand for their exports in the industrialized countries.

<sup>61</sup> Output growth per capita has been close to zero since 1962. Industrial product actually fell in 1964-1965. Some students of the Brazilian economy believe that the stagnation was due almost entirely to political factors; cf. Baer, op. cit., pp. 192-202 and Furtado, op. cit., but economic factors were of perhaps equal importance. Brazil's import bill of goods became increasingly made up of import-inputs essential for the functioning of domestic manufacturing and agriculture. Therefore, the flexibility of the structure of imports was greatly reduced between 1953 and 1962, which greatly reduced the government's options. Also by reducing the feasible output growth of the economy, the bottleneck increased tensions between rival power groups none of which was willing to lose its income share.

flight all constitute further reasons for rejecting the soundness of the policies which promoted the motor vehicles and related industries. Paradoxically, instead of reducing the balance of payments bottleneck, as planned, "import substitution" in this instance perversely increased both dependence on foreigners and potential instability.<sup>62</sup>

Despite the poor performance of exports during the post-reform years, balance of payments discipline improved vis-à-vis the previous period. Both the non-price direct rationing system and the multiple-rate auction system relied upon exchange budgets. While the incentives to exceed the budget under the former system had been too powerful to control, the process of auctioning exchange in a free market removed most of the incentives for exceeding the capacity to import.<sup>63</sup> Deficits, as measured by official compensatory financing, were very slight from 1953 to 1957 even though exchange earnings were falling relative to the import-input needs of the economy.<sup>64</sup> After 1957 the tendency to over-import reappeared and foreign indebtedness became once again critically high.<sup>65</sup>

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<sup>62</sup> Foreign private investment began to fall in 1959 and never again reached the levels attained between 1956 and 1958; since much of the investment was related to the automobile industry, for which subsidies were perhaps unduly high, its demise was not entirely undesirable. A case "for" the benefits of foreign capital to the Brazilian economy is made in E. Baklanoff (ed.), New Perspectives of Brazil Vanderbilt University Press (Nashville, Tennessee, 1966).

<sup>63</sup> See pages 13-14 and note 28.

<sup>64</sup> Over-importation in 1954 was offset by surpluses in 1955-1956. Deficits in the former year were due to: 1) a desire to increase capital and intermediate product imports as much as feasible after the drastic curtailment of imports in 1953; and 2) the collapse of coffee export earnings in late 1954 as international prices fell precipitously. Large imports in the first half of the year had been in anticipation of stable coffee earnings. The latter dropped from an index of 100 in 1953 to 78 by 1957. Source: Conjuntura Economica, Fundacao Getulio Vargas, 1954.

<sup>65</sup> By the early 1960's foreign indebtedness had reached over U.S. \$3 billion and repayment of principle plus interest could only be met by either new terms--a switch to longer term--or large new loans. Cf. Baklanoff, op. cit.

That the balance of payments constraint was so well met between 1953 and 1958, but not thereafter, points up the disciplinary problem of any system of control. Although the means for preventing deficits are available, the authorities may not be able to withstand the numerous pressures which come into play as a rising demand for foreign exchange is thwarted by a falling supply. The equilibrating nature of a rising foreign exchange price may in itself be too painful to accept. When the choice is between increasing excess capacity in the economy (and underemployment) and excess foreign borrowing, the price of the latter may have to be very high indeed before a popular government will forego it.

#### D. The Adjustable Peg Alternative

The closest broad alternative to multiple auctions was a pegged rate system with protective tariffs. Exchange rates could have been devalued every year or so in order to offset rising domestic prices. By depreciating the selling rate less in 1953, and adding discriminatory ad valorem tariffs, the penalty-subsidy structure of the multiple auctions could have been theoretically approximated. But it is doubtful that this system would have been adequate. Given the typical tendency to protect a pegged rate (e.g., the export rate in Brazil), the system may well have degenerated into another round of overvaluation and direct, non-price rationing. Even excluding this possibility, the authorities had little or no basis for setting tariffs in 1953; auctions were used precisely as the means to determine the new tariff levels set in the reform of 1957.<sup>66</sup> Multiple-rate auctions were no small advantage

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<sup>66</sup> Auctions had been intended originally only as a temporary measure until ad valorem tariffs could be studied and agreed upon by the Congress. This was not accomplished until August 1957 when auctions were reduced to two categories (continued on following page)

because they not only blended together market forces and interference, but permitted adjustments in import structure and pricing over time.

Clearly, as the International Monetary Fund itself insists, a devaluation to an equilibrium, pegged exchange rate stands or falls on the willingness and ability of the country's authorities to stabilize domestic prices.<sup>67</sup> Where such stabilization is impossible to achieve either because of political realities, or because it will result in stagnation, the pegged rate system may be inappropriate.

#### IV. Conclusions

Many countries have postponed devaluation for fear that it would cause a rapid acceleration of domestic prices. Devaluation models support this fear. However, in some instances there has been a large discrepancy between what these models and conventional wisdom predict and the actual inflationary impact of a devaluation. Where the pegged exchange rate has been maintained only by direct, non-price rationing and other controls, and the scarcity value of foreign exchange has been rising, devaluation will not accelerate a domestic price index by the degree expected; nor where the devaluation redistributes income from low to high savers will prices be accelerated by the amount predicted by models which assume equal saving propensities among all groups. If, as in Brazil, the gap between the official selling rate and the scarcity value of exchange is very large, and the redistribution effects are very positive, prices may not be accelerated at all. This is encouraging for the numerous countries which have avoided devaluation only by substituting for it inefficient and clumsy exchange control systems. However, it also accentuates the

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(continued from preceding page)

(general and special) and ad valorem tariffs were set which ranged up to 150 per cent on value. Auctions were not discontinued altogether until 1961 and then only at the insistence of the International Monetary Fund as a precondition for stabilization loans.

necessity of designing differential devaluations which maximize non-inflationary, growth inducing effects.

The Brazilian multiple auction system had such growth inducing effects. Until serious errors were made in 1957-1958 powerful incentives were given to import-substitution industrialization. Contrary to statements by some observers, it is not apparent that the penalty-subsidy rate structure prior to 1958 encouraged an inefficient process of import substitution; sectoral growth within manufacturing was fairly balanced and growth sources were well apportioned between domestic demand and import substitution. Whether or not the industrialization was "well attuned" to the dynamics of longer-run Brazilian growth is still an open question. It is true that the industrialization did not create directly a sufficient number of jobs. While total and urban population increased by about 3 and 5.4 per cent yearly, respectively, in the decade 1950-1960, the industrial work force expanded by only 2.5 per cent per year.<sup>68</sup> An industrialization based on substitution in investment and intermediate goods will be capital-biased. But in the Brazilian case anti-employment biases were exaggerated unnecessarily. For instance, both the neglect of the (high labor coefficient) agricultural sector and the massive promotion of (capital intensive) motor vehicle and chemical industries limited employment. The exchange system, of course, was simply the instrument through which policy decisions--good and bad--were implemented. It was unneutral only in the sense that labor was not a traded good and could not, therefore, be taxed or subsidized. Exchange subsidies for capital and intermediate

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<sup>68</sup> Employment growth in agriculture was 1.7 per cent per year and in services was 5.2 per cent per year. Productivity actually fell in the latter. Source: 1950 and 1960 census data.



imports, however, tended to distort factor proportions in production which could have been corrected by labor subsidies.<sup>69</sup> That this was not done reflected the low priority given to employment creation by the government.

Brazil made a concerted effort to achieve sustained, rapid growth under a severe foreign exchange constraint. But even with the relatively large size of the domestic market, adequate entrepreneurial and other resources, growth ceased after 1962. More recently, attempts to promote exports, encourage foreign capital investment, and diminish the Kubitschek-induced runaway inflation have had, at best, limited growth-inducing-effects. An inefficient exchange system has been only one of the factors explaining the stagnation; but it is clear that the foreign exchange bottleneck has been a critical destabilizing factor for the economy except between 1953 and 1961 when multiple fluctuating exchange rates were the chief policy instruments.

An auction system may be the best practical instrument for achieving a specific set of policy objectives in other developing countries. Under fairly typical general circumstances faced in these countries (e.g., inflation, inefficient and dishonest minor bureaucrats, a severe balance of payments constraint, etc.) multiple auctions seem preferable to either over-valued exchange rates and direct rationing or pegged rates, ad valorem tariffs, and reduced growth rates. The precise composition and number of import categories would, of course, vary according to the particular circumstances of the country in question. Although "poor choices" could have deleterious

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<sup>69</sup> Subsidies for more labor-intensive production processes could have been given in the form of tax rebates per marginal laborer added by a firm. Abuses could be difficult to detect; however, and any such scheme must be conditional upon appropriate controls. Alternatively, this consideration would not in any way effect the criticisms of the government promotion of capital intensive activities of relatively low productivity.

repercussions on the economy, appropriate interference may often be the only alternative to slow growth and unemployment.<sup>70</sup> Disequilibrium systems most prevalent throughout the past two decades have tended to incorporate the worst elements of the available alternatives--fixed official exchange rates with rising scarcity values and non-price rationing. A pragmatic approach free from prevalent dogmas would undoubtedly result in improved "second best" systems.

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<sup>70</sup> A description and analysis of exchange auctions proper is found in: D. Huddle, "Foreign Exchange Auctions: An Evaluation" (mimeographed working paper, June 1967). The common objections to fluctuating rates, e.g., creation of risk and uncertainty for traders and resulting social and private costs, were not very forceful for Brazil. Cf. also: Alexander Kafka, "The Brazilian Auction Exchange System," Review of Economics and Statistics, August 1956.

# APPENDIX

Growth sources of manufacturing industry were apportioned among domestic demand, [A], export demand, [B], and import substitution, [C], from the following equation:

$$(1) \quad \Delta x = \left[ \frac{x_1}{z_1} \cdot \Delta(D+W) \right] + \left[ \frac{x_1}{z_1} \cdot \Delta E \right] + \left[ \left( \frac{x_2}{z_2} - \frac{x_1}{z_1} \right) \cdot z_2 \right]$$

where  $x$  is defined as domestic production,  $z$  as total supply,  $D$  as domestic demand,  $W$  as domestic intermediate demand, and  $E$  as foreign demand for exports, and the subscripts refer to the beginning and ending points in time.

The contribution of domestic demand and export demand is calculated by assuming that the proportion of domestic production to total supply did not change during the period. Import substitution (liberalization) is then calculated as the change in the proportion of domestic production to total supply during the period times the most recent total supply.

The identity equations on which equation (1) is based are explained in Lewis-Soligo, op. cit. and Huddle, "Notes on the Brazilian Industrialization: Sources of Growth and Structural Change," Center Discussion Paper No. 30 (Yale University, June 1967). Brazilian data sources and procedures of estimation are discussed in the latter.