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INTERNATIONAL MONETARY RULES AND EXTERNAL DISEQUILIBRIUM IN DEVELOPING COUNTRIES

by

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International Monetary Rules and External Disequilibrium in Developing Countries

By

Donald L. Huddle

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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. Contrary to the advice and leverage exerted by the International Monetary Fund and the advanced Western countries, import restrictions, exchange control, etc., have not only persisted, they have in some instances multiplied[1].

Controls and restrictions have been partly induced by present and past international monetary arrangements which the International Monetary Fund attempts to enforce. In brief, the majority of less developed countries (LDC) place a high premium on accelerating their rates of income growth, a goal also given particular priority by the Bretton Woods Agreement. But attempts to accelerate growth often lead to balance of payments disequilibrium, as a consequence of increased foreign exchange needs and price instability induced by government deficits, excess credit, and structural change. The postwar rejection of domestic deflation, however, leaves external methods of adjustment as the major means of achieving equilibrium, particularly when the imbalance is sudden

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[1] Restrictions and controls have diminished in some cases and increased in others. In some countries restrictions and controls tend to be cyclical, but on the whole few less developed countries have agreed to forgo their use. Cf. Table 1.

and large. Since the Bretton Woods system places a high priority also on fixed exchange rates, there is a decided bias toward the use of "discriminatory" methods of external adjustment-quotas, exchange licensing, etc. — as opposed to nondiscriminatory methods — alteration in exchange rates, across the board import surcharges and export subsidies, etc.

The present paper views the "accommodation" between the rules of the Bretton Woods system and the less developed countries as having produced insufficient and inefficient means of external adjustment. Evidence brought forth suggests that present discriminatory methods of adjustment could be replaced by a better mix of discriminatory and nondiscriminatory methods. More concretely, it is argued that if devaluation and price adjustments were substituted for overvaluation and non-price methods of adjustment less developed countries could more easily achieve their stated policy objectives[1].

II. Trade Restrictions and Currency Overvaluation

The data in Table 1 demonstrate that restrictive practices on currencies and current account transactions are still widespread in the large majority

Table 1 — *Types of Exchange and Trade Restrictions as of 1967*

	Number of countries	
	total	classified as less developed
Article VIII status	31	15[a]
Article XIV status	76	74
Restriction on current transactions .	81	73
Bilateral agreements	47	39
Prescription of currencies	89	74
Quantitative restrictions, quotas and licensing	41	36
Surrender of export, receipts required	88	76

[a] As follows: Costa Rica, Dominican Republic, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Kuwait, Mexico, Nicaragua, Panama, Peru, Saudi Arabia, and Surinam.

Source: International Monetary Fund (IMF), *Eighteenth Annual Report on Exchange Restrictions*, Washington, D. C., 1967.

[1] A catalogue of LDC policy objectives is specified and appraised in John C. H. Fei and Douglas S. Paauw, "Foreign Assistance and Self-Help: A Reappraisal of Development Finance", *The Review of Economics and Statistics*, Vol. XLVII, Cambridge, Mass., 1965, pp. 251 sqq.

of less developed countries. For instance, seventy-four of seventy-six countries unwilling to relinquish the options of Article XIV status were developing countries. In contrast, the developed countries with a few exceptions have made extraordinary progress toward liberalization[1]. Only eight advanced countries still maintain restrictions on current transactions and of these only five presently have quantitative restrictions, quotas, and licensing. Moreover, the latter are usually much more limited in scope in developed as compared to less developed countries[2].

Despite very limited foreign exchange availabilities, less developed countries have, by and large, attempted to keep income growth rates at high rates, often at the expense of domestic price stability. It seems clear that government deficits unfinanced by either domestic or foreign borrowing have helped to accelerate inflation which in many countries has been a major source of creating, or at least worsening, external disequilibria

Table 2 — *Annual Rates of Increase in Prices, Incomes, and Money Supplies*[a]

	1950—63			1963—68			1950—68		
	$\frac{\Delta P}{P}$	$\frac{\Delta Y}{Y}$	$\frac{\Delta M}{M}$	$\frac{\Delta P}{P}$	$\frac{\Delta Y}{Y}$	$\frac{\Delta M}{M}$	$\frac{\Delta P}{P}$	$\frac{\Delta Y}{Y}$	$\frac{\Delta M}{M}$
All countries									
means	.049	.0508	.081	.070	.0469	.091	.058	.0533	.091
standard deviations . . .	.061	.0192	.057	.188	.0219	.075	.082	.0151	.057
Advanced group									
means	.0356	.0530	.065	.0349	.0505	.068	.0387	.0575	.071
standard deviations . . .	.0270	.0141	.040	.0167	.0131	.012	.0199	.0057	.031
Middle group									
means	.058	.0513	.109	.060	.0471	.112	.066	.0527	.115
standard deviations . . .	.081	.0224	.070	.070	.0282	.090	.083	.0206	.075
Least developed group									
means	.058	.0479	.072	.126	.0417	.098	.071	.0481	.090
standard deviations . . .	.067	.0213	.048	.324	.0236	.094	.119	.0159	.051

[a] Income and price levels are in 1953 prices. — Countries divided according to per capita income levels in 1961 dollars as reported in Charles P. Kindleberger, *Economic Development*, 2nd Ed., Economics Handbook Series, New York, 1965.

Source: IMF, *International Financial Statistics*, Washington, D.C., various issues. — U.N., *Monthly Bulletin of Statistics*, New York, various issues.

[1] Only Finland, Ireland, Austria, New Zealand, South Africa, Japan and the United Kingdom have failed to liberalize widely.

[2] Insufficient data were available to quantify the severity of restrictions, but that restrictions are severe in most developing countries is clear from the individual country descriptions. Cf. IMF, *Eighteenth Annual Report on Exchange Restrictions.*

often uncompensated for by alterations in exchange rates. In Table 2 are shown the very different rates of expansion in money supplies and domestic prices for the period 1950—68 between advanced and less devel-

Table 3 — *Preliminary Estimates of Competitive Indices for 26 Less Developed Countries*, 1953—66

Country	Competitive index[a] (1953 = 100)	% Devaluation[b] (during same period)	1953 = 100 Nos. of Devaluations
Greece	83.3 (1954 = 100)	—	—
Iran	70.7 (1955 = 100)	—	—
Thailand	96.3 (1955 = 100)	70.0	1
Argentina	66.7 (1959 = 100)	141.0	4
Bolivia	46.5 (1956 = 100)	51.0	2
Brazil	78.2	~ 4000.0	*c
Paraguay	83.0	9.0	1
Mexico	98.6	45.0	1
Peru	71.3	41.0	2
UAR	88.2	— 19.0[d]	— 1[d]
Spain	156.8	240.0	3
Turkey	152.1	320.0	2
Pakistan	148.4	43.0	1
Philippines	180.0 (1956 = 100)	177.0	1
Tunisia	146.3	45.0	2
Chile	130.0 (1956 = 100)	76.0	3
Colombia	235.0	~ 350.0	5
Uruguay	223.5 (1960 = 100)	~ 550.0	3
Portugal	112.4	—	—
Iraq	106.8	—	—
Lebanon	100.3	—	—
Syria	116.2 (1954 = 100)	7.0	1
India	102.1	59.0	1
Costa Rica	117.9	18.0	1
Ecuador	121.7	20.0	1
Venezuela	658.2	34.0	1

[a] Computed by adjusting the base year exchange rate for (a) relative cost of living changes in the particular country vis-à-vis cost of living changes in the United States and Western Europe as weighted by trade shares and (b) exchange rate changes in the less developed country. Changes in surcharges, trade taxes and subsidies, and tariffs were not included. — [b] Where multiple exchange rates ruled either the import exchange rate served as the basis of estimating devaluation or a later year following termination of multiple rates was chosen. — [c] Continuous devaluations between October 1953 and August 1961 and several discrete devaluations since then. — [d] Revaluation.

Source: IMF, *International Financial Statistics*, various issues.

oped countries. Not surprisingly, both variables were larger, but non uniformly so in developing countries (standard deviations were two to four times as large also). Part of this difference was compensated for by devaluation, but according to the crude "competitive indices" computed in Table 3 depreciation was both too limited and small in size in at least 10 of 26 countries in the sample to offset rising domestic prices.

These "competitive indices" in all likelihood understate the degree of exchange rate overvaluation in many less developed countries for the following reasons: First, the base year chosen for the calculations was 1953, a year of high export prices and favorable terms of trade for LDCs. Even so, many less developed countries were in apparent external disequilibrium in 1953 without obviously exceeding reasonable growth targets[1]. Second, it is likely that LDC demand for imports since 1953 has risen substantially more than the demand for their exports. In some cases, the unit price of primary products has been maintained only by supply restrictions which tend to decrease the income terms of trade. Their demand for imports, on the other hand, has received strong impetus from various sources — rising expectations, population growth, and income growth, the latter with its attendant multiplier effects. Even efforts to effect foreign exchange savings via forced import substitution in the larger countries have not alleviated foreign exchange shortages, and in some cases import substitution has worsened the imbalance by promoting firms with strong comparative disadvantages[2]. On the whole, expectations are for increasingly large foreign exchange "gaps" in less developed countries over the foreseeable future[3].

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[1] Cf. Bela Balassa, *Trade Prospects for Developing Countries*, A Publication of the Economic Growth Center, Yale University, Homewood, Illinois, 1964. — Cf. also Harry G. Johnson, "Increasing Productivity, Income-Price Trends and the Trade Balance", *The Economic Journal*, Vol. LXXIV, London, 1964, pp. 482sqq., for a reasonably complete statement and analysis of the conditions necessary for perennial foreign exchange shortage.

[2] Three recent papers which suggest that import substitution when even superficially successful in raising output has had these effects are: Donald L. Huddle, "The Brazilian Industrialization; Sources of Growth and Structural Change", in: E. Baklanoff (Ed.), *The Modernization of Brazil*, Louisiana State University Press, 1969, pp. 86sqq. — Anne O. Krueger "Some Economic Costs of Exchange Control: The Turkish Case", *The Journal of Political Economy*, Vol. LXXIV, Chicago, Ill., 1966, pp. 466sqq. — Ronald Soligo and Joseph J. Stern, "Tariff Protection, Import Substitution and Investment Efficiency", *The Pakistan Development Review*, Vol. V, Karachi, 1965, pp. 249sqq.

[3] Estimates of foreign exchange gaps are summarized in John Pincus, *Trade, Aid and Development, The Rich and Poor Nations*, The Atlantic Policy Studies, New York, 1967, pp. 297sq. — The falling share of less developed countries in international commodity trade and the leveling off of "real" foreign aid flows in recent years are also summarized in *ibid.*, pp. 58 and 317, respectively. — The offset of transfers to developing countries which occur because of unrecorded and illegal outflows to advanced countries is estimated for

III. Implications of Overvaluation and Non-Price Rationing

The "competitive index" probably understates by a sizable but unknown margin the actual degree of overvaluation of many LDC currencies and helps to explain why many less developed countries have continued to employ current account restrictions in order to attempt to force an equilibrium in their external transactions. LDCs fear that any "net liberalization" would tend to lead to more sizable deficits.

The method by which forced equilibrium is sought, however, can have important implications for resource allocation, the efficiency of investment, and domestic absorption. Generally, we want to distinguish not only between discriminatory methods and non-discriminatory methods of external adjustment, but also between price and non-price methods of (discriminatory) adjustment. Price adjustment methods include import and export surcharges and subsidies, advanced deposits, tariffs, etc., while non-price methods include quotas and licensing[1].

Several of the more important advantages claimed for a system of overvalued exchange rates quotas, licensing, and direct rationing are as follows: 1) by curtailing imports through direct methods the trade balance is improved despite low relevant price elasticities; 2) by keeping import prices "low" it avoids the inflationary effects of devaluation; and 3) it circumvents the terms of trade loss associated with devaluation. In what follows propositions 1) and 2) are examined[2].

The first proposition to be considered is that overvaluation and controls are preferred to devaluation because the relevant price elasticities of import demand, export supply, and of foreign demand for exports are "too low." Elasticity pessimism has been common in less developed

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Latin America and the United States by Robert Triffin at about $ 6 bill. per year. Cf. Robert Triffin, *The World Money Maze, National Currencies in International Payments*, New Haven and London, 1966, pp. 490sq. — Estimates of income elasticities of U.S. demand for imports (1.27) and of world demand for U.S. exports (2.92) by Tse Chun Chang, *Cyclical Movements in the Balance of Payments*, Cambridge, 1951, p. 148, suggest perennial dollar shortage. A comparison of advanced and LDCs would no doubt indicate a larger difference.

[1] For the purposes of the present paper the important distinction between altered exchange rates and discriminatory external methods involving price changes is ignored. Some writers attach more significance to these differences than between price and non-price differences. Cf. Gottfried Haberler, "Import Taxes and Export Subsidies a Substitute for the Realignment of Exchange Rates", *Kyklos*, Vol. XX, Basel, 1967, pp. 175qq. — Jagdish Bhagwati, *Indian Devaluation: Some General Lessons*, Economic Growth Center, Yale University, Spring 1967 (mimeogr.).

[2] Proposition 3) is not examined because it seems clear that only in two goods models do the terms of trade necessarily worsen for the devaluing country; with numerous goods, any terms of trade change is incidental. Cf. W. M. Corden, *Recent Developments in the Theory of International Trade*, International Finance Section, Department of Economics, Special Papers in International Economics, No. 7, Princeton, New Jersey, 1965.

countries (and even advanced countries). For advanced countries, however, recent studies suggest that price elasticities may be higher than previously believed. Econometric analysis of U.S. and Canadian imports by Kemp and Rhomberg, respectively, for example, has yielded fairly high short-run price elasticities of demand for imports[1]. Also Cooper found that empirical evidence drawn from recent experience in the Atlantic Community tends to confirm the notion that trade flows are reasonably sensitive to relative price changes[2].

Controls and other interferences increase the difficulties of measuring elasticities for less developed countries, but the Spanish devaluation points up the error of a priori elasticity pessimism. Devaluation and decontrol was accompanied by a very large increase in Spanish exports, a finding which implies a price elasticity of foreign demand for exports, as well as of domestic supply, far above unity[3].

The Brazilian devaluation throws additional doubt on presumed low elasticities, in this instance for imports. Although elasticity pessimism had always been an unassailable rationale for restrictions and controls in Brazil, a sample of thirty-three monthly observations taken between 1953 and 1957 when foreign exchange was auctioned demonstrates price elasticities of demand above unity (1.7) at a very high significance level[4].

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[1] Cf. citations in Carlos F. Diaz Alejandro, *Exchange-Rate Devaluation in a Semi-Industrialized Country, The Experience of Argentina 1955—1961*, Cambridge, Mass., and London, 1965, p. 4.

[2] Richard N. Cooper, "National Economic Policy in an Interdependent World Economy", in: *Changing Patterns in Foreign Trade and Payments*, Ed. with an Introduction by Bela Balassa, Rev. Ed., Problems of the Modern Economy, New York, 1970, pp. 98sqq.

[3] Cf. Baklanoff, *op. cit.* — IMF, *International Financial Statistics*, various issues. — The greatest response was in tourism, but other exports also responded elastically.

[4] Auctioned exchange comprised about half of total foreign exchange. The sample came from all foreign exchange which was auctioned weekly in twenty markets. The regression equation was

$$\text{Log}\left(\frac{P}{p'}\right) = a - b \text{ Log } Q$$

$$= 2.30371 - .59738\ Q.$$

Std. Errors = (.057) (.049)

T = (40.53) (— 12.11)

R^2 = 0.816; Durbin-Watson = 1.57; F = 147

P = auctioned price of U.S. dollar in Cruzeiros per U.S. dollar

p′ = wholesale price deflator

Q = the quantity of foreign exchange auctioned in U.S. dollars.

See Donald Huddle, "Some Evidence on Price Elasticities in International Trade", *Oxford Economic Papers*, N.S., Vol. XXII, 1970, pp. 235sqq. — A related implication of the results seems important. Since the "free market" sector demonstrated high price elasticities, it may be the government and/or controlled sector which is often unresponsive to relative price changes.

These findings are particularly relevant in that several biases which normally lead to underestimations of elasticity were unimportant[1]. Thus, while the elasticity "pessimism" resulting from the dismal thirties is still in vogue, recent findings seem much more consistent with elasticity "optimism."

Related to, but distinguishable from, elasticity pessimism is the so-called truism that devaluation will have an inflationary impact on the economy. If domestic prices are rigid downward, factors are relatively immobile, and elasticities of substitution of domestic for foreign products are low, a devaluation to a new equilibrium level will tend to be more inflationary than overvaluation and controls (*unless* the authorities are willing to allow a rise in unemployment and a fall in output). The likelihood of rigidities and immobilities in developing countries and their strong growth orientation, adds to the plausibility that controls and overvaluation might be less inflationary than devaluation.

This view has been challenged by Sohmen among others. Clearly, though devaluation per se tends to raise prices, a devaluation which replaces controls will be anti-inflationary by promoting resource allocation more along lines of comparative advantage. Since this will take time, however, (the longer the greater the rigidities and immobilities) they conclude that prices will probably rise in the short run.

Consideration of all factors relating to the inflationary impact of a devaluation is exceedingly complex, but is unnecessary for our purposes. Reasonably complete discussions are to be found in the literature by Alexander, Machlup, Sohmen, Yeager, and Alejandro[2]. For the moment we restrict the analysis to the issue of the inflationary bias of devaluation in the short run assuming permissive (full employment) monetary policy. The argument that overvaluation/control is less inflationary than devaluation depends critically upon the assumption that the rationing of foreign exchange at fixed rates actually results in the sales of imports at constant prices in the domestic market. Cutting back a trade deficit by reducing imports through rationing, however, will tend to increase the scarcity value of the imports; in the absence of effective price controls in the economy import prices will therefore rise, though not by more than if exchange rates had depreciated to the extent necessary to reduce imports by an equivalent amount. Domestic prices could, however, rise by more if the income redistribution caused by overvaluation and non-price

[1] Auctions eliminated numerous biases which were believed by Orcutt to have caused measured elasticities to be substantially below "true" elasticities. Guy H. Orcutt, "Measurement of Price Elasticities in International Trade", *The Review of Economics and Statistics*, Vol. XXXII, 1950, pp. 117sqq.

[2] These are summarized in Diaz Alejandro, *op. cit.*, pp. 2sqq.

rationing favors consumption rather than saving, and conversely of course. The thrust of the present argument, however, is not to deny a possible inflationary effect of market clearing pricing, but to insist that in instances of overvaluation preserved by controls the fear has been greatly exaggerated.

Country evidence regarding foreign exchange pricing, import pricing, and corruption is difficult to obtain. But the available evidence points to pricing at scarcity values rather than at official, overvalued rates. In Brazil, importers and exchange officials captured sizable windfall profits; exchange officials sold import licenses to favored importers at prices fifty per cent and above the official exchange rate[1]. Importers, likewise, were able to increase their mark-ups by as much as one-hundred per cent or more of the official exchange rate. Only a few products imported by the government and several controlled homogeneous consumption goods apparently sold at official prices[2]. Corruption and scarcity value pricing were common features of overvaluation-exchange control systems in India, Thailand and Pakistan[3]. Although the country coverage is not broad, not one piece of evidence contrary to this behavior is prominent.

Several writers, e. g., Celso Furtado, have argued that overvaluation/non-price rationing will normally lead to a redistribution of income which increases savings and investment[4]. As a consequence, inflationary tendencies are offset and real income growth enhanced. I tested this assertion for the Brazilian case and found that the available evidence implied just the converse: corrupted bureaucrats, middlemen, and privileged importers spent their windfalls predominately on consumption goods[5]. In fact, the sizable Brazilian devaluation in October 1953 was successful partly because it redistributed these windfalls to exporters

[1] Cf. D. Huddle, *Fluctuating Exchange Rates and Economic Growth*, Institute of Economics, Rio de Janeiro, forthcoming.

[2] *Idem*, *Disequilibrium Systems, Industrialization and Inflation: The Brazilian Case*, Economic Growth Center, Yale University, July 1967 (mimeogr.).

[3] Cf. Jagdish Bhagwati, "Indian Balance of Payments Policy and Exchange Auctions", *Oxford Economic Papers*, N.S., Vol. XIV, 1962, pp. 51sqq. — Cf. W. D. Reeve, *Public Administration in Siam*, Royal Institute in International Affairs, 1951. — Cf. Ina Yatallah, *Bureaucracy and Development in Pakistan*, Peshenar, 1963, especially Part I, Chs. IV—V.

[4] Cf. Donald Huddle, "Furtado on Exchange Control and Economic Development: An Evaluation and Reinterpretation of the Brazilian Case", *Economic Development and Cultural Change*, Vol. XV, Chicago, 1967, pp. 209sqq. — Especially *idem*, "Balanço de pagamentos e contrôle de câmbio no Brasil, Parte II: Eficácia, bem-estar, e desenvolvimento econômico", *Revista Brasileira de Economia*, Ano XVIII, Rio de Janeiro, 1964, Núm. 2, pp. 5sqq.

[5] *Idem*, "Balanço de pagmentos, *op. cit.*, pp. 44sq.

and the government, both of which were relatively high savers and investors at the margin[1]. To my knowledge the hypothesis has not been examined elsewhere, although Diaz Alejandro discusses its likelihood in Argentina's "stop and go" inflations.

The prevalence of scarcity value pricing and either neutral or "perverse" marginal saving and investment behavior help explain why domestic prices have tended to rise in many countries (e. g., in India, Pakistan, Thailand, Spain, Brazil, and elsewhere[2]) despite fixed official exchange rates and non-price rationing beyond the amount expected from other sources. Interestingly enough, a devaluation which followed overvalued rates and non-price rationing in each of these countries did not raise the price level by the amount expected. According to Harberger's estimates for Latin American countries a devaluation of fifty per cent should increase the price level by between twenty-four and thirty per cent[3]. That devaluations in the countries mentioned above did not cause price increases of even approximately that degree, after allowing for differing parameters, may indicate the critical importance of price as compared to non-price rationing. Where non-price rationing is perfectly subverted by corruption and ineffective price controls for all imports, a devaluation may be absolutely non-inflationary.

As a first step in testing the differential effects of devaluation on price levels, all countries for which devaluation, price, and money supply data were available were grouped into those countries which (I) employed "fairly extensive" exchange controls as defined by the Annual Report on Exchange Control by the International Monetary Fund and, (II) used few if any controls. The hypothesis to be tested was that exchange control countries experienced greater *relative* price increases following a devaluation than did non-control economies. For each country in both groups price changes were postulated as being solely dependent on changes in the money supply. The relationship between ΔM in the period between twelve and six months preceding each devaluation and ΔP in the following two quarters was used as a mean of predicting ΔP for the six month period following the devaluation.

$$(1) \qquad \Delta P_{0-6} = \Delta M_{6-0} \cdot \left(\frac{\Delta P}{\Delta M}\right)_{12-6}$$

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[1] Huddle, "Balanço de pagamentos", *op. cit.*,

[2] IMF, *International Financial Statistics*, 1958 and 1966.

[3] Arnold Harberger, "Some Notes of Inflation", in: *Inflation and Growth in Latin America*, Ed. by Werner Baer and Isaac Kerstenetzky, A Publication of the Economic Growth Center, Yale University, Homewood, Illinois, 1964, pp. 319sqq.

Table 4 — *Predictions and Results of Devaluation on Price Levels*

Group I Country	Devaluation date	Actual Δ P 1/2 prior to date	% Δ P	Predicted Δ P 1/2 later	% Δ P	Actual Δ P date to 1/2 after	% Δ P	Predicted — actual % Δ P
Bolivia	57	410	20.9	— 102.91	4.34	0	0	4.34
	58	23	1.	18.95	.79	380	15.8	— 15
	59	160	5.8	48.49	1.64	160	5.4	— 3.8
Brazil	54	24	13.9	25.58	13.0	15	7.6	5.4
	59	48	20.8	54.05	19.4	31	11.1	8.3
	60	61	16.6	61.01	14.2	69	16.1	— 1.9
Chile	62	34	18.9	76.54	35.8	48	22.4	13.4
	63	48	3.7	71.68	27.4	48	18.3	9.1
	64	80	25.8	262.9	67.4	50	12.8	54.6
	65	74	16.8	143.2	27.9	29	5.6	22.3
	66	77	14.2	70.68	11.4	44	7.1	4.3
Colombia	57	14	12.1	10.48	8.1	12	9.2	— 1.1
	58	12	8.5	43.6	28.3	1	.65	27.6
	59	11	7.1	7.2	4.3	—4	— 2.4	6.7
	62	2	1.6	— 54.35	— 43.1	37	29.4	— 72.5
	65	6	3.1	13.3	6.7	29	14.6	— 7.9
Ecuador	61	4	3.9	—.84	—.78	— 1	—.93	.15
	66	6	4.8	— 1.52	— 1.17	1	.77	— 1.94
Mexico	54	— 1	—.7	— 5.59	4.0	11	7.8	— 11.8
	66	3	2.5	—.95	—.78	2	1.6	— 2.38
Uruguay	63	17	2.5	169.3	58.0	82	28.1	29.9
	64	80	18.6	211.3	41.4	122	23.9	17.5
	65	166	29.1	265.2	36.0	324	44.0	— 8.0
	66	266	29.4	317.9	27.2	250	21.4	5.8
Venezuela	64	1	.9	12.95	12.1	0	0	12.1
	66	— 3	— 2.7	76.2	70.6	2	.19	70.4
Viet Nam	62	4	3.8	1.23	1.1	— 1	—.91	2.0
	66	32	19.3	34.6	16.7	62	30.0	— 13.3
Tunesia	57	—	—	—	—	—	—	—
	64	4	4.0	— 4.91	— 4.7	4	3.8	— 8.5
	66	3	2.8	3.38	3.0	4	3.6	—.6
Pakistan	55	0	0	—	—	1	1.0	—
	66	8	6.8	3.47	2.8	5	4.0	— 1.2
India	66	6	4.0	14.63	9.4	12	7.74	1.7

continued

Table 4 continued

Group II Country	Devaluation date	Actual ΔP 1/2 prior to date	% ΔP	Predicted ΔP 1/2 later	% ΔP	Actual ΔP date to 1/2 after	% ΔP	Predicted — actual % ΔP
Argentina . . .	62	23	7.2	40.06	11.7	80	23.4	— 11.7
	64	50	9.2	73.62	12.5	56	9.5	3
	65	83	12.9	68.63	9.4	151	20.7	— 11.3
	66	106	12.1	87.04	8.8	145	14.7	— 5.9
Paraguay . . .	59	11	5.0	— 2.1	—.91	11	4.74	— 5.7
	66	2	1.3	— 5.06	— 3.2	1	.63	— 3.8
Peru	59	5	3.6	—.24	—.17	16	11.3	— 11.5
	66	9	4.5	17.99	8.7	5	2.42	6.3
Korea	55	67	34.0	117.6	44.5	— 22	— 8.33	52.8
	60	13	3.7	13.76	3.8	23	6.28	— 2.5
	61	24	6.3	— 36.04	— 8.9	8	1.98	— 10.9
	64	40	24.1	46.84	22.7	1	.49	22.2
	65	23	11.1	32.9	14.3	0	0	14.3
Syria	62	—	—	— 4.93	— 4.8	—	—	—
Israel	62	8	7.2	4.95	4.2	4	3.39	.8
	66	9	6.0	23.31	14.7	1	.63	14.1
Yugoslavia . . .	65	46	25.8	503.6	224.8	37	16.5	208.3
	66	14	5.6	15.94	6.0	3	1.14	4.9
Finland	57	5	4.3	— 4.61	— 3.8	5	4.13	— 7.9
	63	2	1.8	4.53	4.0	3	2.63	1.4
	66	3	2.2	—.55	—.40	4	2.88	3.3
Iceland	60	0	0	—	—	3	2.33	—
	61	3	2.8	124.1	114.9	9	8.33	106.6
	66	10	5.6	3.72	2.0	6	3.6	— 1.6

The predictions and results of the test are shown for all countries in Table 4. The results clearly lead to a rejection of the above hypothesis since the exchange control group experienced much less inflation than expected whereas the non-control economies experienced slightly more than predicted.

It is surprising that the single variable — money supply — did so well in "predicting" the average price changes for non-controlled economies. The results are not, however, totally convincing because of the variation of average cases in Table 4 from the average. As a further test, regressions were run cross section on the data for the two groups with

	Number	Average predicted	Average actual	Difference
Controlled (I)	32	16.42	11.88	4.54
Non-controlled (II) . .	23	36.5	37.	—.5

Source: Data from Table 4.

added specification of variables. The change in the price level (cost of living) for the two quarters following the date of the devaluation was regressed upon the depreciation (appreciation) of the exchange rate and change in the money supply in the two quarters preceding the date of the depreciation (appreciation).

$$(2) \qquad \frac{P_6 - P_0}{P_0} = a + \frac{P_{fe_6} - P_{fe_0}}{P_{fe_0}} + \frac{M_6 - M_0}{M_0}$$

Table 5

	$\underline{a}$	$\underline{b} \cdot \Delta P_{fe}$	$\underline{z} \cdot \Delta M$	$\overline{R}^2$	$\underline{N}$
Controlled (I)	1.11	.070	.60	.603	37
	(.66)	(1.92)	(5.67)		
Open (II)	—.12	.084	.61	.650	25
	(—.08)	(1.90)	(5.0)		

The results of the cross-section regressions are shown in Table 5[1]. For both the controlled and open economy cases the "explained" impact of the devaluation upon domestic prices in the short run (two quarters) was small relative to that of the changes in the money supply. However, the regression coefficients were significant at the five per cent level in both instances and the impact of the devaluation was greater in open than in the controlled economy.

A second set of cross section regressions was run with the change in prices in the two quarters preceding the devaluation date as an independent variable rather than the change in the money supply. Here, the overall explanation was much less for the controlled group; but more importantly the coefficient was negative between prices and devaluation for controlled foreign exchanges only and the T scores were significant at the five per cent level.

[1] As in the above analysis single countries had several devaluations included, but never less than one year apart in order to allow previous effects to work themselves.

Table 6

	a	b · ΔP_{fe}	z · ΔP	$\bar{R}^2$	N
Controlled (I)	— 1.64	— 0.13	0.54	.26	37
	(.71)	(2.96)	(3.19)		
Open (II)	— 4.95	0.02	0.99	.68	25
	(— 2.66)	(.53)	(5.06)		

Between all three sets of results, a pattern emerges which suggests that exchange control economies do not face the inflationary dangers to nearly the extent they have imagined for so long. In future efforts I will test more definitively this notion and add a variable for the degree of overvaluation at the time of devaluation. The hypothesis being that the greater the overvaluation at the moment of devaluation, the less the inflationary result of any given devaluation[1]. In addition, further efforts to disaggregate the "explanation" offered by the monetary variable by finding the relationship between ΔP_{fe} and ΔM would be desirable. We have presumably eliminated most of the danger of multicollinearity by letting ΔM precede ΔP_{fe}. But a breakdown of the effects of ΔP_{fe_t} and ΔM_t might bring forth better insights.

Over the longer run, the effects of the two systems on resource allocation, investment efficiency, output growth, and exports must be considered. Though we still know too little about the dynamic consequences of alternative exchange practices, an increasing body of evidence is accumulating which demonstrates the high costs of both overvaluation and non-price rationing as well as discriminatory controls of other types. In Argentina, Chile, Brazil, Turkey, Uruguay, Thailand, Pakistan, India, to name but a few, one to several costs including export stagnation, ineffective and costly import substitution, capital flight, and other misallocations have been closely associated with "inappropriate" disequilibrium systems[2]. Consistently, in each country case we have analyzed,

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[1] From a scatter diagram of the present sample date, we found that the relationship between ΔP and ΔP_{fe} became positive only after ΔP_{fe} exceeded 40%. Thus, the distribution has some bimodality which reduced our "explanation." This will be dealt with in our future study.

[2] Cf. H. G. Johnson, *The World Economy at the Crossroads, A Survey of Current Problems of Money, Trade and Economic Development*, London, 1965. — Shu-Chin Yang, *A Multiple Exchange Rate System, An Appraisal of Thailand's Experience, 1946—1955*, Madison, 1957. — Richard H. Leftwich, "Exchange Rate Policies, Balance of Payments, and Trade Restrictions in Chile", *Economic Development and Cultural Change*, Vol. XIV, 1966, pp. 400sqq. — A. C. Harberger and Marcelo Selowsky, *Key Factors in the Economic Growth of Chile*. — Don Huddle, *Fluctuating Exchange Rates and Economic Development in Brazil*, Institute of

a return to rationing via market prices and at least partial decontrol has been associated with improved performance in the balance of payments, pricing, and capital flows. The problem to be resolved is what rules of behavior in the international economy will encourage external adjustment which avoids overvaluation and non-price rationing, given the "legitimate" policy objectives being pursued.

IV. Implications for Reform

Fragmentary evidence from the sample of countries examined in the present paper suggests that overvaluation and non-price restrictions have tended neither to keep import prices low nor to reduce inflation. At the same time, the common presumption that devaluation will be both unsuccessful because of low elasticities and inflationary seems unwarranted under circumstances not uncommon. In fact, an appropriate devaluation will help prevent other costs associated in recent years with overvaluation and controls in numerous countries, viz., export stagnation, capital flight, and resource and investment misallocations[1].

If departures from equilibrium exchange rates were either temporary or very slight on the trend, present international machinery would be adequate. Increased liquidity as anticipated under the new Fund scheme for Special Drawing Rights should enable countries in temporary disequilibria to avoid some costly restrictions. Devaluation would be reserved for those instances, presumably exceptional, in which permanent exogenous and unexpected changes in supply-demand conditions had occurred. But where divergencies from equilibrium are sizable and more pervasive over the trend — the implication is for reform of the Bretton Woods system. Clearly, measures to hold domestic price increases in LDCs *below* those in advanced countries must be much more successful than in the past for the present system to be satisfactory. Advocates of the Bretton Woods system have often been optimistic regarding price stability in LDCs.

Per Jacobsson earlier and then Irving Friedman[2] later asserted that: "There are many more cases of less developed countries improving their price performance than the reverse." But past and present events have not

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Economics, GVF Rio de Janeiro, forthcoming. — Diaz Alejandro, *op. cit.*, and previous country citations for supporting evidence. — Cf. Herman Daly, *Trade Control in Uruguay*, 1965, (mimeogr. working paper) and citation.

[1] See previous footnote.

[2] Cf. Per Jacobsson, *International Monetary Problems 1957—1963*, Selected Speeches, International Monetary Fund, Monograph Series, No. 3, Washington, D.C., 1964. — Also Irving S. Friedman, "Comment", *The Journal of Political Economy*, Vol. LXXV, 1967, Supplement, p. 651.

borne them out. In actuality, price inflation tends to be cyclical with no downward trend being detectable. The latest data show that the average rate of cost of living increase was over ten per cent in less developed countries versus less than four per cent in advanced countries[1]. This constitutes a clear increase in the longer-term differentials computed in Table 2. Moreover, price performance does not seem to be improving on an individual country basis[2]. The factors mentioned earlier — high growth targets, rising expectations, high relative income elasticities of demand, and productivity differentials between developed and LDCs relative to very limited trade, aid, and import substitution possibilities — would seem to indicate for many LDCs continuous and increasing external disequilibrium. The Fund has consistently admonished governments in less developed countries to eschew loose monetary and fiscal policies which tend to be inflationary and in turn disequilibrate the balance of payments. But the Fund's view of what is an appropriate rate of inflation is incorrect; it is premised on developed rather than less developed countries needs. Harry Johnson summed up this point of dispute succinctly as follows:

"The indicated optimum rate of inflation is likely to be significantly higher for an underdeveloped than for an advanced economy, for two reasons: first, the sophisticated financial system of an advanced economy provides many more facilities for economizing on the use of money in face of expected inflation; and second, the superior mobility of resources of an advanced economy implies that the increase in total output achievable by inflationary means is relatively much smaller. ... tolerable price stability in an advanced economy is ... inflation of no more than one to two per cent per year ... [which] ... for an underdeveloped country might be ... four to six per cent ..."[3].

Interestingly enough, Johnson apparently accepts Harberger's suggestion of an outside limit for inflation of about 10 per cent per year, a figure above the mean inflation rate of least developed countries over the 1950—68 period, but slightly below the figure for the middle group in Table 2.

Under these circumstances, whatever the bias of the Fund and the advanced countries, fixed exchange rates seem unjustified, and the present

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[1] IMF, *International Financial Statistics*, Vol. XX, 1967, No. 3, p. 33; Vol. XXII, 1969, No. 3, p. 31.

[2] *Ibid.* — Also to 1968 Table 2 above.

[3] Harry G. Johnson, *Essays in Monetary Economics*, London, 1967, p. 284. — He also mentions another problem of control which is relatively more complex in less developed countries than developed countries. *Ibid.*, p. 288. The fact that the money to income ratio is much lower in less developed countries means that any given budget will result in higher rates of price increase.

accommodation — large discrete devaluations with overvaluation and restrictions in the interim — seems far more disadvantageous than either small, continuous devaluations[1], or equivalent adjustments in import surcharges and export subsidies[2]. But only Brazil and a few other developing countries have well learned these lessons.

* * *

Zusammenfassung: Internationale Währungsvorschriften und äußeres Ungleichgewicht in Entwicklungsländern. — Die vorliegende Abhandlung vertritt die Auffassung, daß die »Annäherung« zwischen dem Bretton-Woods-System und den weniger entwickelten Ländern zu unzureichenden und unwirksamen Maßnahmen der äußeren Anpassung für die weniger entwickelten Länder geführt hat.

Die meisten Fälle von Überbewertung werden durch Hinweis auf Elastizitätspessimismus und die Furcht vor inflatorischen Auswirkungen einer Abwertung erklärt. Die Stichhaltigkeit beider Gründe wird überprüft und abgelehnt. Im Gegensatz zur Abwertung in offenen Volkswirtschaften, führt in Volkswirtschaften, die überbewertete Wechselkurse mit Restriktionen und Überwachungsmaßnahmen unterstützen, eine Devaluation zu keinem inflatorischen Schub. Das statistische Beweismaterial ist mit dieser Hypothese vereinbar. Die gegenwärtigen Kosten dieser Politik könnten durch eine Anpassung, die zu den nötigen Wechselkurskorrekturen führt, vermieden werden.

*

Résumé: Règles monétaires internationales et déséquilibre extérieur des pays moins développés. — Dans cet article, on considère que l'accommodement du système de Bretton Woods aux pays moins développés a produit des mesures insuffisantes et inefficaces pour l'ajustement extérieur de ces pays.

La plupart des cas de surévaluation sont expliqués par le pessimisme quant à l'élasticité et la crainte des suites inflationnistes d'une dévaluation. Dans cet article, la validité de ces deux arguments est examinée et rejetée. Autrement que dans les économies ouvertes, la dévaluation, dans les économies qui soutiennent, au moyen de restrictions et de surveillances, des cours des changes surévalués, tend à ne pas avoir des effets inflationnistes. Ceci est confirmé par la statistique. Les coûts actuels de cette politique pourraient être évités par un accommodement qui conduirait à l'ajustement nécessaire des cours des changes.

*

[1] The Fund has only very reluctantly gone along with greater exchange rate flexibility. It has pressed for stable rates and used its resources to this end. For instance, the condition for the Brazilian stabilization loan requested in 1961 was that exchange auctions be discontinued. According to Bhagwati, "Indian Balance of Payments Policy", *op. cit.*, the Fund did not look with any favor upon a similar system in India. — Cf. also p. 66, footnote 2, and previous country citations for the costs of large, predictable devaluations in various countries.

[2] Though devaluation would seem preferable to surcharges-subsidies for strictly external adjustment, under some conditions (e.g., price inelastic demand for exports, domestic infant industry) some combination of the two may be desirable.

Donald L. Huddle

International Monetary Rules and
External Disequilibrium in Developing Countries

Resumen: Reglamentos monetarios internacionales y desequilibrio externo en países en desarrollo. — El autor sostiene que la creciente acceptación del sistema de Bretton Woods por parte de los países en desarrollo ha tenido la consecuencia de que estos países tienden a adoptar las medidas necesarias de reajuste cambiario de manera inapropiada e ineficiente.

En la mayoría de los casos en que la moneda está sobrevaluada, se recurre al pesimismo de elasticidad y al temor de un impacto inflacionario para mostrarse reacios a la devaluación. El autor niega, después de analizarla, la validez de ambos argumentos. Al contrario de lo que cabe esperar de una devaluación en economías abiertas, la devaluación en países con restricciones y controles del comercio exterior no tendrá efectos inflacionarios. La evidencia empírica apoya esta hipótesis. Los costos de la política actual podrían evitarse si se ajustaran los tipos de cambio adecuadamente.

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Riassunto: Norme monetarie internazionali e squilibrio estero in Paesi in sviluppo. — Il presente saggio sostiene l'opinione che l'«avvicinamento» tra il sistema Bretton-Woods e i Paesi poco sviluppati abbia condotto a misure insufficienti ed inefficaci dell'adattamento estero per i Paesi poco sviluppati.

La maggior parte dei casi di supervalutazione sono spiegati facendo riferimento ad un pessimismo di elasticità e col timore di ripercussioni inflazionistiche di una svalutazione. La validità di questi due motivi è esaminata e respinta. In contrasto con la svalutazione nelle economie aperte, una svalutazione in economie che sostengono cambi sopravvalutati con restrizioni e misure di controllo non conduce a nessuna spinta inflazionistica. Il materiale statistico di prova è accordato con questa ipotesi. I costi attuali di questa politica potrebbero essere evitati per mezzo di un adattamento che conducesse alle necessarie correzioni dei cambi.

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