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Center for Latin American Development Studies

CONTAINING THE COSTS OF STABILIZATION

IN SEMI-INDUSTRIALIZED LDC's

A Marshallian Approach

by

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SUMMARY AND RECOMMENDATIONS

1. Stabilization programs in Semi-Industrialized LDC's are more painful than they need to be, largely because the peculiarities of their balance of payments adjustment mechanism do not receive adequate attention in the design of these programs.

"Standard" Practice

2. Stabilization programs are usually adopted when a country's balance of payments situation becomes so critical that deficits can no longer be met by drawing down own reserves or borrowing commercially and when the automatic IMF facilities are exhausted. Domestic inflation in excess of world levels rarely leads to the adoption of stabilization programs by and of itself. Only when such an inflation coexists with balance of payments problems does it become the focus of policy action as part of the stabilization package.

3. The "standard" stabilization package consists of the following central elements:

    (i)   devaluation,

    (ii) reduction of government expenditure or at least containment of its growth,

    (iii) restriction of credit to the private sector.

In addition, it may also include the following subsidiary measures:

    (iv) increase in taxation,

    (v)   increase in nominal interest rates,

    (vi) liberalization of quantitative import restrictions or more rarely reduction of import duties,

(vii) increase of the prices of public utilities and other public

enterprises.

4.   The principal assumption about reality underlying the standard
stabilization package is that the balance of payments problem (and its
accompanying inflation, if any) is caused by aggregate excess demand
pressing on limited supplies. The empirical evidence used to justify this
view is the existence of a considerable government deficit financed by
borrowing at the Central Bank.

5.   The view of the balance of payments adjustment mechanism which under-
lies the standard package is the following:

(i)   devaluation will be expansionary:

    (a)   on the production side, higher prices for exports will lead

        producers to increase output;

    (b)   on the consumption side, the rise in price of importables will

        switch demand away from imports and to locally produced goods.

The combined result will be an improvement of the balance of payments,

but excess demand on domestic supplies.

(ii) the reduction in government expenditure and the tightening of credit

to the private sector are both deflationary and serve to offset the

excess demand pressures on domestic supplies generated by the

devaluation. The subsidiary measures are all designed to reinforce

this effect.

On a net basis, then, the standard package is thought of as a mix of
interrelated measures that improve the balance of payments without
affecting the level of output of the economy.

Semi-Industrialized LDC Conditions

6. The present economic reality of the Semi-Industrialized LDC's is in large measure the result of a vigorous import substituting industrialization policy (ISI) pursued for at least a decade and sometimes as long as half a century. The main pillar of the ISI policy was naturally the restriction of imports, be it through quantitative restrictions or through the use of high and secularly rising import duties which on many items became prohibitive. In either case, the cumulation of import restrictions created a _de facto_ multiple exchange rate system affecting trade and payments of all sorts.

Three major consequences followed:

(a) A profound duality was introduced in the costs of production of industry compared to those of the traditional activities (agriculture and mining).

Industry had to buy its inputs at prices reflecting the import restrictions, paying the duties or foreign exchange scarcity premia if it bought imported inputs or paying higher prices if it bought from protected local suppliers. Moreover, it had to pay higher money wages because of the unionization of labor and because of the social legislation governing wages, vacations, hiring and firing, etc. Agriculture and mining, by contrast, were typically favored in the treatment of their imported inputs and were often not subject to the full panoply of labor legislation. In addition, due to the nature of the product, the incidence of the excess cost of inputs is much greater in industry than in the primary sectors: the latter use few intermediate inputs and include a significant component of rent in value added.

(b) Imports became complementary with local production.

Success of the import substitution strategy implies by definition importing

only those things that are not produced domestically; in practice it

signified in addition the elimination of all imports of consumer goods

other than food. Thus imports in semi-industrialized LDC's consist

typically of 50-65% raw materials, 25-35% capital goods and 10% food.

(c) Nominal factor incomes in industry became very sensitive to the

      price level and the exchange rate.

The growth of an industrial labor force, increased urbanization and

extension of educational facilities all converged to create a situation in

which income receivers increasingly perceived a link between the exchange

rate and the purchasing power of their incomes. Moreover, they often

wield sufficient political and market power to raise money incomes in

response to devaluation.

7. The policy generating duality of costs also typically brings with it

overcapitalization of industry, i.e. installed capacity very much in excess

of the socially optimal amount for the output being produced. This outcome

results from two interrelated phenomena: (1) the relative cheapness of

capital compared to labor leads to the design of a large proportion of

plants for use on a single shift basis, while something in the region of

2.5 to 3 shifts would be socially optimal, (ii) the intermittent scarcity

of foreign exchange leads to the accumulation of fixed assets in advance of

its actual need as a hedge against inflation and devaluation. As a

consequence output is often well below a full single shift level.

The joint outcome of these factors is that the semi-industrialized

economy is characterized by ample excess capacity in its industrial sector.

8. Furthermore, the policy generating duality also produces an exaggerated impression of inefficiency in industry. This "industrial inefficiency illusion" results from comparing domestic industrial costs to world import prices by means of the "financial" exchange rate, i.e. the rate at which domestic currency converts into dollars at the bank. Industrial costs, however, are based on that financial rate plus the import duties and other restrictions. In other words, in the de facto multiple exchange rate system of the semi-industrialized LDC's, industrial costs must be compared to world prices by converting local costs to dollars with the exchange rate corresponding to those costs. Since the "costs exchange rate" is almost always above the "financial" rate, the simple comparison leads to an overstatement of costs and an overestimation of industrial inefficiency.

In addition to the above, an evaluation of the efficiency of industrial production needs to take into account that in the short run the capital installed in the sector is a sunk cost. Moreover, un- or underemployed labor has a shadow price below its market costs. Thus industrial output from existing capacity has a very low social cost indeed; in fact that cost may well be quite close to zero. Such a situation of course does not imply that expansion of industrial capacity is necessarily desirable.

9. The balance of payments adjustment mechanism which operates in the economic structure of the semi-industrialized economy is one characterized by two specific features: (i) exports are not very variable in the short run, thus the adjustment is almost totally on the import side; and (ii) changes in the level of imports are due principally to income effects and only minimally to relative price effects.

Exports do not respond much to devaluation because the de facto multiple exchange rate system in place forces the economy to operate only in the inelastic range of the export supply curve, which corresponds to primary exports. Agricultural exports are limited by the amount of arable land under cultivation and mining exports are limited by the size of the extractive operation in place. In either activity gestation periods for increasing "capacity" are long, hence the short-run price elasticity is low, even if over a five or ten year period the response may be quite different. On the other hand, devaluation is unlikely to make industrial products exportable, for input costs rise together with the exchange rate and domestic factor costs follow quickly. Unfortunately, however, it is precisely industrial output that contributes an elastic range to the export supply curve, by virtue of the excess installed capacity which is in existence.

On the import side, the price elasticity of demand is low because of the composition of imports. Food demand usually has a low price elasticity; raw materials are often required in fixed proportions, at least on installed plant and equipment; and investment demand is only slightly responsive to the cost of the machine since this cost will be amortized over many years. Moreover, all domestically used goods have some import component, hence the change in relative prices between final use goods as a result of a devaluation is rather small. It follows that changes in the import level will depend mainly on the income effect.

In sum, the whole balance of payment adjustment mechanism is crucially dependent on recession as a balance-of-payments balancing mechanism.

10. In the economic structure of the semi-industrialized LDC, as described above, internal balance will necessarily imply external deficit, for the simple reason that full capacity output of the industrial sector requires a volume of imported inputs which cannot be paid for from current exports. Furthermore, growth in the current ISI pattern tends to aggravate the problem: as industrial growth continues to outstrip primary growth, the demand for foreign exchange grows secularly faster than the supply. Correspondingly, only underutilization of plant and equipment or very low levels of investment enable external equilibrium to be maintained. However, either of these alternatives implies domestic imbalance.

Domestic cost push can fuel domestic inflation but will affect external balance only insofar as it (i) raises the cost of traditional exports, and (ii) raises the aggregate level of activity in the economy and hence increases the demand for raw material imports. The existence of quantitative restrictions and/or prohibitive tariffs prevents buyers from switching to finished imported goods.

11. A careful diagnosis of the extent to which a particular balance of payments crisis is due to a fuller utilization of installed capacity and to what extent it is due to a loss of profitability of traditional exports (or other causes) is of the essence for proper design of stabilization policy. In the first case, one is facing a manifestation of the imbalance in the distribution of capital stock in the economy; in the other, one is facing the consequence of a reduction in sectoral profitability. In either case, an induced recession will suppress the symptom: lowered imports will bring the balance of payments into equilibrium or even into surplus. However, suppressing the symptom will not cure the illness: as soon as the

level of activity increases again, imports will rise and the balance of payments problem will reappear. However, the induced recession will have caused a once-and-for-all loss of income and capital formation which is not recoverable.

Effectiveness of the Standard Package

12. Under the conditions obtaining in the semi-industrialized LDC, a devaluation will be both recessionary and inflationary. The reasons are:

(a) The balance of payments mechanism relies principally on a fall in imports and these have a low price elasticity. Hence for the balance of payments to improve a recession must occur. Devaluation induces the recession by two mechanisms: (i) fall in real factor incomes, and (ii) reduction in the real liquidity of individuals and firms.

(b) Devaluation causes the domestic price level to rise as a consequence of the increased cost of imported inputs and of the response of domestic income receivers who attempt to minimize the fall of their real incomes. Thus inflation is an immediate consequence and an exchange rate-wage-price spiral may well ensue. However, factor incomes typically rise less than prices, hence real aggregate demand falls and a domestic recession ensues.

(c) Devaluation also raises the domestic currency value of the balance of payments deficit. However, this deficit is a net contractionary force on the money supply. Thus devaluation directly produces a tightening of the money market and a contraction of credit, hence depressing aggregate demand.

(d) The cost push effect of devaluation raises the demand for credit from firms who are caught in a cash flow squeeze between revenues coming in from past sales and the need to pay their foreign exchange liabilities at the higher exchange rate and their current inputs at the new higher prices. Confronted with the lowered availability of credit, firms have no option other than reducing output and raising prices. Devaluation through this mechanism lowers output and raises prices directly.

13. Reduction in government expenditure and/or increase in taxation will obviously be recessionary. An increase in the prices of government or public enterprise services will signify a once-and-for-all price increase, but is likely to fuel a wage-price spiral insofar as income receivers attempt to reestablish their real purchasing power. Thus, improving the fiscal situation of the government is likely to be both recessionary and inflationary at the same time. Moreover, government tax receipts are likely to fall during this period as a consequence of the recession induced by the policy package. Thus elimination of the government deficit will be doubly difficult.

14. Tightening credit to the private sector will make it harder for firms to finance their cash flow needs in the face of increasing input costs. The consequence will be a transitory fall in output coupled with a transitory price rise. The latter will further fuel the price-wage spiral, thus in part becoming permanent. Hence credit restriction to the private sector is also recessionary and inflationary at the same time.

15. In sum, the standard package suppresses the balance of payments deficit by depressing the level of activity of the economy. At the same time it brings about an increase in domestic prices and may set off a wage-price-exchange rate spiral. Indeed, the balance of payments deficit stays suppressed only as long as output stays depressed, thus real incomes cannot be allowed to recover their preexisting levels, for otherwise the balance of payments problem cyclically recurs. The standard package does not succeed in dealing with the underlying economic imbalance which produces the incompatibility of internal and external balance. It is a symptom suppressant, not an illness cure.

A Modified Stabilization Package

16. The   generation   of industrial exports is the key to successful and lasting stabilization in semi-industrialized LDC's. With part of industrial output going to the export market, the level of activity of the economy is no longer dependent on the rate of growth of output in the primary sectors; rather, capacity can be utilized and installed on the basis of the domestic and export sales of the leading sector itself. Moreover, industry can earn the foreign exchange it needs to pay for its inputs. Under such circumstances internal and external balance become compatible.

17. A modified stabilization package should include the following short-run measures:

(a) a small general devaluation, sufficient to reestablish the traditional profitability of the main export sectors;

(b) an additional differential devaluation for industrial exports, sufficient to enable at least a range of industrial producers to profitably sell on the world market on the basis of installed

capacity. This differential devaluation could be implemented with a separate exchange rate, a "compensatory" export subsidy (to compensate for the multiple rates on the input side) or through a compensated devaluation in which exchange rate and trade taxation are modified simultaneously in offsetting fashion.

(c) a reallocation of credit from the public to the private sector, or failing that, expansion of credit to the industrial export sector.

18. The effects of such a package would be the following:

(a) the devaluation would be stagflationary as usual,

(b) the differential devaluation would be strongly expansionary as well as anti-inflationary by making more imports available,

(c) the credit policy would be contractionary for government demand but expansionary and anti-inflationary on the private side.

Thus the net effect would be an expansionary tendency for the level of activity, anti-inflationary pressure on prices, and an improvement in the balance of payments by expansion of exports rather than by contraction of imports.

19. For the longer run, the stabilization package should include the following measures:

(a) a crawling peg indexed to domestic input costs (mainly labor) to prevent the erosion of export competitiveness;

(b) a narrowing of the exchange rate differentials in the de facto multiple exchange rate system, i.e. a gradual reduction of tariffs and export supports accompanied by a correspondingly faster crawl so that the exchange rate provides the protection rather than the tax measures.

20. These longer run measures will generate improved allocation of invest-
ment resources as existing installed capacity wears out. At the same time
the gradual nature of the policy allows the economy to extract product from
its existing capital stock rather than making it obsolete as an abrupt free
trade policy would.

Furthermore, the existence of industrial exports will signify a very
major change in the nature of the balance of payments adjustment mechanism;
for the price elasticity of industrial export supply is much higher than
that of primary output. Thus the economy would be operating in the elastic
region of its export supply curve and the price effect of devaluation on
exports would again come into its own. In addition, the fuller use of
industrial capacity will necessarily lead towards the appearance of imports
competitive with domestic output, thus adding another dimension of price
elasticity to the balance of payments from the import side.

In short, in the presence of industrial exports, the balance of
payments mechanism would cease to rely principally on contraction of
imports through recession, thus reducing in a major way the cost of future
stabilization efforts.

Changes Needed in Current Practice

21. The analysis of balance of payments problems in semi-industrialized
LDC's and the design of stabilization programs for them must start from
the recognition that these countries operate de facto multiple exchange
rate system and from an analysis of the consequences of these systems.

22. Such a change of existing practice requires abandoning the traditional
division between monetary and fiscal instruments. Indeed, it requires
acting on the well-known proposition that a tariff is equivalent to a
partial devaluation.

23. At the institutional level it calls into question the traditional divisions of responsibility within governments and between international organizations. Thus it seems distinctly counterproductive to have the Central Bank be responsible for the exchange rate but the Ministry of Trade or Finance be responsible for the tariffs, quotas and export subsidies. With such an administrative division, nobody is responsible for the composite picture, yet it is the de facto multiple exchange rate system, comprised of exchange rate and trade restrictions, which determines the economic performance of the system. At the international level, a comparable division exists between the IMF and the GATT. Here again, it is no organization's explicit responsibility to assure that exchange rate and trade restrictions add up to a coherent whole. Indeed the IMF and the GATT are each careful not to trespass in their recommendations on the other's turf, whatever their confidential analyses may show.

24. It is also essential for proper understanding of the semi-industrialized LDC's problems to adopt an analytical macroeconomic framework comprising at least two economic sectors: traditional export production and production for the domestic market. Only with such a division is it possible to keep in sight the fundamental differences in cost levels, cost structures and supply elasticities between these different economic activities.

25. Empirical determination and update of excess installed capacity and the consequent potential supply of product should be a standard piece of economic information. It bears in an important way on the diagnosis of an economic crisis for it permits direct determination of whether or not excess demand exists. Moreover, it allows an assessment to be made of the extent to which a balance of payments crisis can be solved by increasing

nontraditional exports and the extent to which a domestic inflation can be stopped by increasing output rather than reducing demand. In turn, the extent to which supply oriented measures are feasible determines the cost of adjustment.

26. The dual role of credit in the economy must receive more central attention. Rather than being considered only an element of demand, the role of credit in supply and pricing decisions must be recognized. These become important when companies' cash flows become squeezed under conditions of rapidly rising import and factor costs.

27. To support supply expanding policies, stabilization programs should include specific export targets for industry and incorporate earmarked funding to supply working capital to new exporters to finance the purchase of needed inputs, the period of production and the normal financing period of sales to the rest of the world. Should such funds not be mobilizable from the IMF, complementary funding from others, including commercial banks, should be raised.

28. Adoption of supply expanding policies as part of stabilization programs will require a redefinition of the meaning of dumping and a redrafting of GATT rules on export subsidies. Without such changes mobilization of output potential from excess capacity in industry will be made unnecessarily difficult.

29. A useful definition of dumping would be "selling below marginal social cost." Such a definition would allow taking into account idle capacity as well as the un- and underemployment of labor.

30. Alternatively or in conjunction with the above, the concept of "compensatory export support" should be created, to signify a reimbursement of all those elements by which a producer's costs are above world prices as a result of government policy (i.e. tariffs, quotas, etc.). Such compensatory export subsidies should be explicitly allowed.

31. Where appropriate, GATT action should be followed by comparable action on the part of importing countries.

Conclusion

32. A stabilization plan is not the place to solve all of a country's problems, however neither should it be an aspirin which only suppresses symptoms which will soon recur. In the context of the semi-industrialized LDC's, stabilization programs should contain enough offset to the anti-export bias in the de facto multiple exchange rate system to enable these economies to use their installed capacity fully, thus extracting economic resources from their capital stock for reinvestment in activities more consistent with their comparative advantage. In so doing, stabilization programs will contribute to resolve the basic inconsistency which past policy in these countries has introduced between internal and external balance and will lay the basis for more healthy growth in the future.

I

THE PROBLEM

It is obvious that stabilization in semi-industrialized economies entail large economic (and social) costs. One need only recall the recent riots in Egypt, when an attempt was made to reduce the government deficit by cutting out subsidies on food, or the strikes and riots in Peru, when its fiscal and balance of payments deficit was tackled in part by reducing the subsidies on gasoline and food, or the case of Chile, when stabilization generated reported unemployment figures of more than fifteen percent of the labor force.[1] Nor are these experiences atypical, as the earlier history of Argentina and Ghana, to name a few instances, testifies.

While the social and political costs are the most dramatic, and the ones which draw most attention as well as stimulate the cries for remedial action, the economic costs of stabilization are no less serious and perhaps even more far reaching. These economic costs take two forms: (i) a fall in stabilizing countries' GNP below its potential or normal output, and (ii) a loss in savings and investment. These losses are unrecoverable, for unused man-hours cannot be stored and machines obsolesce by the mere passage of time. Likewise, investment not put in place at a particular time means output irremediably foregone. Such is the nature of the unfolding of history.

Moreover, the empirical magnitudes of these losses of output are quite considerable. For instance, Peru's stabilization policy from 1976 to 1978 caused a reduction in annual GNP/capita of about ten percent. Aggregate

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[1] In 1977 the official rate was still 10.5% for the entire country and 13.2% in Santiago.

GNP in 1977-78 shows a cumulative shortfall of 6% from the 1976 level (at 1970 prices); aggregate consumption shows a cumulative shortfall of 5% from the 1976 level and real investment shows a cumulative shortfall of 54% from the 1976 level which was itself down 12% from 1975. Similarly, Chile suffered a reduction in aggregate GNP of 11% in 1975 alone. Furthermore, the fall in output is typically concentrated in the more modern sectors of the economy, namely in industry and services. Thus, the output in the Peruvian industrial sector in 1978 amounted to 90% of its normal level, while in Chile the index of industrial output stood in 1975 at 85% of its 1969 level.

The social costs arise from the fall of personal incomes which accompany the extinction of part of a country's gross national product. While wages normally receive the primary attention, the fall in personal incomes also encompasses the reduction in entrepreneurial incomes, the absolute fall of which is harder to measure. Reductions in real wages have been on the order of 30-50 percent in recent stabilizations in Argentina[1] and Peru, and it is not surprising therefore that labor unrest, riots, and other political agitation ensued. Indeed, in some instances, the political stability of the government implementing the policy has been affected, and on some occasions entrepreneurs have joined laborers in exerting political pressure to bring about a change in policy.[2]

Yet stabilization efforts are unavoidable. Balance of payments deficits lead rapidly to the exhaustion of own reserves; debt accumulation cannot go on without limit. Thus balance of payments deficits must inexorably be cured. High and sustained price increases are usually

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[1] See Frenkel and O'Donnell (1978), p. 22.

[2] See Taylor (1978) for a discussion of the Egyptian situation.

unacceptable to the domestic political constituency. However, if stabil-
ization is unavoidable, it is equally necessary to contain its costs. No
LDC can readily afford losses of ten percent or more of a year's GNP, nor
can it take lightly a major slowdown of its growth rate, nor, again, a
major fall in real incomes lasting several years, nor, indeed, the unem-
ployment that all this implies.

The search for a low-cost stabilization policy must begin with an
analysis of the structure of the semi-industrialized economies.

We may thus ask which countries, precisely, are to be considered
semi-industrialized and to be used as basis for the conceptualization of
the following sections. An exhaustive listing is neither feasible nor
probably desirable since all countries continually develop and some enter
while others leave this intermediate category. Typical charter members
of the "Club of the Semi-industrialized," however, are Argentina, Chile
and Uruguay in Latin America, Ghana in Africa, and Pakistan and India in
Asia. Moreover, Peru has become almost prototypical in the last decade
or so, while Thailand may well become a member as its industrialization
deepens.

Sections II and III describe the salient features of the semi-
industrialized economy. In Section IV, the impact on such a semi-
industrialized economy of a standard stabilization policy consisting of
demand restriction, devaluation and liberalization is evaluated. Section
V explores the potential for stabilizing from the supply side, through
output expansion. Section VI presents a Marshallian synthesis in which
both demand and supply policies are brought to bear simultaneously, and
briefly discusses the potential links of such a balanced approach to
medium-term growth.

II

CHARACTERISTICS OF THE SEMI-INDUSTRIALIZED LDC'S

While no two economies are exactly alike, the semi-industrialized LDC's have a number of characteristics in common which determine very similar macroeconomic structures and adjustment mechanisms. As a result, they can usefully be treated as a particular kind of economy. In what follows, the four major aspects of these economies are discussed: output determination, price formation, factor costs, and import composition.[1] Thereafter a partial listing of the semi-industrialized LDC's is given, and finally the proximate causes leading to stabilization programs are described.

(a) Output generation

The semi-industrialized economy has two types of economic sectors: those whose output is determined from the supply side, and those whose output is determined from the demand side.

Among the supply determined sectors, we find two kinds of production:

(i) Export production, typically industrial agriculture and mining. Output consists almost exclusively of value added, and few imported inputs are used. Usually little or no domestic demand exists for this production. A few countries, Argentina being the most notable example, are the exception.

(ii) Food production, which encompasses subsistence and commercial agriculture for domestic use.

Sectors whose output is demand determined also comprise two groups:

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[1]See Behrman (1975) and Bruno (1978) for similar but not identical descriptions.

(i) Industrial production, which was originally import substituting but which has typically substituted away all preexisting imports of goods competitive with those produced domestically some time ago and now lives comfortably behind tariffs high enough to keep out any possible import competition or behind quantitative restrictions. This output uses imported inputs extensively. Furthermore, one finds some domestic price competition in this sector, which has driven domestic prices down below CIF plus tariff levels and generated "water" in the tariff;[1] however, this competition is rather gentlemanly and reflects by and large an oligopolistic market structure.

(ii) Services, which are naturally nontraded, but which use a varying amount of imported inputs. Within the service group, we find the import trade, which supplies inputs to the industrial sector, and also brings in food in countries where demand exceeds the domestic food availability.[2] In the latter case, we often find a very high import content with a rather low domestic value added in importing and transformation.

Grouping these sectors along a different dimension, one can say that semi-industrialized LDC's have one sector which generates foreign exchange, namely export agriculture and mining, and two sectors which use foreign exchange, namely industry and services.

(b) Prices

The export sectors typically operate at world prices and world costs. In some instances, however, these sectors are subject to export taxation

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[1]For quantification of this phenomenon see, for example, Balassa (1971), Berlinski and Schydlowsky (1977).

[2]See Bruno (1978), p. 11, for a similar consolidation of importing activities and other services.

which reduces their sales revenue below the world price as translated by the financial exchange rate.

On the other hand, the industrial sector operates at prices substantially above world prices. This is the consequence of this sector's origin and growth within the context of an import substituting industrialization strategy. Since the industrialization process has gone on for some time, moreover, at any stage of industrial transformation it is not only price which is above world levels but cost as well, as successive attempts at backwards integration of the productive structure have led to protection of sectors producing intermediate goods and capital goods. However, since a supplying sector's increased revenue is the using producer's greater cost, the process of backward integration has caused a rise in the cost structure throughout the industrial system.[1]

A useful way of visualizing the environment within which the industrial sector operates is to combine the exchange rate and the trade restrictions into an implicit multiple exchange rate system.[2] A typical structure of such an exchange rate system is shown in Table II-1. It is immediately apparent that on the import competing side, the closer the product is to the finished stage, the higher the tariff. This "cascading" is the result of the natural evolution of the import substitution drive from finished products backwards down the input chain. On the export side, however, in the common case of no taxes or subsidies, the exchange rate for exports is the same as that for financial transactions. This has rather strange

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[1]The recognition of this interaction is the basis of "effective rate of protection" type analyses.

[2]An early attempt to do so is Cartta (1966). See also Diamand (1973), particularly pp. 209 ff., and Schydlowsky (1972).

Table II-1

The Typical Exchange Rate System of a Semi-Industrialized LDC

"Pesos" per Dollar

Product	Market	Financial Rate	Trade Taxation	Total Rate
Primary Export	Domestic	10	—	10
	Export	10	—	10
Financial	—	10	—	10
Raw Material	Domestic	10	20%	12
	Export	10	—	10
Semi-Manufactures I	Domestic	10	35%	13.5
	Export	10	—	10
Semi-Manufactures II	Domestic	10	50%	15
	Export	10	—	10
Finished Products	Domestic	10	80%	18
	Export	10	—	10

consequences. On the input side, the exchange rate structure raises the costs of production progressively above world levels as the share of material inputs in output and the complexity of these inputs increase. Nonetheless, it is profitable to produce for the domestic market, where the output has an even higher exchange rate, while it is totally unprofitable to produce for export, where the exchange rate is only equal to the financial rate. It is fair to conclude from all this that the typical exchange rate structure in a semi-industrialized LDC contains a major hidden export tax.[1]

Furthermore, it can be concluded that simple productivity comparisons between domestic industrial production and world efficiency levels run the risk of being seriously misleading. Thus, for example, if one takes domestic costs of production and divides them by the "exchange rate" to obtain a dollar equivalent for comparison with world (import) prices, one will generate an overstatement of the excess cost. This "inefficiency illusion" arises because the "exchange rate" used is naturally the financial exchange rate while the domestic producer's cost is based on the "total" or "commodity" exchange rate (including tariffs) affecting the producer's inputs on the average. Evidently, this "cost exchange rate" is an average consisting of the total exchange rates affecting raw materials, semi-manufactures, capital goods, and wage earners' consumption (thus incorporating cost of living adjustments to a real wage). This average of input commodity exchange rates will invariably be above the financial rate and the difference may be quite considerable. Thus in the example of Table II-1, the material input rates to be averaged are 12, 13.5, and 15, whereas the implicit rate for wages would be a mix of 10 (food) and 18 (finished products). The average would lie between 12 and 18 depending on the input coefficients involved. In any case, the result

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[1] See Balassa et al. (1971) and Little et al. (1970) for empirical documentation.

will be considerably above 10. An actual calculation of such cost rates

and a comparison with the domestic and export sales rate are given in

Table II-2 for the Argentina of 1969.[1]

(c) Factor costs

The labor market is segmented into two major categories: a protected

submarket, where wages are set by government regulation (minimum wage laws

etc.) and union bargaining, and a nonprotected subsector, where significant

competition exists.[2] In the protected market, there is a tendency to

stabilize wages in real terms, although government actions in this regard

tend to fluctuate, while the ability of unions to compensate for any

inflation-induced erosions in the real wage fluctuates with their political

and economic power. In the nonprotected sector, the range of fluctuation

in the real wage is wider, as suppliers of labor take their cue from what

is happening in the protected sector and as the customarily high level of

underemployment changes either up or down. It should be emphasized that

although wages are set by market forces in the nonprotected sector, no full

employment is achieved; rather, a form of work sharing occurs in which most

members of the labor force are always partially employed and partially

unemployed.[3]

Consistent with the above labor market structure, the market wage in

both sectors is above the shadow wage rate, as measured by the opportunity

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[1]For a discussion of the inefficiency illusion and its difference from
effective protection analysis, see Balassa (1975) and Schydlowsky (1975).

[2]See Harberger (1971) for various consequences of this situation.

[3]What sets the floor on wages in the unprotected sector and how work-
sharing functions is still a subject of research. See Schydlowsky (1977),
Sec. III.1, and Papanek (1979) for various hypotheses. Also see Leibenstein
(1977) for a rationale for excess capacity applicable to "excess leisure"
of underemployed workers.

Table II-2

COST AND SALES EXCHANGE RATES AS MULTIPLE OF FINANCIAL RATE

Sector	Cost Rate	Sales Expt.	Rate Dom.	Sector	Cost Rate	Sales Expt.	Rate Dom.	Sector	Cost Rate	Sales Expt.	Rate Dom.	Sector	Cost Rate	Sales Expt.	Rate Dom.
011	.90	.90	.90	212	1.16	1.19	1.50	279	1.44	1.19	1.83	341	1.47	1.30	1.56
110	1.30	1.00	1.30	213	1.29	1.19	1.50	280	1.68	1.19	1.16	342	1.49	1.19	1.57
121	1.72	1.00	1.72	214	1.68	1.19	1.50	291	1.16	.89	1.65	350	1.36	1.21	1.75
122	1.70	1.00	1.70	220	1.24	.90	1.53	292	1.47	1.01	.97	360	1.65	1.22	1.88
130	1.33	1.00	1.33	231	1.27	.97	1.56	293	1.31	1.19	1.12	369	1.38	1.19	1.96
140	1.00	1.00	1.00	232	1.76	1.19	1.90	299	1.32	1.19	1.12	370	1.41	1.16	2.28
191	1.00	1.00	1.00	233	1.40	1.19	1.41	300	1.41	1.19	2.04	379	1.23	1.19	1.78
192	1.63	1.00	1.63	239	1.36	1.19	1.51	309	.97	1.19	2.09	381	1.29	1.19	2.03
199	1.71	1.00	1.71	241	1.38	1.19	1.78	311	1.59	.97	1.88	382	1.39	1.19	1.84
201	.99	.91	.93	242	1.45	1.19	1.76	312	1.01	.84	.84	383	1.56	1.19	2.12
202	1.23	.98	1.00	243	1.75	1.19	1.57	313	1.47	1.19	1.75	384	1.33	1.19	2.48
203	1.53	1.13	1.06	244	1.81	1.19	1.69	319	1.30	1.18	1.67	385	1.20	1.19	2.27
204	1.24	1.06	1.00	249	1.79	1.19	1.62	321	1.43	1.19	1.37	386	1.47	1.19	1.44
205	.99	.90	.92	251	.87	1.19	1.81	329	1.34	1.19	1.77	389	1.18	1.19	1.93
206	1.30	1.19	1.00	252	1.44	1.19	1.95	331	1.48	1.19	1.63	391	1.36	1.24	1.95
207	.56	1.19	1.87	259	1.23	1.19	1.70	332	1.48	1.19	1.76	392	1.60	1.13	1.51
208	1.55	1.19	1.30	260	1.47	1.19	1.41	333	1.37	1.19	1.33	393	1.54	1.19	2.15
209	1.03	.92	1.14	271	1.37	1.19	1.56	334	1.61	1.19	1.15	394	.93	1.19	2.22
211	1.71	1.19	1.52	272	1.77	1.19	1.82	339	1.43	1.19	1.28	395	1.34	1.19	1.55
												399	1.51	1.19	2.20

cost of additional employment of labor. Naturally, the differential is greater in the protected sector but it exists also in the nonprotected sector as a result of several elements operating on the supply curve of labor to raise it above the direct cost of leisure foregone.

The market price for capital, on the other hand, is substantially below its shadow price. This is a result of (i) relatively low tariffs on the importation of capital goods, (ii) the availability of long-term low-cost credit for the purchase of capital equipment, and (iii) features in the tax system which provide subsidies for the acquisition of capital goods via depreciation rates and writeoffs from corporate and other income taxes upon reinvestment in fixed assets.

The consequences of an overvalued cost of labor and an undervalued cost of capital goods are precisely those which one would expect: the rate of unemployment of labor is much higher than justified by underlying technological conditions, and, concurrently, extensive underutilization of the capital stock exists, which is totally out of keeping with the scarcity of this factor of production in the semi-industrialized economy.[1] The underutilization of the capital stock, which amounts to capital waste in the midst of capital scarcity, is particularly remarkable and illustrates the extent to which private profitability, based in good part on the incentive system, diverges from the social optimum. It should be noted, moreover, that the overcapitalization of the industrial and service sectors in the semi-industrialized LDC's, while fundamentally a secular phenomenon, fluctuates over time in accordance with the level of economic activity.[2]

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[1] Documentation of the underutilization of installed capacity in LDC industry is now widely available. See, for example, Betancourt and Clague (1978), Hughes (1976), and Schydlowsky (1976).

[2] See Behrman (1975).

This is of course consistent with the output of these sectors being demand determined.

(d) Import composition

Consistent with the structure of production, the semi-industrialized countries import mainly intermediate goods and capital goods which are noncompetitive with local production and complement local inputs in their various uses. In addition, they sometimes import food which is partially competitive with local production, supplementing it insofar as domestic supply is unable to satisfy local demand. However, food imports are often inputs into processed foods, such as wheat which gets processed into flour and bread, powdered milk which is used in bakery and confectionary goods, etc.

(e) The proximate cause of the need for stabilization

While countries naturally differ in the configuration of symptoms requiring treatment through a stabilization program, a balance of payments deficit and higher than desired inflation are invariably present. Moreover, it is common for the balance of payments problem to be much worse than the inflationary situation; indeed, many a time the domestic price level begins its explosive growth only after efforts to stabilize the payments situation are under way.

That balance of payments problems should be a leading indicator of general economic malaise is to be expected, given the economic structure of the semi-industrialized LDC. For if the country uses tariffs, prices cannot for long rise above the point at which competitive imports come in, thus strong demand pressures produce only limited inflation before spilling over into increased imports. In addition, the availability of plentiful excess capacity and underemployed labor means that for manufacturing and

services, any increase in demand can be accommodated with little or no
price increase--provided the requisite import component is brought in.
Thus in these cases as well, the balance of payments will register increased
imports while prices show little or no increase.

Crises originating in demand increases will thus show up first as
deficits in the foreign acccounts.

Cost push pressures have similar effects. Insofar as export costs rise,
foreign exchange revenue will fall, but until devaluation occurs, the domestic
currency price will not rise. Factor price increases in the domestic sectors
will raise prices but at the same time will raise demand, due to greater fac-
tor incomes and due to induced increases in the government budget. More
expenditure follows greater income and output and imports may rise. Hence
even cost push is likely to show up very directly in the balance of payments.

The final element making the balance of payments the bellwether is
the role of foreign debt. The semi-industrialized LDC's have recently
taken to financing their current account deficits increasingly with
medium-term capital inflows, principally from the large commercial banks.
While these flows are of moderate size and the build-up of total debt
proceeds slowly, there is no problem; however as the total debt cumulates,
its servicing and roll-over become increasingly more difficult. The need
for stabilization has thus increasingly been precipitated by a balance of
payments crisis originating in the inability to borrow additional amounts.
Stabilization then is attempted in a situation where the current account
has been negative for a number of years but inflation has been quite
moderate. The need for a policy change responds then more to an external
than an internal imbalance, with the relationship between the two often
being a bone of contention.

III

A SCHEMATIZATION OF THE MACROECONOMIC SYSTEM

The objective of this section is to present the typical semi-industrialized LDC in simple macroeconomic model form. The time frame is the short run, i.e. a time period short enough to permit omitting the effect of the enlargement of the capital stock. The model is thus intended to be for semi-industrialized LDC's what the standard textbook macro-model is for the developed countries: a useful schematization of how the different parts of the economy interact.

The model takes from the Keynesian tradition the existence of sectors whose level of economic activity is determined by demand. Hence the model has a multiplier. On the other hand, the model follows Polak's monetary analysis[1] by operating with a propensity to spend, thus recognizing that in these economies investors and savers are overwhelmingly the same individuals.[2] However, in differentiation with Polak, the fiscal system is kept separate from the private accounts. Furthermore, it is recognized that the typical semi-industrial LDC does not have an open market for its government's securities. Thus, the model incorporates the identity between the government deficit and central bank credit to the government.[3]

Aggregate supply and demand are conceived of as gross value of production concepts, thus allowing intermediate goods to be considered explicitly

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[1] Polak (1957), Polak and Boissonneault (1960).

[2] A similar view is taken by McKinnon (1973), Ch. II. See also Schydlowsky (1973) for a disaggregated formulation in the context of a less industrialized LDC.

[3] This feature of LDC reality is also used by Reichman (1973), Ch. III, and Bruno (1978), p. 15, and cited by Behrman (1975), p. 482.

in production as well as in price formation. Imported inputs, in particular, play an important role consistent with the importance of international trade in these economies.[1] Moreover, world prices are assumed given and fixed. Finally, the existence of tariffs or quotas on imports is explicitly assumed.

The model will be exposited in detail for a country using tariffs with the quota case being discussed later. The exposition focuses in turn on different parts of the macro-system which are described by the use of equations and graphs, the purpose being at the end to have an integrated, diagrammatic presentation which allows the effects of the major policy measures to be seen directly in visual form. In particular, the relation of internal to external balance will be explored.

(a) The Tariff Using Country

   (1) Exports and the supply of foreign exchange

The country is small in international trade and thus is a price-taker in world markets. It is capable of selling to the world two different kinds of products:

   (i) Traditional exports, consisting of agricultural and/or mining products. These are produced under increasing cost conditions and their short-run supply curve turns sharply upward and becomes inelastic at the level of "installed capacity," i.e. full utilization of land for agriculture and of existing production facilities for mining. This kind of output consists entirely of value added and does not require material inputs. Whereas this last assumption is only approximately true, it significantly

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[1]See particularly Behrman (1975) and Bruno (1978) for concurring views.

simplifies the exposition in graphics and does not change the conclusions in any substantive way.[1]

(ii) Industrial products, which are produced under constant cost up to the level of installed capacity of equipment. This kind of output requires considerable amounts of intermediate inputs, both imported and domestic, and the respective materials are bought at prices substantially above those obtaining in the world market, as a result of protection at successive stages of production. In other words, tariffs or quantitative restrictions on earlier stages of transformation affect the costs of production for the user industries. Within this category, a number of further subdivisions exist, with each sector of industry having its own cost structure and its own installed capacity.

The aggregate supply curve of exports, and therefore the aggregate supply curve of foreign exchange (since prices are given from the outside) is the horizontal summation of the aggregate supply curves of the various exportable products. The summation process is shown in Diagram 1, which, for simplicity's sake, shows only two industrial products as representatives of the whole sector. Notice that the aggregate curve has the approximate shape of a stylized "s", with a low-cost, inelastic segment followed by a high-cost and elastic segment.

Schematically, we can write supply function of exports and hence of foreign exchange as follows:

$$S_x = S_x(R, w_\ell, w_e, t, t_e, i) \tag{1}$$

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[1] See Bruno (1978) for a concurring view.

where R stands for the exchange rate, w_ℓ signifies the wage rate for laborers, w_e is the wage rate for entrepreneurs or managers, t is the tariff on imported inputs, t_e is the tariff equivalent on domestically produced inputs, and i is the interest cost on funds actually borrowed.

The amount of exports forthcoming depends on the exchange rate applicable to exports. Typically, this is a number of local currency units per dollar which make it feasible and/or profitable to export primary products, but not to export industrial goods, due to the interaction of the exchange rate and tariffs, which produces an anti-export bias in the exchange rate system considered as a whole. In Diagram 1, the export exchange rate is drawn as R_o which yields an amount of exports equal to X_o. It can immediately be seen by looking across the constituent elements of export supply, that all of the exports supplied come from the primary sector.

(2) Aggregate nominal demand

Aggregate nominal expenditure in the economy is a result of the total of private expenditure (E_p), government expenditure (G), and expenditure on the economy's export products by the rest of the world (XR):

$$D = E_p + G + XR \qquad (2)$$

Assuming for simplicity's sake that there is no domestic demand for export products, domestic income (V) can be written as the difference between total expenditure (D) and its import component (MR):

$$V = D - MR \qquad (3)$$

In turn, private expenditure is equal to aggregate income after taxes, less savings held in financial assets (ΔSB) and plus new net indebtedness incurred (ΔCRP):

$$E_p = V(1 - t) - \Delta SB + \Delta CRP \tag{4}$$

The financial markets are quite underdeveloped, hence all savings held in financial assets take the form of savings and time deposits in banks[1] while all new indebtedness of the private sector (excluding intra-sector loans) is to the domestic banking system, i.e. is additional credit.[2] Making financial saving a function of pre-tax income allows a simple incorporation of the effect of "savings in banks":

$$E_p = V(1 - t - sb) + \Delta CRP \tag{4a}$$

Imports[3] are technologically determined as a constant fraction of real output:

$$M = m \frac{D}{P^d} \tag{5}$$

Making use of the preceding equations, we can develop the equilibrium levels of domestic income and aggregate demand:

$$V + MR = V(1 - t - sb) + G + XR + \Delta CRP \tag{6}$$

$$M = \frac{m}{P^d} V - \frac{mR}{P^d} M = \frac{m}{P^d - mR} V \tag{7}$$

$$V = \frac{1}{\dfrac{mR}{P^d - mR} + t + sb} (G + XR + \Delta CRP) \tag{8}$$

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[1] See McKinnon (1973), Ch. 6, for a rationale leading to saving in monetary form. Behrman (1975) adopts a more conventional consumption function approach, but includes a consumption function for businesses as well.

[2] Borrowing abroad is excluded for simplicity's sake. See Schydlowsky (1973) for a treatment with such borrowing.

[3] Remember that world prices are assumed given and fixed, thus M is measured in CIF values and P^d is the domestic price of a quantity of output worth $1 CIF.

$$D = \frac{1}{\frac{mR}{P^d}(1 - t - sb) + t + sb} (G + XR + \Delta CRP) \qquad (9)$$

Equation (6) joins equations (2) and (3). Equation (7) gives us a reduced form for the real level of imports as a function of total domestic factor remuneration, and equations (8) and (9) give us respectively the equilibrium levels of domestic nominal income and aggregate nominal demand.

From equation (9) we see that aggregate nominal demand takes the traditional Keynesian form. It is equal to the sum of exogenous expenditure on the part of government, autonomous investment[1] and expenditure on the economy's output by foreigners, times a multiplier which results from the existence of demand determined sectors in the economy. Since the economy is open, the leakages correspond to imports (m) in addition to taxes (t) and savings in banks (sb). It is useful to call the multiplier λ, as is traditional.

$$\lambda = \frac{1}{\frac{mR}{P^d}(1 - t - sb) + t + sb} \qquad (10)$$

The relationship between the exogenous variables and aggregate nominal demand is shown graphically in Diagram 2.

(3) Aggregate real demand

Since domestic prices in the domestic sector are higher than world prices, it is necessary to deflate aggregate nominal demand in order to obtain aggregate real demand. This requires specifying the domestic prices

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[1]Note that autonomous investment is in this case only a fraction of total investment, for all investment financed out of retained earnings by firms or individuals is regarded as "induced."

in the domestic sector. For simplicity's sake, the physical units will be defined as those which cost one dollar's worth in world prices.[1]

We know from the nature of the markets that prices cannot be below marginal costs nor can they be above the import point. In turn, given the fixed coefficient production function,[2] the marginal cost curve is horizontal and easily defined. Thus, the floor for domestic prices is given as shown in equation (11) below, where the f_i represent the input coefficients of production and managerial labor and w_i are the respective unit labor costs.[3] In turn, we know that the import point depends on the tariff level. Thus, the ceiling for domestic prices will be given as in equation (12). Note that if the country operates with quotas rather than tariffs, there will be no effective ceiling since the tariff in that case is equal to infinity.

$$P^d_{min} = mR(1 + t^{input}) + (1 - m)R[f_\ell w_\ell + f_e w_e] \quad \Sigma f_i = 1, \; w_i > 1 \qquad (11)$$

$$P^d_{max} = R(1 + t^{output}) \qquad\qquad 0 < t^{output} \leq \infty \qquad (12)$$

The price naturally does not need to settle on either the floor or the ceiling. However, it is off the floor only when domestic supply is constrained in some fashion to be less than aggregate demand at the floor price. This means that the relevant sectors would no longer have demand determined outputs. We leave the discussion of the circumstances under which this may occur to the following section on aggregate supply, and note here only that

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[1]Since world prices are assumed fixed, this gives an unambiguous quantity measure. If world prices were to change a specific base year would have to be chosen and index number problems would occur.

[2]Recall (a)(ii) above for this assumption.

[3]This is the cost push formulation in prices found for example in Cauas (1970).

where prices are off the cost floor, they must be such as to equate quantities supplied and demanded at current prices. This reflection enables us to make a general statement about domestic prices as shown in equation (13): Price will be the <u>lesser</u> of (a) the price ceiling given by the import point and (b) the cost floor or the price equating quantities demanded and supplied, <u>whichever is greater</u>.[1]

$$P^d = \min\{R(1 + t^{output}), \max[mR(1 + t^{input}) + (1 - m)R_i \Sigma f_i w_i, \frac{D}{D^*}]\} \quad (13)$$

We can now explore what changes in the domestic price level mean for the multiplier. If prices are at their cost floor, we can substitute equation (11) into the denominator of equation (10), which allows the exchange rate to drop out. In that case, we find the multiplier defined as follows:

$$\lambda = \frac{1}{\frac{m}{m(1 + t^{input}) + (1 - m)\Sigma fw}(1 - t - sb) + t + sb} \quad \text{for } P^d \text{ as in (11)} \quad (14)$$

Naturally, if domestic factor incomes were equal to world factor incomes, i.e. w_i equals 1 for all i, and there were no tariffs on inputs, the denominator would simplify to the normal open economy Keynesian multiplier reflecting the propensities to import, pay taxes and hoard. However, it is precisely because factor incomes are above world levels that protection is needed. Correspondingly, the multiplier is greater than it would otherwise be. This result can be generalized by taking the derivative of the multiplier with regard to factor incomes and finding it to be greater

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[1]Both Corbo (1974) and Bruno (1978b) adopt a cost push approach with a variable mark-up, with the latter a function of demand, while Krugman and Taylor (1976) use a straight mark-up formulation. Keeping cost, demand and import ceiling separate has at least expository and perhaps also substantive advantages.

than zero:

$$\frac{d\lambda}{dw_i} > 0 \qquad\qquad (14a)$$

It follows that cost push increases in factor remuneration will be accompanied automatically by some demand pull as the multiplier becomes larger. In other words, factor price increases provide some of their own validation. Furthermore, if demand pull eventuates exogenously, such as from an increase in government expenditure, and lifts prices off their cost floor, factor quasi-rents will be created which will cause the multiplier to grow. As a result, an initial demand pull which is exogenous will propagate itself through further demand pull caused by the increase in the multiplier arising from increases in factor income. Or put yet another way, the economy becomes more closed and the multiplier becomes larger. Such closure of the economy can be the result of exogenous cost push or of income increases accruing to factors as a result of the appearance of quasi-rents pursuant to demand pull in the economy.

The translation from aggregate nominal demand to aggregate real demand is shown in Diagram 3. Notice that higher domestic prices with a constant exchange rate imply lower real demand.[1]

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[1]By definition $D^* = \frac{\lambda}{P^d} (G + XR + \Delta CRP)$. Taking λ from (14) and P^d from (11) yields $\frac{\lambda}{P^d} = \dfrac{1}{m(1-t-sb)R + (t+sb)R[m(1+t^{input}) + (1-m)\Sigma fw]}.$ However, an increase in P^d with R constant implies an increase in Σfw. Evaluating $\partial D^*/\partial \Sigma fw$ shows aggregate demand to be negatively sloped with regard to domestic prices.

(4) Aggregate supply

Aggregate supply in the domestic sector of the economy (S) is pro-
duced at constant costs with a fixed coefficient production function, up
to the maximum allowed by resource constraints. Thus we can conveniently
write the aggregate supply function as follows:

$$S = \min[\frac{1}{k}\bar{K}, \frac{1}{\ell}\bar{L}, \frac{1}{m}M, \frac{1}{\alpha}CRP] \tag{15}$$

Fixed coefficients are a reasonable approximation of the situation
because the short run that is relevant for this model is by definition one
in which the capital stock is constant as installed, and it is notoriously
difficult to change factor proportions on existing machinery.[1] Further-
more, the time frame involved, perhaps a year, is short enough to give
entrepreneurs fairly little incentive to make whatever adjustments in
factor proportions are in fact possible.[2]

The limitation to output arising from the endowments of capital ($\bar{K}$)
and labor ($\bar{L}$) in the economy require no particular explanation. The max-
imum arising from the availability of imports is of importance only in the
context of a quota-ridden economy, where the balance of payments is forced
into equilibrium through quantitative restrictions. In that case, the
availability of complementary ("maintenance") imports is indispensable to
production. (See the form of the import function, equation (5).) In the
tariff using economy, the import requirement does not place a ceiling on

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[1]See Reichman (1973) for a concurrent view and Behrman (1975) for a
contrary one.

[2]Evidently changes in the composition of output may generate substi-
tution between inputs in the aggregate supply curve. This possibility is
taken into account when discussing devaluation where it is particularly
relevant with regard to the import component.

domestic output but merely transmits the level of activity of the economy onto the balance of payments.

The fourth required input into production, credit, calls for some explanation. In most economies, output is not instantaneous and sales are not exclusively for cash payment nor are purchases of all inputs made for cash against delivery. The existence of a lag between the conclusion of a sale or a purchase and the payment of the amount involved causes a divergence between the profit and loss statement and the cash flow statement of enterprises. In static situations, this divergence causes no problems, however when the quantity produced and sold begins to grow rapidly or when input prices rise ahead of sales prices, the fact that any period's cash flow depends in part on a previous period's activity may generate a cash squeeze for the enterprise concerned. An increase in the demand for credit will then occur or alternatively a change in output level and/or prices will be required. The effect on an enterprise of a rapid growth in output can be seen from Table III-1.

Consider the initial situation. Sales are stable at 100 units, costs consist of imported and domestic raw materials (M Raw and D Raw, respectively), hired labor (L), hired management and entrepreneurship (E), and depreciation. A profit before taxes of 5 remains, against which 40% tax liability is incurred and profits after taxes equal 3. In this economy, it is customary for sales to be paid 90 days after receipt and for the same to occur with regard to payment for all material inputs purchased. However, all factor incomes are paid on a current cash basis. In turn, taxes are also paid 90 days after they are incurred. In a stationary situation, none of these lags makes any difference. Each period's net

Table III-1

The Demand for Credit Arising from Rapid Growth

	Initial Situation		desired growth t+1 (ΔQ20%)		desired growth t+2 (ΔQ20%)		adjusting through price t+1 (ΔP9.4%)		adjusting through price t+2		adjusting through output t+1 (ΔQ13.3%)		adjusting through output t+2 (ΔQ13.3%)		adjusting through price and output t+1 (ΔQ13.3% ΔP15.6%)		adjusting through price and output t+2 (ΔQ27%)	
	P/L	CF	P/L	CF	P/L	CF	P/L	CF	P/L	CF	P/L	CF	P/L	CF	P/L	CF	P/L	CF
Sales	100	100	120	100	144	120	131.3	100		131.3	113.3	100	126.2	113.3	131.0	100		131.0
Costs:																		
M Raw	30	30	36	30	43.2	37.2	36	30		37.2	34.0	30	37.8	34.8	34.0	30	43.2	34.8
D Raw	10	10	12	10	14.4	12.4	12	10		12.4	11.3	10	12.6	11.6	11.3	10	14.4	11.6
L	30	30	36	37.2	43.2	44.6	36	37.2		44.6	34.0	34.8	37.8	38.6	34.0	34.8	43.2	45.0
E	20	20	24	24.8	28.8	29.8	24	24.8		29.8	22.7	23.2	25.2	25.8	22.7	23.2	28.8	30.0
Deprec.	5	-	5	-	5	-	5	-		-	5	-	5	-	5	-	5	-
	95	90	113	102.0	134.6	124.0	113	102.0		124.0	107.0	98.0	118.4	110.8	107.0	98.0	134.6	121.4
ΠBT	5		7		9.4		18.3				6.3		7.8		24.0			
TX	2	2	2.8	2.0	3.8	2.8	7.3	2.0		7.3	2.5	2.0	3.1	2.5	9.6	2.0		9.6
ΠAT	3		4.2		5.6		11.0				3.8		4.7		14.4			
		8		-4.0		-6.8		-4.0		0		0		0		0		0

desired growth t+1: Sales 120, ΔInv 4, Output 124.

desired growth t+2: Sales 144, ΔInv 4.8, Output 148.8

adjusting through output t+1: Sales 113.3, ΔInv 2.6, Output 115.9

adjusting through output t+2: Sales 126.2, ΔInv 2.6, Output 128.8

adjusting through price and output t+1: Real Sales 113.3, Real ΔInv 2.6, Real Output 116.0

adjusting through price and output t+2: Real Sales 144, Real ΔInv 6.1, Real Output 150.1

change in cash is equal to the profits after taxes plus the allowance for
depreciation. In the example, this amounts to 8.

Now consider a situation where demand expands 20% per quarter.[1] In
quarter $t+1$, the profit and loss statement grows proportionately by 20%
except for depreciation, which is assumed fixed. Cash flow, however, is
dependent on revenues and payments held over from the previous quarter.
Thus receipts from sales do not rise at all but stay at 100. Likewise,
payments for raw materials do not increase and stay at a total of 40.
However, payments to factors must grow 20% to keep pace with the sales
and on this account would total 60. However, if sales expand, it is
natural for the enterprise to also wish to raise its inventories propor-
tionately. If the ratio of inventories to sales is 20%, then current
production must rise 24% for sales to rise 20%. Hence, factor costs in
fact rise from 50 to 62 rather than just to 60. Cash flow for our company
in period $t+1$ therefore consists of 102 of expenses compared to 100 of
revenues, i.e. a current shortfall of 2. To this must be added the payment
of last period's taxes which are another 2. Thus the total shortfall of
cash is 4. In the next period, the situation repeats itself and the short-
fall rises from 4 to 6.8. Notice that these shortfalls of cash are con-
sistent with significant increases in profits which rise after taxes from
their stationary rate of 3 to a level of 5.6 in period $t+2$. Note also
that the shortfall of cash occurs despite the fact that all purchased
inputs are available at constant prices.[2]

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[1]Such a rapid increase in demand for particular sectors or firms is
not uncommon when there is an upsurging of exports or investment. As will
be seen in the illustration, to achieve a rate of growth of output by 20%
in response to the 20% increase in demand is difficult.

[2]Notice also that if there were no inventory accumulation, there would
still be a cash shortfall of 2 in period $t+1$ and 2.8 in period $t+2$.

The firm in this situation has only two options. It can borrow the cash it needs to carry it through this expansion phase or it can attempt to generate the cash internally. In the latter case, it must raise prices to generate sufficient profits after taxes to cover its increased cash needs. This alternative is simulated in the second panel of the table, entitled "adjusting through price." A moment's reflection makes it clear why during the first period, there is no way the company can finance its cash flow shortfall internally: any price change it implements in this period will only be felt as revenue in the following period. Thus, adjusting through price enables the cash deficit to be wiped out in quarter $t+2$ but not in $t+1$. Price adjustment is therefore not a short run substitute for additional credit.

The enterprise naturally has the option of growing more slowly and either not satisfying the increase in demand immediately or running down inventories. The former alternative is shown in the panel headed "adjusting through output." If our enterprise grows only 13.3% per quarter instead of satisfying the increased demand of 20%, then it can meet all its cash needs internally. However, such a slower growth of supply as compared to demand is unlikely to leave prices unchanged. Thus demand pull would ensue and raise prices. Decumulating inventories would prevent the excess demand from arising but may simply postpone the problem's occurrence and/or may leave the firm to replace the inventories later at higher factor costs with the consequent capital loss. In consequence, inventory decumulation cannot be relied upon to save the situation.

Our final panel shows "adjusting through price and output," the most usual outcome. In the first quarter, output grows by its cash constrained maximal rate and prices grow sufficiently to bring supply and demand into

equilibrium in the second quarter with a substantially higher internally financed growth rate. It can be seen in our example that for the aggregate growth rate of 40% to be obtained over two periods, we need a price rise of 14% in the first period accompanied by a growth of output of only 13.3%.

Evidently this example is a special case. In general, the need for additional credit will depend on the terms extended on sales and purchases, on the ratio of pure profits and depreciation to sales, on the relative increases in output and input prices, and on the magnitude of the change in output volume.

The overall conclusion which emerges is that the rate at which aggregate supply can expand depends on the amount of internal or external finance available.[1] Given sufficient time for adjustment, however, any level of output can be attained through internal finance. Thus, the constraint on output arising from the need to finance working capital and trade credit results from the rate of change per period and not from the absolute levels involved. This is not to say of course that if credit were cut to the enterprises, this would not have an immediate supply restricting effect. It does mean that at a constant level of credit to enterprises, the aggregate supply curve will turn sharply upward in the vicinity of current output levels for very short-run adjustment periods and will gradually become more elastic as the time period considered is extended.

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[1] For an early theoretical statement of the role of finance for working capital in the price and output decisions of firms, see Williams (1967). At the macro level the problem has been investigated by Maynard and Rijckeghem (1968). The role of working capital in the microeconomics of the firm and its macro implications has recently received attention in Cavallo (1977), Bruno (1978a) and (1978b), and Aspe (1978). However, these recent treatments all assume the existence of a capital market with a supply of funds responsive to the interest rate. In consequence they focus on the price effect of the demand for working capital and derive output consequences indirectly. Cavallo does attempt a rationing approach in his macro modeling; however, it is not fully integrated with his underlying micro model.

Rapid increases in quantities of factors demanded may also raise factor costs. Machines and their staffs can work overtime, however this may imply paying higher wages to both production line and entrepreneurial labor. Thus the supply curve of factors will no longer be horizontal. The same occurs in regard to imports. The delivery time from overseas acts in precisely the same form as the period of production. Thus a very rapid expansion of the demand for imports will cause a temporary monopoly to exist with regard to the stocks at hand. This monopoly can be broken insofar as goods can be flown in, but the freight charges in that case are higher than the usual cost of importing by sea, leading to higher costs and prices.

In conclusion, then, the aggregate supply curve is constant cost provided the rate of increase of output per unit of time does not exceed the accustomed rate by too much.

We now graph our aggregate supply curve, including its short-run credit constraint, in Diagram 4.

(5) The balance of payments

The supply of foreign exchange comes naturally from exports. However, to the extent that export production requires the input of imported intermediate goods or raw materials, the net provision of foreign exchange to the balance of payments will be lower than gross export receipts. The same occurs when export production entails the obligation to remit profits and/or royalties. For balance of payments purposes, then, it is necessary to translate gross export receipts into net foreign exchange retained, or net exports (NX) for short. This is done in equation (16):

$$NX = \sum_i (1 - \sum_j r_{ji} m_j) X_i \qquad (16)$$

For reaspons of simplicity, we have assumed that primary exports require no material inputs, being entirely value-added. For these exports, then, net exports and gross exports are identical. For industrial exports, obviously, the same does not hold. Furthermore, there is no reason to believe that price competitiveness of industrial exports is correlated either positively or negatively with the import intensity of export production. Thus, when in Diagram 5 we draw in the lower right-hand quadrant the transformation from gross to net exports, the line does not have a declining slope but has kinks whenever the product switches.

Imports are dependent on domestic output since they are complementary to domestic production. While imports are related through fixed coefficients to domestic output, the average import intensity of domestic output changes with the level of activity, due to different effects: (i) changes in the output mix resulting from differential income elasticities of these different products, and (ii) changes in the output mix resulting from some domestic sectors' reaching full capacity output before others and, as a consequence, requiring a change in sourcing patterns from inside the economy to outside the economy.[1]

In Diagram 5, the import curve reflecting these considerations is shown. It starts with a very low import intensiveness as primarily food gets consumed and increases its marginal import intensity as the share of industrial products in demand increases, to once again grow more slowly as services become more important in the consumption basket, and finally to become unity when domestic supply capacities are exhausted completely.

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[1]Price elasticities for final product also affect the average import coefficient when domestic relative prices change. This element is discussed in the context of devaluation.

The lower vertical axis of Diagram 5 serves to summarize the balance of payments situation. Here imports and exports can be compared on a net basis and capital flows can be added in. In the example used in the diagram, there is a requirement to retire a certain amount of debt $(-\dot{B})$ which is greater than the surplus on the balance of trade, thus causing an overall balance of payments deficit.

(6) Employment

The demand for labor originates in both the export and the domestic sectors. Consistent with the fixed coefficient production function, the quantity of labor demanded is determined by the labor input coefficients. There is not the price elasticity that would exist if the demand for labor resulted from a continuous marginal product of labor curve.[1]

The situation in the labor market is depicted graphically in Diagram 6. The vertical axis LL' represents the total stock of workers in the economy. The right-hand part shows the labor coefficient corresponding to the export activities which consists of a number of linear segments, the slope of which need not vary continuously in one direction, because the ordering of activities by price competitiveness in exports need have no correlation with the ordering by labor intensity. On the left-hand employment panel is the demand for labor curve arising from the nonexport activities. The marginal labor intensity of output falls as the share of agricultural products in the demand mix falls and the share of industry increases. It later rises again as services become more important in the production mix. Given a level of activity in each of the economic sectors,

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[1]However, wage changes can bring about changes in average labor input through changes in relative prices of products and attendant changes in the composition of final demand.

their demand for labor results. We can measure the demand for labor in

exports from the origin L and the demand for labor and domestic activities

from the origin L'. The segment $N_x N_D$ represents the labor not employed in

either sector and hence constitutes unemployment. Where a work sharing

system of one sort or another exists, the portions $L'N_D$, LN_x should be

thought of as full employment equivalents and the segment $N_x N_D$ represents

unemployment equivalents of underemployed individuals.[1]

(7) The market for money

In the usual semi-industrialized LDC, no sophisticated financial

markets exist and thus the market for money is identical to the monetary

system.[2] In this system money gets created as a result of export receipts

which are converted into domestic currency, or as a result of increases

in bank credit. Money gets extinguished through imports or through the

collection of taxes by the government. Thus on a continuing basis there

are two major sources of monetary change: the balance of payments and

bank credit.

In Diagram 7, the top half illustrates the process of the creation

and extinction of money. On the right-hand side, we have the exogenous

expenditures in the economy expanding the money supply: exports, plus

government expenditure and credit to the private sector, insofar as they

are financed by central bank credit (high powered money). With tax

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[1] See Brecher (1974) for a treatment of the pure theory of international trade with unemployment of labor.

[2] Obviously various localized and unintegrated curb markets exist. However, the only ones of importance function within family groups which are in effect closely held conglomerates and within rural villages where money lenders operate. In both situations barriers to entry (on both sides of the market) are formidable. In a macro context these markets vanish through aggregation of similar economic agents.

collection lagging one quarter, however, it is convenient to regard all government expenditures as financed by the central bank and all taxes as used to repay such financing. With this convention, all government expenditure adds to the money supply. Moreover, it is quite uncommon to find the central bank financing the private sector. Thus exports and government expenditure represent "high powered money," and the increase in the total monetary stock will be a multiple of this exogenous input, depending on the average reserve requirement (rr) resulting from the mix of demand deposits, time deposits, and currency held at the margin. On the other side of the graph, we see the elements extinguishing money, namely, imports and taxation. These are also multiplied by the money multiplier. Finally, we have outward capital flow, i.e. debt repayment, which also extinguishes money. On a net basis, there is extinction of money in this example.

On the lower part of the diagram, we show the change in the domestic credit level which arises from the functioning of the money multiplier. Corresponding to the creation or extinction of money in the upper part of the diagram there is expansion or contraction of credit in the lower part.

In addition to these continuous flows which exist even when the system is in equilibrium, there are the demands for money and credit originating from changes in the level of activity. These operate on both sides of the market. When the level of income rises, the demand for money balances on the part of households and businesses will change, while expansion of the level of activity will cause an increase in the demand for credit on the part of businesses. There is no reason to assume that these demands are mutually compatible nor that they will coincide exactly with the expansion of the monetary stock or expansion of credit arising

from the continuous flows. Thus, taking into account these demands for
one-time changes in stocks of money and credit will imply transitory
levels of income and expenditure different from the final static equilib-
rium points.

(8) The system as a whole

We are now ready to assemble the various pieces into one coherent
whole. This is undertaken in Diagram 8. Begin in the second panel from
the top on the right-hand side (Panel IIR). This is the supply of export
panel and one can see how the interaction of the supply curve with the
exchange rate yields a level of exports. These contribute to aggregate
nominal demand in the panel immediately above (Panel IR) and also contribute
to net supply of foreign exchange in the panel immediately below (Panel
IIIR). Tracing through aggregate demand in Panel IR we must add to exports
the expenditure of the government and increases in credit to the private
sector. All three together are converted by a multiplier to an aggregate
nominal demand. Moving along the top toward the left to Panel IL, we find
the deflator from aggregate nominal demand to aggregate real demand. Note
that the demand curve labeled D* in Panel IIL reflects the combined
effect of changes in the domestic price on the multiplier and the price
deflator, with exchange rate held constant. Panel IIL also shows aggregate
supply and internal equilibrium at the intersection of both curves (D_o/P^d).

Moving downward to Panel IIIL we see that real domestic output
determines the import requirement. Furthermore, the vertical axis between
Panels IIIL and IIIR shows that in this instance there is a deficit in the
balance of trade. Moving further to the next set of panels (IVR and IVL)
we see the money market, where the generation and extinction of money
exactly balance each other, which is a reflection of the internal

equilibrium. However, since the balance of payments is in deficit, this implies that taxation is insufficient to cover government expenditure and the central bank is injecting money via the government deficit. Correspondingly, in Panels VR and VL immediately below, the creation and extinction of credit is recorded to be in equilibrium.

Finally, in the bottom two panels (VIR and VIL) we see the employment situation. The sum of labor employed in the export activity plus the labor employed in the domestic sector are insufficient to exhaust the supply, and unemployment exists.

(b)   Comparative Statics of the Tariff Using Country at Constant Exchange Rates: More Government Expenditure

It is useful to undertake this discussion with Diagram 9 in view.

The first thing that occurs as government expenditure rises is that the exogenous input into the spending stream becomes greater. This is shown in Panel IR. Concurrently, the creation of money and credit is also expanded, as can be seen in Panels IVR and VR.

If prices stay constant, the expansion in nominal government expenditure translates itself not only into an increase in nominal aggregate demand but also into an increase in real aggregate demand and real domestic output. The corresponding point is shown in Panel IIL as the intersection between the new aggregate demand curve D_1^* and the preexisting aggregate supply curve, and is labeled D_1/P_o^d.

Corresponding to this higher domestic output level is a higher level of imports (Panel IIIL), a worsened balance of payments and a higher level of employment in the domestic sector (Panel VIL). Since income has risen, the demand for money has gone up as has the demand for credit. These transitory demands would depress income below its stationary level for a

period of time. The long-run effect in the money market is neutral; how-
ever, the loss of reserves has a continuous contractionary effect on the
money supply and credit which is offset by increased deficit financing to
the government. It should be noted, however, that the higher level of
activity implies a higher tax base and thus the increase in deficit
finance is lower than the increase in government expenditure.

We know from previous discussion, however, that it is not possible to
expand output quickly without having a corresponding expansion in credit
to the private sector. If this is not forthcoming, we move up the con-
strained supply curve which results from the need to finance working
capital. This curve is shown as $S(CR)$ in the second panel on the left-
hand side. As prices rise, domestic output moves to the intersection of
demand curve D_1^* and $S(CR)$, the economy becomes more closed, the multiplier
rises to a level λ_1, aggregate nominal demand rises and aggregate real
demand falls. Concurrently, demand for liquid balances rises. The fall
in domestic output level improves the balance of payments somewhat by
reducing imports, but deteriorates the employment situation with regard
to the situation without price increases. Finally, the tax coefficient
with regard to real income rises, as a result of the price inflation, and
the multiplier becomes smaller on this account.

With the passage of time, the credit constraint becomes relaxed;
however, the increase in prices leads to an increase in factor incomes
which constitutes cost push and raises the supply curve of domestic output
to a level P_2^d. Since this price level is lower than the transitory level
caused by the credit constraint, the multiplier falls back to λ_2, and
aggregate demand expands to a level corresponding to the intersection of
aggregate demand curve D_1^* and the new raised supply curve P_2^d. Imports

expand once more, the real tax coefficient recedes somewhat, and employment expands to some extent.

Comparing the final situation with higher government expenditure to that obtaining initially with a lower level of government expenditure, we find the following: a higher level of real activity, a higher level of prices, a worsened balance of payments, an improved employment situation, and a money market which is in equilibrium thanks to a continuous injection of central bank credit to finance a share of the new government expenditure.

These results are not remarkable except in one respect: the extent to which the existence of a short-run credit constraint produces a lasting rise in the price level through the wage push set off by transitorily higher prices.[1] It should be noted parenthetically that even the prices of imported goods would rise in such a situation so long as any domestic value added were required to move the imports from their arrival in the port into the hands of the final users. Since such value added is always required (e.g. transportation, wholesaling, etc.), it is possible to have domestically induced inflation even in a completely open economy operating under free trade. Moreover, under such conditions the price increases would be lasting and could not be competed away by bringing in more imports.

(c) Comparative Statics of the Tariff Using Country at Constant Exchange Rates: World Inflation

The effect of world inflation on the system depends on whether the price increase is of export or import prices or of both.

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[1]The same effect might well result from short-run sectoral inelasticities in the supply of nontraded goods or services such as cement or a particular category of skilled labor.

An increase in export prices will cause an increase in aggregate demand through the multiplier. The supply response will cause an increased transitory demand for working capital, an increased lasting demand for imports as well as an accumulation of liquidity. Note that the increase in export prices will initially cause a balance of payment surplus which makes room for the accumulation of additional money and for the extension of the credit required for working capital.

An increased world price of imports will signify an increase in the cost of production of nonexportables, hence an upward shift in the aggregate supply curve. Simultaneously the increased cost of inputs will generate an increased demand for working capital, which cannot be satisfied without fall in output by selling existing inventories since there has been no change in aggregate demand. Hence the demand for working capital will be translated into an increased demand for bank credit. At the same time, the impact effect of an increased price of imports will worsen the balance and payments, thus contracting the monetary base. The combined effect of the increase in demand for credit for working capital with the contraction of the monetary base and the rise in the cost of production will result in a fall in the output of nonexport goods and a decrease in national income.

If both export and import prices increase together in the same magnitude, the effect depends upon the situation of the balance of trade.[1] If exports equal imports exactly at the outset, the result will be a transitory reduction in output and a transitory surplus on current account from a twofold effect: (i) increased demand for working capital resulting from the higher cost of production of nonexportables confronting an unchanged

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[1] See Hirschman (1949) and Cooper (1971).

monetary stock (since the balance of trade is initially in equilibrium) will cause a fall in output until sufficient internal cash flow has been built up to replenish the stock of working capital. In turn, the fall in output will depress imports causing a BOP surplus. (ii) Additional demand for monetary balances resulting from the increase in the domestic price level will clash with the fixed money supply and assure that the deflation lasts until the desired level of liquid assets has been built up again.

Should the balance of trade be positive, the deflation will be less or nonexistent, since the higher world prices will raise the domestic currency equivalent of the surplus and thus provide a monetary expansion which may accommodate increases in the demand for money and credit. On the other hand, should the balance of trade be negative, the deflation will be more severe since the effect of the larger reduction of the monetary base through a balance of payments deficit at the higher new world prices will be added to the contractionary effects discussed under the case where the balance of trade is in equilibrium.

(d) The Quota Using Country

The macroeconomic interrelationships in this type of country are the same as in the tariff using country except for one major aspect. The difference arises in the balance of payments and in aggregate supply. Under quotas, the deficit in the balance of trade is exogenously determined. This implies that with a given import intensity of production, aggregate supply is determined by the available imports. As a result, the aggregate supply curve turns vertical at the point where all import quotas are used up. It follows that aggregate demand and aggregate supply will balance

through the price mechanism, and prices are likely to rise above the level given by the cost of production (see equation (13)).

Increased government expenditure in this situation will produce an increased aggregate nominal demand, but since aggregate supply cannot expand, increased prices will result. This will lead to increased nominal income rates for all factors of production and increased demand for working capital. The latter can be found in part or in whole from additional credit available consequent to the primary finance of the government deficit.

An increase in export prices has the same effect as in a tariff using country provided imports are allowed to increase proportionately to the export price increase. Otherwise, the effect will be the same as with an expansion in government expenditure. An increase in the world price of imports, on the other hand, will reduce effective real import capacity. In addition, domestic cost of production will rise, and the demand for working capital will increase. Simultaneously, because of the restriction of import capacity, sustainable aggregate output will fall and domestic prices will rise more than the direct cost push effect of higher import prices.

(e)   The Interaction Between Internal and External Balance

In the semi-industrialized economy, there are several interactions between internal and external balance that are not usually found in other types of economies. It is therefore useful to point them out explicitly:

(i)   Full use of installed capacity implies balance of payments deficit: A quick look at Diagram 8 will show that when the output of the demand determined sectors is at full utilization, the amount of imports demanded exceeds the import capacity. This results from the

overcapitalization in industries and services consequent to the relative price policy followed. The short-run macroeconomic implication is major, however: balance of payment deficit does not automatically indicate over-heating of the economy. At best it may mean sectoral overheating, such as is indicated by excess demand for food or for the products of the construc-tion industry. Sectoral overheating, however, loses much of its meaning in an open economy since the purpose of trade is precisely to allow countries to avoid having to produce all they consume, but rather import those things in which they have either a long-run comparative disadvantage or a short-run supply bottleneck.

(ii) In tariff using countries, domestically engendered inflation depends on the speed of growth of aggregate demand, not on the level of government deficit, for the "normal" elasticity of the aggregate supply curve is extremely high; it is only for very rapid movement along the curve that it turns steeply upward. Moreover, domestic price increases in these economies are constrained by the possibility of competitive imports: when the domestic price in any good rises to the import point, domestic demand will spill over into imports, thus containing the price increase and generating a balance of payments deficit instead.

(iii) In a quota using economy, the link between domestic demand and trade is effectively severed. As a result, the economy behaves as though it were closed: an increase in aggregate demand causes an increase in domestic prices, regardless of the speed at which that increase has taken place.

(iv) World inflation is likely to be contractionary since an increase in import prices leads to an increase in costs which in turn causes an increase in the demand for working capital credit. If the balance of trade

is in deficit, world inflation will increase the nominal drain on the
monetary stock through the balance of payments, thus tightening the
domestic money market. If the balance of trade is in surplus, the monetary
mechanism will provide an offset to the deflationary impact arising from
the increased demand for working capital and income may go up or down.

IV

STABILIZING FROM THE DEMAND SIDE

In this section the "standard" package comprising the usual stabilization policy is first described, and its rationale exposited; then the effect of this package in the semi-industrialized LDC is explored.

(a) The "standard" package and its rationale

The usual stabilization package consists of three central elements: (i) devaluation, (ii) government expenditure restriction, and (iii) private credit restriction. In addition, it may involve a reduction in prohibitive tariffs or an elimination of quotas.

The effects of these measures are intended to be mutually complementary as follows:

The devaluation is designed to raise the domestic currency prices of exports and imports compared to prices of nontraded domestic goods. This is to lead to a switching of expenditure from traded goods to nontraded goods. As a result, more supply of exports is expected to be forthcoming, the demand for imports is expected to fall, and the demand for home goods is expected to rise with the consequent inflationary pressure on the output of such nontraded domestic goods. Thus, devaluation is expected to improve the balance of trade and to generate expansionary pressures in the nontraded sector.

The restriction of government expenditure and of private credit is designed to offset the expansionary effect of the devaluation in the domestic goods sector.

Trade liberalization (tariff or QR reduction) is designed to have some dampening effect on prices, but above all is intended to increase efficiency by letting in foreign competition.

On a net basis, then, the package is supposed to expand exports, contract imports and have an effect on the domestic level of activity (the nontraded goods sector) depending on whether the expansionary effect of the devaluation outweighs the deflationary effect of reduced government expenditure and private credit restriction or vice versa. The fundamental intent is certainly to have the level of domestic activity stay constant and to generate a net reduction in the absorption of traded goods, thus improving the balance of payments. Monetary effects in this context contribute a transitory deflationary impact, as the rise in domestic prices of traded goods generates a demand for increased liquidity which depress private expenditure transitorily, while liquid balances are being built up. In addition, efficiency is to be raised by an increase in the competitiveness of markets.

(b) Effect of the standard package in the semi-industrialized LDC's

(i) Devaluation

The devaluation will have no significant effect on expanding exports, for the export sectors have very low short-run price elasticity of supply.

Consider Panel IIR of Diagram 10. The change in the exchange rate from R_o to R_1 has two effects: It raises the revenue from exports, and raises the cost of exports. The latter effect is a consequence of two elements: (1) the increase in the cost of any imported inputs used in the process of export production, and (2) the increased domestic factor incomes pursuant to devaluation. Both effects together are depicted in the movement of the export supply curve from $S_x(R_o)$ to $S_x(R_1)$. On balance, revenue

goes up more than cost, particularly for traditional exports, which we have assumed have no import component whatsoever. Thus, export profitability of traditionals will have risen; whether any increase in the quantity supplied is forthcoming depends on whether the price elasticity of supply is greater than zero. However, no export supply will be forthcoming from nontraditionals.

Since little if any expansion of export revenue can be expected in the short run, any improvement on the balance of trade will occur mainly to the extent to which imports can be made to fall. However, a switching of expenditure from the consumption of traded goods to nontraded goods which would reduce the average import component (Panel IIIL) is minimal for several reasons. First, there is virtually no import of finished products, thus switching must occur between different home goods with differing import contents. Second, all home goods have an import component, hence the increase in the price of foreign exchange affects the price of all domestic goods to some extent, depending in part on their import intensity. Third, the most import intensive home goods tend to be food, since at the margin food often contains a very high import component. Yet the price elasticity of the demand for food is usually very low. Fourth, devaluations of any size will cause repercussions on domestic nominal wages, with various income receivers attempting to restore their real predevaluation incomes, and succeeding at least partially. This effect naturally minimizes further the extent of relative price changes between goods of different import intensity.

The limited extent to which devaluations affect relative prices in semi-industrialized LDC's can be seen from the example shown in Table IV-1. Notice that the two goods at issue have very different import intensities:

Table IV-1

Effect of Devaluation on Relative Prices [1]

Cost Structure	Good	
	A	B
Imported inputs	20%	60%
Production Labor Bill	50%	20%
Managerial/Entrepreneurial Bill	30%	20%

Case I

Devaluation = 50%		Increase in P_A = 40%
Prod. Wage Increase = 30%		Increase in P_B = 46%
Man./Entr. Increase = 50%		Rel. change P_B/P_A = 4.3%

Case II

Devaluation = 50%		Increase in P_A = 34%
Prod. Wage Increase = 30%		Increase in P_B = 42%
Man./Entr. Increase = 30%		Rel. change P_B/P_A = 6%

Case III

Devaluation = 50%		Increase in P_A = 26%
Prod. Wage Increase = 20%		Increase in P_B = 38%
Man./Entr. Increase = 20%		Rel. change P_B/P_A = 9.5%

[1] These examples assume that there are no pure profits. Nonetheless accounting profits may well exist as a way of paying managerial/ entrepreneurial wages.

Commodity A has a 20% import component, while commodity B has a 60% import component. Furthermore, commodity A is more labor intensive than commodity B. If we consider the effect on these commodities of a 50% nominal devaluation, we need to specify at the same time what kind of domestic factor price response there will be. In case I we have assumed that nominal production line wages rise by only 30%, while managerial and entrepreneurial wages rise by the full amount of the devaluation. The result is that relative prices change by only 4.3%. The same 50% nominal devaluation, when accompanied by a 30% rise in all nominal income rates, generates a relative price change of 6%. With the same 50% devaluation and a rise in all nominal income rates of only 20%, we still get a relative price change of only 9.5%. And, of course, 50% nominal devaluations are usually regarded as rather hefty. Thus, there isn't much to be expected from expenditure switching price effects.

However, the devaluation will have income effects. The domestic value of export revenues will rise, as can be noted from Panel IR. We note, however, that the devaluation at the same time also generates cost push in the domestic sector, raising the supply curve of domestic goods to a new level of P_1^d. This implies a reduction in the multiplier through a greater opening of the economy. However, $\lambda_1 R_1$ is greater than $\lambda_o R_o$ and thus aggregate nominal demand expands. Aggregate real demand, however, falls, as does real domestic output.[1] The new level of internal equilibrium based only on cost push is given by the intersection of $D_1^*(R_1)$ and the new supply curve P_1^d. This lowered level of real domestic output implies a reduction

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[1]This result always holds if there is no increase in real exports. If export revenue is sufficiently responsive to devaluation, the absolute change in R is high and exports are large compared to government expenditure and credit to the private sector, aggregate real demand can rise.

in required imports and thus an improvement in the balance of payments in dollars. At the same time, however, it signifies an increase in the deficit of the balance of payments in terms of domestic currency, thus increasing the contraction in the money market. Simultaneously, employment in the domestic sector falls.[1]

The contraction in the stock of money resulting from their increased domestic currency BOP deficit causes a contraction of credit. Simultaneously, however, the requirement for working capital has been increased since costs have been pushed upward exogenously. Domestic output falls to allow internal financing of working capital to occur through selling off existing inventories, while domestic price rises. The new temporary internal equilibrium takes place at the intersection of the aggregate demand curve $D_1^*(R_1)$ and the short-run credit constrained supply curve $S_1(CR)$.

With these transitory higher prices, the economy becomes more closed, the multiplier rises to $\lambda_2 R_1$. Employment falls somewhat, and so do imports, thus, finally, reversing the situation in the money market and beginning to create an expansion of money and credit, through an increase of international reserves.

It is worth halting here briefly to consider the mechanism which generates the demand for additional credit as costs are pushed upward. We use for this purpose the same representative firm analyzed in the situation of increasing aggregate demand. The respective initial conditions are reproduced in Table IV-2, together with the simulation of the firm's profit and loss and cash flow statements in two successive quarters.

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[1] Note that if domestic real demand increases (see footnote on preceding page), the monetary tightness will be much worse, for imports will be up rather than down.

Table IV-2

The Demand for Credit Arising from Devaluation

Initial Situation			t + 1 $\dot{R} = 50\%$ $\dot{w}_i = 0$		t + 2 $\dot{R} = 0$ $\dot{w}_i = 30\%$	
	P/L	CF	P/L	CF	P/L	CF
Sales	100	100	115	100	130	115
Costs:						
M Raw	30	30	45	45	45	45
D Raw	10	10	10	10	10	10
L	30	30	30	30	39	39
E	20	20	20	20	26	26
Depreciation	5	–	5	–	5	–
	95	90	110	105	125	120
ΠBT	5		5		5	
TX	2	2	2	2	2	2
ΠAT	3		3		3	
CF		8		−7		−7

At the beginning of quarter $t+1$, a 50% devaluation occurs. The most immediate effect is an increase of the cost of imported raw materials for new purchases, and for the payment of the outstanding debt which is typically denominated in foreign exchange. No other cost items rise in price immediately and thus sales prices need not rise by more than the additional 15 of import costs to preserve nominal profit in the P&L statement. In the cash flow statement, however, revenues are still based on the predevaluation sales, and thus the firm incurs a cash deficit of 7. In the following period, the exchange rate stays constant, but domestic factor costs increase by 30%. Domestic raw materials are still constant in the example and are assumed to increase in price only in period $t+3$. In the P&L statement, it is now necessary to raise prices once more, to cover the additional 15 cost increase arising from factor price increases. Thus nominal profitability is once again maintained. In the cash flow statement, however, revenue now depends on the sales in $t+1$, which signify that once again the firm has a cash shortfall of 7.

It is worth noting that in period $t+1$ the firm has only two options: It either borrows to cover its cash shortfall, or it is forced to reduce output, regardless of its price policy, since the latter can only have an effect on the following period. Output in $t+1$, however, affects revenue in the cash flow statement of $t+2$, thus requiring an even higher price increase in the earlier period to prevent cash flow in the later period from being more negative.

The reduction in output required by the negative cash flow depends on the proportion of costs subject to price increase, as well as the initial positive cash flow and the fraction of total costs that are variable. The following equation summarizes the relevant relationships:

$$\bar{\Delta D}* = \frac{\Sigma a_{ji} \dot{P}_j - (cf_i)_o}{\underset{var}{\Sigma} a_{ji}} \tag{17}$$

where a_{ji} = cost shares at world prices, $(cf_i)_o$ = ratio of cash flow to sales before devaluation, and var = inputs making up variable costs.

We return now to our analysis of devaluation.

The short-run price rise caused by the credit restriction will become incorporated into a factor price increase which will translate itself into cost push for domestic production. As a result, the domestic cost curve shifts upward to P_3^d. In turn this change has an impact on the multiplier which becomes somewhat smaller, moving to $\lambda_3 R_1$. The effect is an expansion of the level of activity compared to the credit constrained situation.

The final equilibrium resulting from devaluation will imply the following changes in comparison to the predevaluation situation: exports will be up very slightly, domestic prices will be up, domestic output will be down, and employment will be down. The balance of payments will be in equilibrium and the domestic money stock and credit level will have increased.

Devaluation will have generated inflation and recession.[1]

(ii) Expenditure restriction

The contractionary elements of the standard package reinforce the previous results. A reduction in government expenditure leads naturally to a reduction of aggregate demand. A reduction in credit to the private sector can lead to a reduction in aggregate demand or a reduction in

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[1] See Krugman and Taylor (1976) for similar results. Also see Diaz-Alejandro (1963) and (1965), Diamand (1973), Hirschman (1949), and Cooper (1971a) and (1971b).

aggregate supply. Which effect occurs depends on the purpose for which the credit is extended. If consumer credit is cut or demand for fixed investment is affected, aggregate demand will fall. On the other hand, if the credit which is cut finances working capital needs, it will be aggregate supply which will be reduced.

Thus, the contractionary components of the stabilization package will in any case be deflationary but may be inflationary in addition.

(iii) Import liberalization

Abrupt removal of QR's or drastic reduction of prohibitive tariffs will affect the total exchange rates affecting sales on the domestic market but leave the cost rates largely unchanged. Hence profitability of producing for the domestic market will be reduced, domestic output will fall and imports will rise. Thus liberalization will tend to worsen the balance of payments at the same time as it depresses domestic output.

(iv) In summary, the standard stabilization package applied to the semi-industrialized LDC produces:

1. No important change in exports.

2. Reduction of imports based on a fall in the level of economic activity resulting from supply restriction, and demand restriction.

3. Further fall in output due to import liberalization which will also raise imports somewhat at the same time.

4. Domestic price rises resulting from supply restriction.

It is evident that these results differ significantly from those which provide the rationale for adopting the package in the first place.

V

STABILIZING FROM THE SUPPLY SIDE

The preceding section dealt with the "standard" package for stabiliza-
tion, and characterized that package as operating essentially on the demand
side. In this section we will explore the other side of the market and see
what can be done from the supply side to help the stabilization effort.

(a) Increasing supply and the foreign exchange bottleneck

It is a truism that when too much money is chasing too few goods, one
can either reduce the amount of money chasing the goods or increase the
amount of goods being chased. In either case, the rise in prices would
be contained. In the case of the semi-industrialized LDC, raising the
availability of goods is easier said than done because all domestic output
has an import component and thus unless additional foreign exchange is
forthcoming, domestic output cannot increase. Hence, stabilizing prices
from the supply side requires essentially providing foreign exchange for
the economy. However, an increase in the availability of foreign exchange
solves the two stabilization problems at the same time for it will improve
the balance of payments while making it possible for imports to expand,
thus raising the effective domestic aggregate supply.

(b) Earning more foreign exchange: reexamining the supply curve of
     exports

The analysis undertaken so far has focused on the inelastic portion
of the supply curve of foreign exchange, because it is only the primary
sector which is a foreign exchange earner in the semi-industrialized LDC.
It is in part this inelasticity of the supply of foreign exchange which

causes the problems for the traditional standard stabilization package. However, if it were possible to operate on the elastic portion of the supply curve of foreign exchange the picture would be quite different. On that portion of the curve, even a small real devaluation would cause a large increase in the availability of foreign exchange, because labor is available and capital is installed and the sale abroad of the output would make it quite feasible to pay for the required imported inputs and still have foreign exchange earnings left over.

However, operating on the elastic segment of the supply curve of exports is difficult since the shape of the curve itself is the result of the multiple exchange rate system operating on the cost side.

A general devaluation is not usually capable of "rounding the kink." The reason is the following: a general devaluation raises the cost of industrial products in part by directly raising the cost of the imported component and in part by indirectly raising the nominal cost of domestic factors. Thus the "cost exchange rate" of nontraditional exports rises together with the financial rate, and even if it does not rise proportionately it rises enough to make it very hard for the sales rate, i.e. again the financial rate, to ever be high enough in real terms to make it profitable to export. This perverse circumstance can be readily illustrated with the example which was used before to examine the switching potential of devaluation (see Table V-1). Assuming that factor income rates fall no more than 25% compared to the exchange rate, neither product becomes export competitive even at 1000% rate of devaluation; however, in the process factor cost inflation of 780% will have been caused. Only if all factors were willing to accept relative price losses of 37.5% or 75% could export

Table V-1

Making Industry Export Competitive Through General Devaluation

Costs	Good A	Good B
Imported Inputs (33 1/3% tariff)	20	60
Production Labor Bill	50	20
Management/Entrepreneurial Bill	30	20
	100	100
World Price	70	70

(Tariff on output 42.8%)[1]

% Devaluation	% Δ Factor Costs	Good A Cost	Good A Export Price	Good B Cost	Good B Export Price
20%	10%	112	84	116	84
50%	25%	130	105	140	105
100%	60%	168	140	184	140
200%	140%	252	210	276	210
1000%	780%	924	700	1012	700

	Good A	Good B
Required fall in factor incomes compared to exchange rate to achieve competitiveness[2]	37.5%	75%
Required fall in production labor wage rate compared to exchange rate to achieve competitiveness[3]	60%	Wages must become negative

[1]The effective protection on value added is: 45.5% for good A, 60% for good B.

[2]Good A: $\dfrac{\text{new factor incomes}}{\text{old factor incomes}} = .625 \dfrac{\text{new exchange rate}}{\text{old exchange rate}}$

Good B: $\dfrac{\text{new factor incomes}}{\text{old factor incomes}} = .25 \dfrac{\text{new exchange rate}}{\text{old exchange rate}}$

[3]Good A: $\dfrac{\text{new production labor wage bill}}{\text{old production labor wage bill}} = .4 \dfrac{\text{new exchange rate}}{\text{old exchange rate}}$

competitiveness be achieved. However, it is hard to imagine all income receivers to stand still for such income losses, particularly for any length of time.[1] If wages alone had to bear the brunt, the relative deterioration would have to be 60% for good A and more than 100% for good B, i.e. in the latter case, production labor would have to be willing to accept a reduction in nominal income!

Unfortunately, general devaluation is not well suited for making industrial goods export competitive.

Happily, there is another alternative for "rounding the kink" and that consists of adopting a differential devaluation rather than a general devaluation. The objective of such a differentiation would be to offset some of the undesirable features of the existing multiple exchange rate system. Specifically, the differentiation would make it possible to provide nontraditional exports with a sales exchange rate at least equal to the exchange rates affecting its costs on average, and possibly providing a rough parity between the total exchange rates affecting sales on the domestic market and those affecting sales for export. Such differential devaluation need not affect the cost exchange rate, because if desired, the financial rate and trade tax system would be left unchanged.

(c) The implicit multiple exchange rate system: Before and After

Differential Devaluation

It is useful at this point to recall for a moment the structure of the exchange rate system which governs the semi-industrialized LDC and conditions its balance of payments adjustment mechanism. The typical structure

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[1]Note that the cost of living need not rise immediately by the full rate of the devaluation; how soon it does in fact depends on income receivers' expectations and their ability to drive up their rates of pay.

presented in Section II is reproduced in Table V-2. Notice that there is

a complete lack of symmetry between the total exchange rates affecting

sales for the domestic market and those affecting exports. Remember also

that the cost exchange rates are based on the exchange rates affecting

domestic sales.

A Differential Devaluation implies adjusting only the sales exchange

rates for nontraditional exports. A possible set of magnitudes is shown

in the middle panel of Table V-2. It is a particularly simple alternative

which consists of a uniform across-the-board export subsidy for all non-

traditionals.

A further alternative is possible, however, Rather than having a high

explicit export subsidy, it is possible to have a lower explicit subsidy

in addition to a modification of the mix of exchange rate and trade taxa-

tion in the exchange rate system. Such a combination involves implementing

what is called a "compensated devaluation," which provides an export sub-

sidy through the exchange rate while lowering tariffs and applying an

export tax on traditional exports. This subsidy-cum-compensated-devalua-

tion alternative is shown in the right-hand panel of Table V-2. Notice

that the right and middle panels produce exactly the same economic effect

on production and trade; the only difference lies in the rate applied to

financial transactions.

Which alternative one wishes to implement or indeed what mix of both

depends naturally on a number of considerations which cannot be gone into

at length here.[1] It is worth mentioning, however, that the most obvious

considerations are of legal nature, since explicit subsidies invite

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[1]For a partial discussion see Schydlowsky (1967).

Table V-2

Alternative Modifications to the Exchange Rate System

		Initial Situation			Uniform Export Subsidy			Compensated Devaluation		
		Fin. Rate	Tax	Total Rate	Fin. Rate	Tax/ Sub.	Total Rate	Fin. Rate	Tax/ Sub.	Total Rate
Primary Export	Domestic	10	-	10	10	-	10	12	16.6%	10
	Export	10	-	10	10	-	10	12	16.6%	10
Financial	-	10	-	10	10	-	10	12	-	12
Raw Material	Domestic	10	20%	12	10	20%	12	12	-	12
	Export	10	-	10	10	50%	15	12	25%	15
Semi-Manuf. I	Domestic	10	35%	13.5	10	35%	13.5	12	12.5%	13.5
	Export	10	-	10	10	50%	15	12	25%	15
Semi-Manuf. II	Domestic	10	50%	15	10	50%	15	12	25%	15
	Export	10	-	10	10	50%	15	12	25%	15
Finished Products	Domestic	10	80%	18	10	80%	18	12	50%	18
	Export	10	-	10	10	50%	15	12	25%	15

countervailing duties, whereas the compensated devaluation does not. On

the other hand, the compensated devaluation may have some cost push

effects, if there are many tariffs at rates below the rate of devaluation.

This is particularly serious when food imports are an important item and

enter duty free. In such circumstances, the compensatory devaluation may

well have some inflationary impact. Furthermore, the two alternatives

will have different allocative effects resulting from the different

effective rates of protection which they imply. Finally, there may be

differences in fiscal effect resulting from differences in the sizes of

the tax bases for export and import taxation.

(d) Welfare and fiscal aspects of differential devaluation

The instinctive reaction of the economist is to recoil in horror from

implementing a multiple exchange rate system. Its vices and defects are

too well known. Yet, what we have here is a choice between two alternative

multiple exchange rate systems and _not_ a choice between one unitary and

one multiple exchange rate system. Thus, the question is which of the two

multiple exchange rate systems is preferable from a welfare-theoretic

point of view, and can be resolved by looking at the differential effects

of the systems. The system after differential devaluation will produce

additional export product and revenue. If the revenue is worth more than

the cost, this is movement in a positive direction and the policy is

desirable.

In the semi-industrialized LDC foreign exchange is always scarce,

particularly so when the balance of payments problem has gotten serious

enough to require a stabilization package. Thus, it is safe to say that

the shadow price of foreign exchange is well above the market price.

Furthermore, if the alternative to producing more for export is to induce a recession combined with inflation, it is roughly correct to say that all the GNP which has to be sacrificed in this deflation should be imputed to the value of the foreign exchange which is lacking. Thus, in these special circumstances, the shadow price of foreign exchange will be a multiple of the market exchange rate. On the other hand, a semi-industrialized LDC is typically plagued by high unemployment and underemployment rates. If a recession is induced, the employment situation will get even worse. Thus not only is the shadow wage well below the market wage, but with a recession around the corner it is even more so. Indeed, it could be argued that the marginal social cost of labor in these circumstances is quite close to zero. Moreover, the semi-industrialized LDC has substantial amounts of idle capacity in its domestic goods sector. With an induced recession, this overcapacity would increase even further. Thus the marginal social cost of using already installed capital is virtually zero as well.[1] It follows that the foreign exchange to be earned has several times the value of the market exchange rate whereas the factors of production needed to produce that foreign exchange have a social cost of only a fraction of their market price. Under these circumstances, it can safely be concluded that on welfare grounds differential devaluation would be clearly beneficial.

It may not be sufficient for differential devaluation to have beneficial welfare consequences. It may be necessary for the program to be financeable by the government, particularly if an export subsidy is the alternative chosen and the exchecquer is already in difficult straits as

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[1] Note that user cost is irrelevant if machines are replaced due to technological obsolescence rather than physical exhaustion.

it normally would be if a stabilization program is being envisaged. For there is no question that an export subsidy system would require fiscal expenditure. On the other hand, it would also prevent a recession which would significantly reduce the tax base and therefore cause a substantial loss in government revenue. The question then is whether on balance the government is better off paying the export subsidy and collecting its normal taxes or not paying out the export subsidy and suffering the reduction of tax collection from the recession. Which way the answer comes out depends on the empirical magnitudes. However, since a peso spent on export subsidies leverages itself through bringing in fresh foreign money from abroad, it is safe to expect that for a wide range of situations such an export promotion program will be self-financing. Indeed, the few calculations that exist on this topic confirm this suspicion.[1]

Three principal concerns can therefore be put to rest: (1) stabilizing from the supply side does not imply creating a multiple exchange rate system where a unitary exchange rate system existed previously. Rather, it involves substituting a new multiple exchange rate system for the preexisting multiple exchange rate system. (2) The new multiple exchange rate system generates greater output than the old one and produces foreign exchange which in rough terms has marginal social utility worth several times the marginal social cost incurred in producing it. (3) The new system will cause the fiscal treasury to incur some expenditure but will also prevent a shortfall in government revenue which for a wide range of situations exceeds that initial expenditure.

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[1]See, for example, Schydlowsky, D. M., "Short Run Policy in Semi-Industrialized Economics," Economic Development Cultural Change, XIX, 3 (April 1971), and "Capital Utilization, Growth, Employment, Balance of Payments and Price Stabilization," Discussion Paper No. 22, Center for Latin American Development Studies, Boston Univ., Dec. 1975; Valdivieso, Luis, "The Distributive Effect of Alternative Policies to Increase the Use of Existing Industrial Capacity," Ph.D. dissertation, Boston Univ., July 1978, forthcoming CEMLA.

VI

A MARSHALLIAN SYNTHESIS OPERATING ON DEMAND AND SUPPLY

In stabilizing an economy, particularly where a balance of payment deficit is involved, time is of the essence. A supply approach is likely to be fairly slow because new export markets need to be found and developed, an export oriented mentality needs to be created, administrative and regulatory infrastructure needs to be reformed, etc. Thus a pure supply approach may not produce an improvement of the balance of payments quickly enough to satisfy a country's creditors. On the other hand, demand measures also have a lag in taking effect for they collide with the inertia inherent in the economy and they run counter to the short-run interests of domestic income receivers as well as the politicians in power. Thus a pure demand approach cannot be counted upon to produce an immediate improvement either. Indeed, the only policy measures which can be guaranteed to cut imports quickly are quantitative restrictions. Yet these have particularly high costs in terms of output for they drastically reduce the supply capacity of the economy. A reasonable approach to providing a fairly rapid improvement of the balance of payments situation together with limited costs in terms of deflation and unemployment is a mix of supply and demand policies. In such a context, demand policies can be assigned the task of restricting government expenditures, which typically have raced ahead of the expansion of aggregate supply in the economy. On the other hand, the supply policies can be used to provide a switching of the markets in which domestic output is placed: from domestic to foreign, thus containing the deflationary effect of a reduction in government expenditure.

A policy package which would represent such a mix would consist of
(i) a differential devaluation which raised the general exchange rate
somewhat and the exchange rates for nontraditional exports very substan-
tially, (ii) expenditure restriction on the government, either through a
direct ceiling on government expenditure or through limits on additional
government borrowing at the central bank and abroad, (iii) a credit shift
in the private sector, making available resources for working capital in
preference to new fixed investment. Such a change in the mix of private
finance would shift credit from economic agents in the private sector
interested in expanding final demand for goods and services to those who
require credit to finance working capital.

A major advantage of proceeding on such a balanced stabilization
course is the link which it affords to medium-term improvement in the
overall productive efficiency of the economy. Such a medium-term goal
is typically formulated in terms of reducing the productivity differen-
tials between sectors, i.e. closing the gap between the domestic resource
cost of earning foreign exchange in industry and the primary traditional
exporting sectors. In principal, this gap can be closed by allowing
industry to survive only if it can match the primary sector in productivity
or alternatively it can be closed by expanding the primary sector to the
point where decreasing returns make the productivity at the margin no
greater than industry's. Which route one follows has major policy design
and welfare implications.

Taking primary sector productivity as the goal implies a free trade
policy with an exchange rate set at a level allowing primary exporters to
compete. However, an abrupt liberalization will make a very large fraction

of the existing capital stock obsolete by policy fiat, for imports will force enterprises to close.

On the other hand, expanding up the marginal cost curve of the primary sectors implies free trade at an exchange rate reflecting the average level of productivity of the industrial sector. However, such a policy will provide large rents for intra-marginal primary producers and may create income-distributional problems (especially if food output is involved).

A Marshallian stabilization policy allows a gradual approach to a goal reflecting a compromise of both positions. Existing capital is not rendered obsolete by abrupt liberalization. Rather, the savings embodied in the existing capital stock are extracted through the medium of additional output. Then they are reinvested in more productive lines of endeavor on the basis of a more uniform exchange rate structure announced for the future. At the same time, primary expansion is promoted up the marginal cost curve by replacing the export tax imposed as part of the compensated devaluation, by a Ricardian land tax which picks up intra-marginal rent but does not reduce output at the margin. The land tax deals directly with part of the equity problem; in addition, it may provide revenue for financing compensatory programs to ease the transition to relative food prices more in accord with the comparative advantage of the country.[1]

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[1] See Diamand (1973), Ch. 12, and Berlinski and Schydlowsky (1977) for a fuller discussion of these medium-term strategies.

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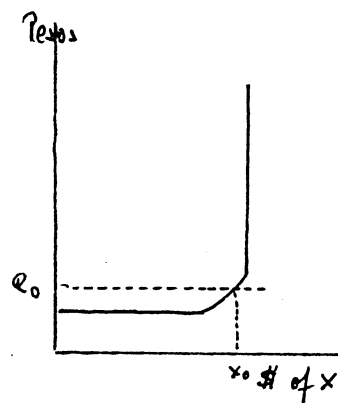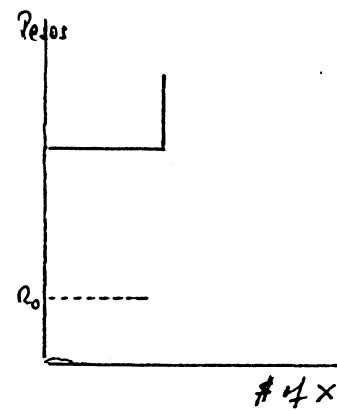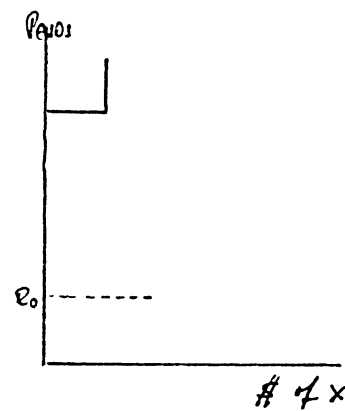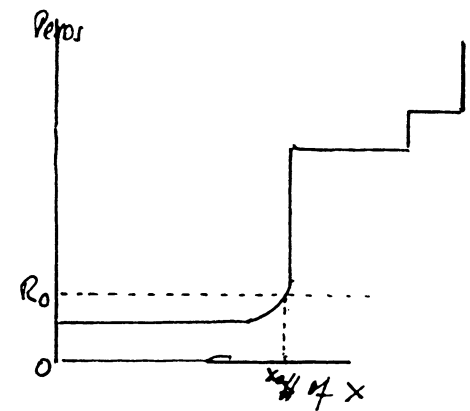
The Supply of Exports

Diagram Nº 1

Aggregate Nominal Demand

$$\lambda R = \cfrac{R}{\dfrac{mR}{Pd}(1-t-sb)+t+sb}$$

D
(pesos)

D_0

X_0 $X_0 + G_0/R + \Delta CRP/P$

$
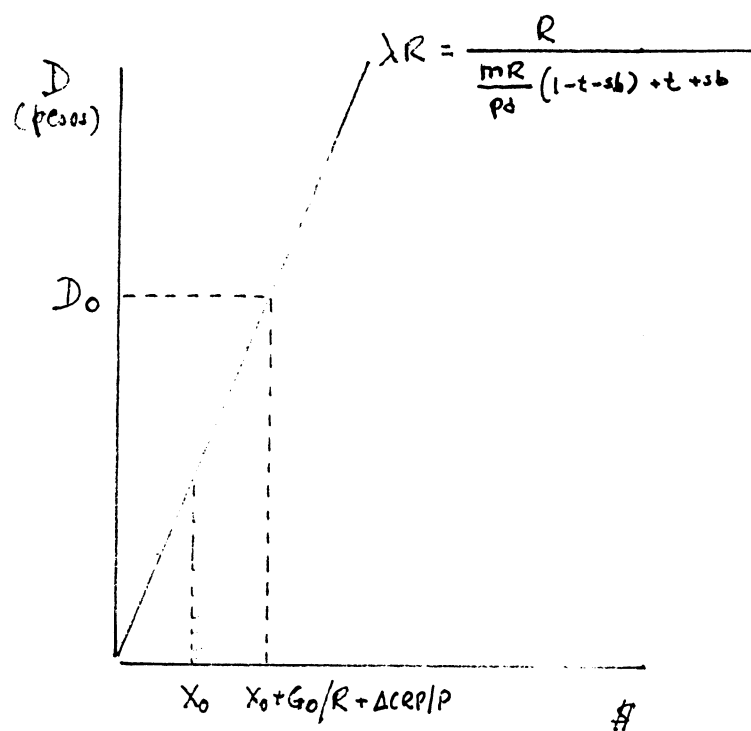
Diagram Nº 2

Aggregate Nominal & Aggregate Real Demand

$$D$$
$$(Pesos)$$

$$\frac{1}{P^d_0}$$

$$\frac{1}{P^d_1}$$

$$\lambda_1 R$$

$$\lambda_0 R$$

$$\frac{D}{P^d} \ (\$'s)$$

$$\frac{D_0}{P^d_0} \quad \frac{D_1}{P^d_1}$$

$$X_0 + G_0/R + \Delta CEP/R$$

$$\#$$
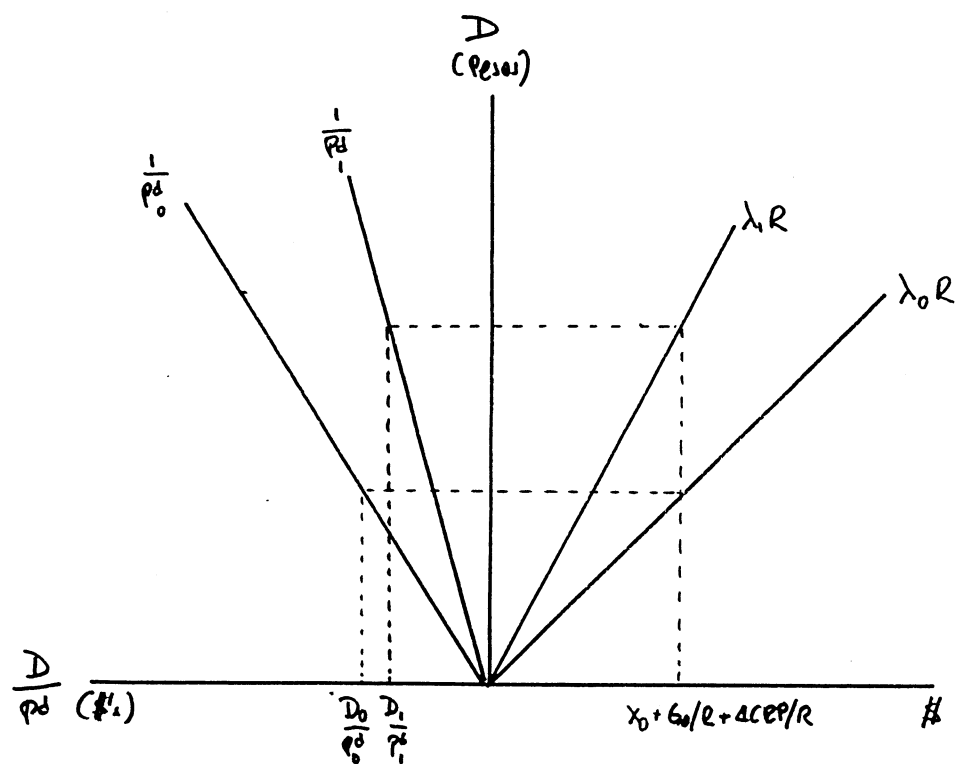
Diagram Nº 3

Aggregate Supply

$\Delta CRP = 0$

Pd

D^*

$\overline{H}$ $\overline{L}$ $\overline{K}$ D_0
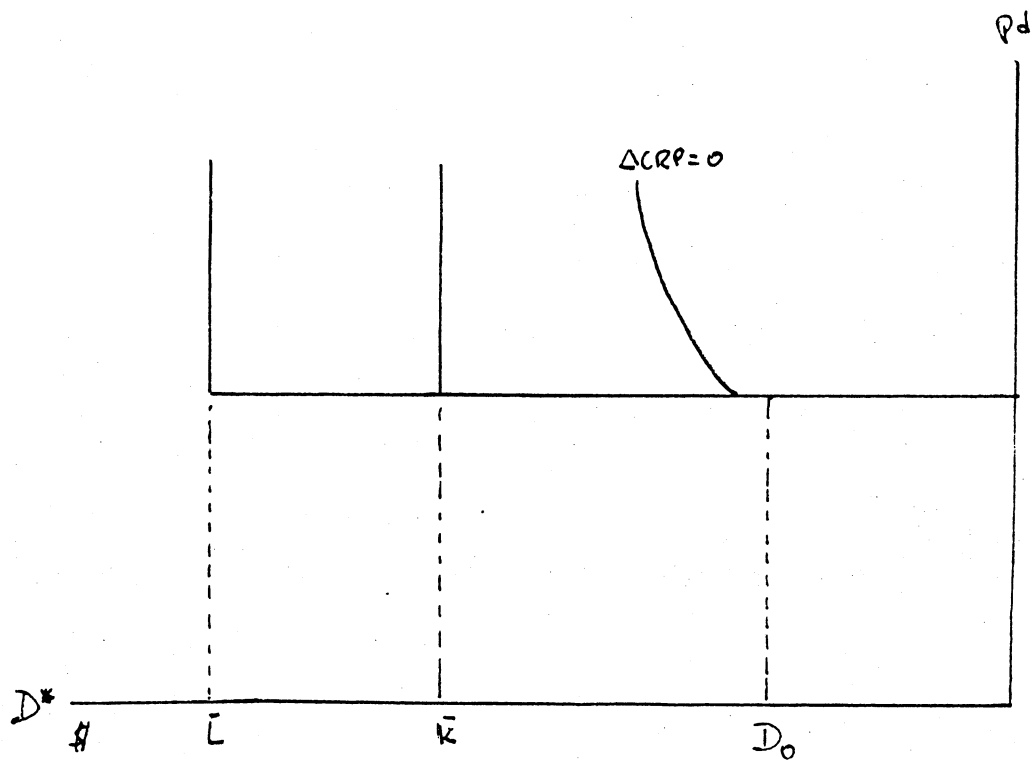
Diagram Nº 4

The Balance of Payments
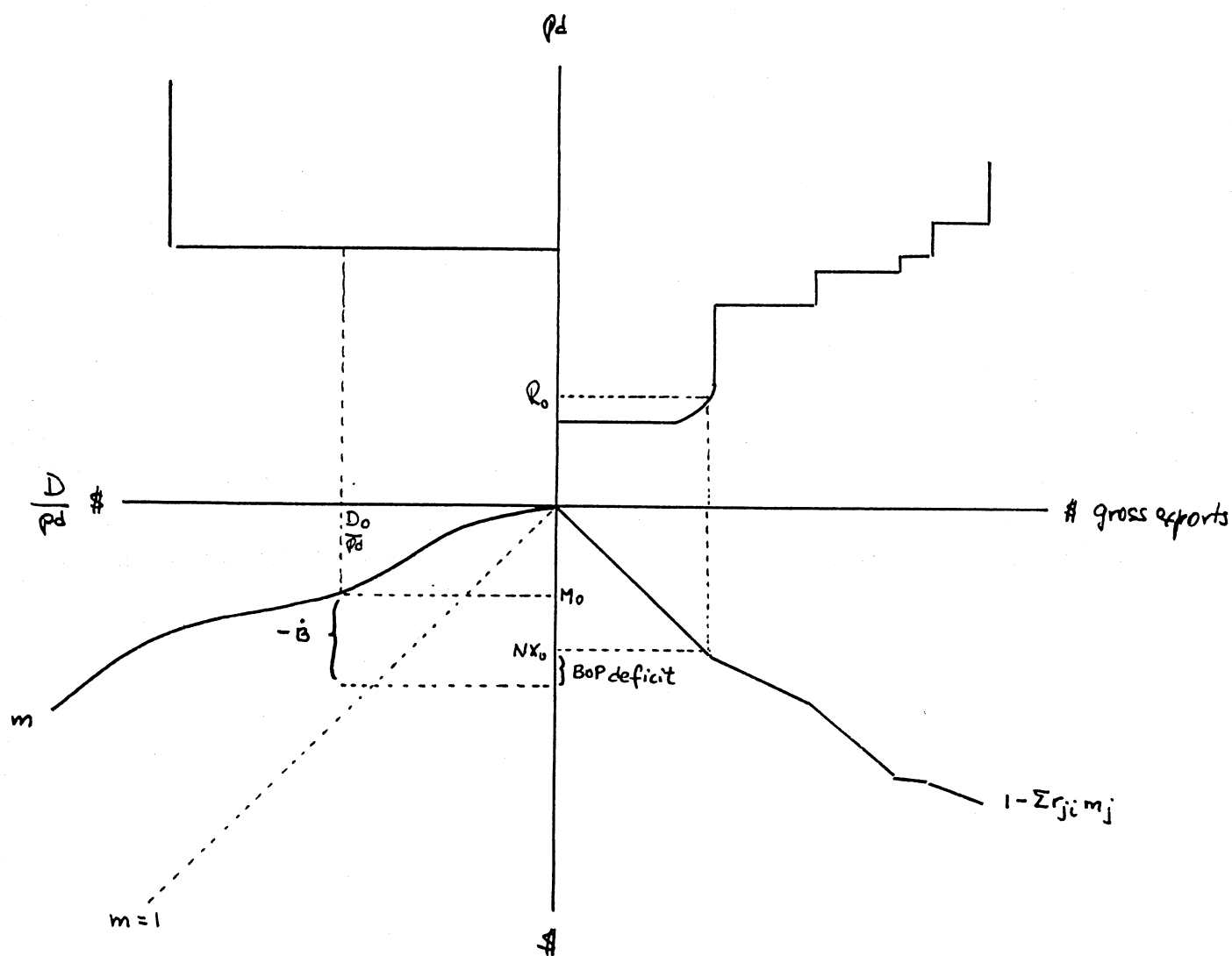
Diagram Nº 5

Employment

Diagram Nº 6

The Monetary System

ΔMO

$\frac{D_0}{P_d}$

$R \cdot \frac{1}{rr}(m+t)$

$R \cdot \frac{1}{rr}(m+t)$

$R \cdot \frac{1}{rr} \cdot m$

$\frac{D}{P_d}$ #

$X_0 + \frac{G_0}{R} + \frac{\Delta CRP}{R}$

$R \cdot \frac{1}{rr}$

} extinction of money

$-\dot{b}\frac{R}{rr}$

gross exports, G/R, $\Delta CRP/R$

$-\dot{b}\frac{1-rr}{rr}R$

} contraction of credit

$R \cdot \frac{1-rr}{rr} \cdot m$

$R \cdot \frac{1-rr}{rr}(m+t)$

$R \cdot \frac{1-rr}{rr}$

ΔCR
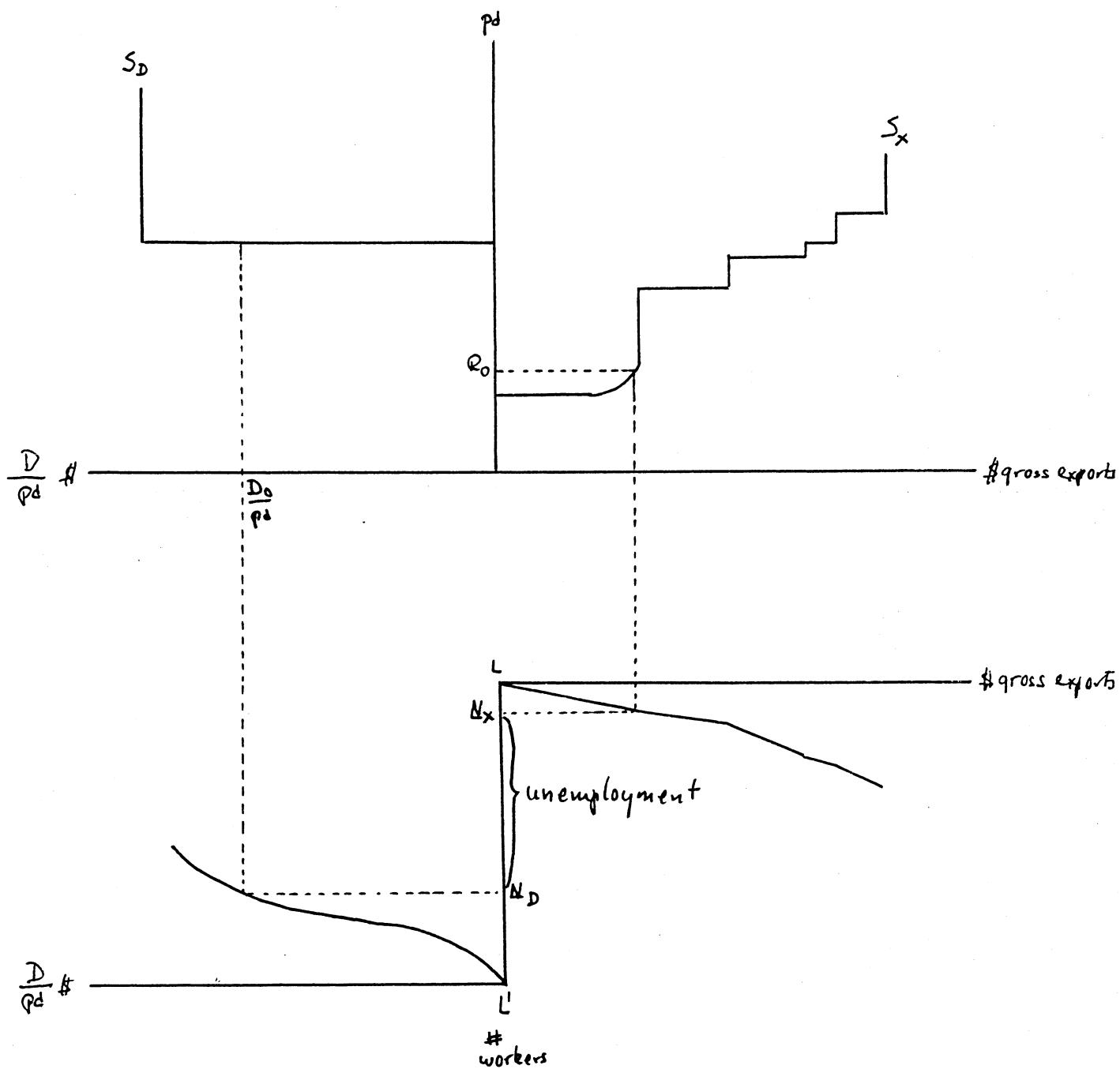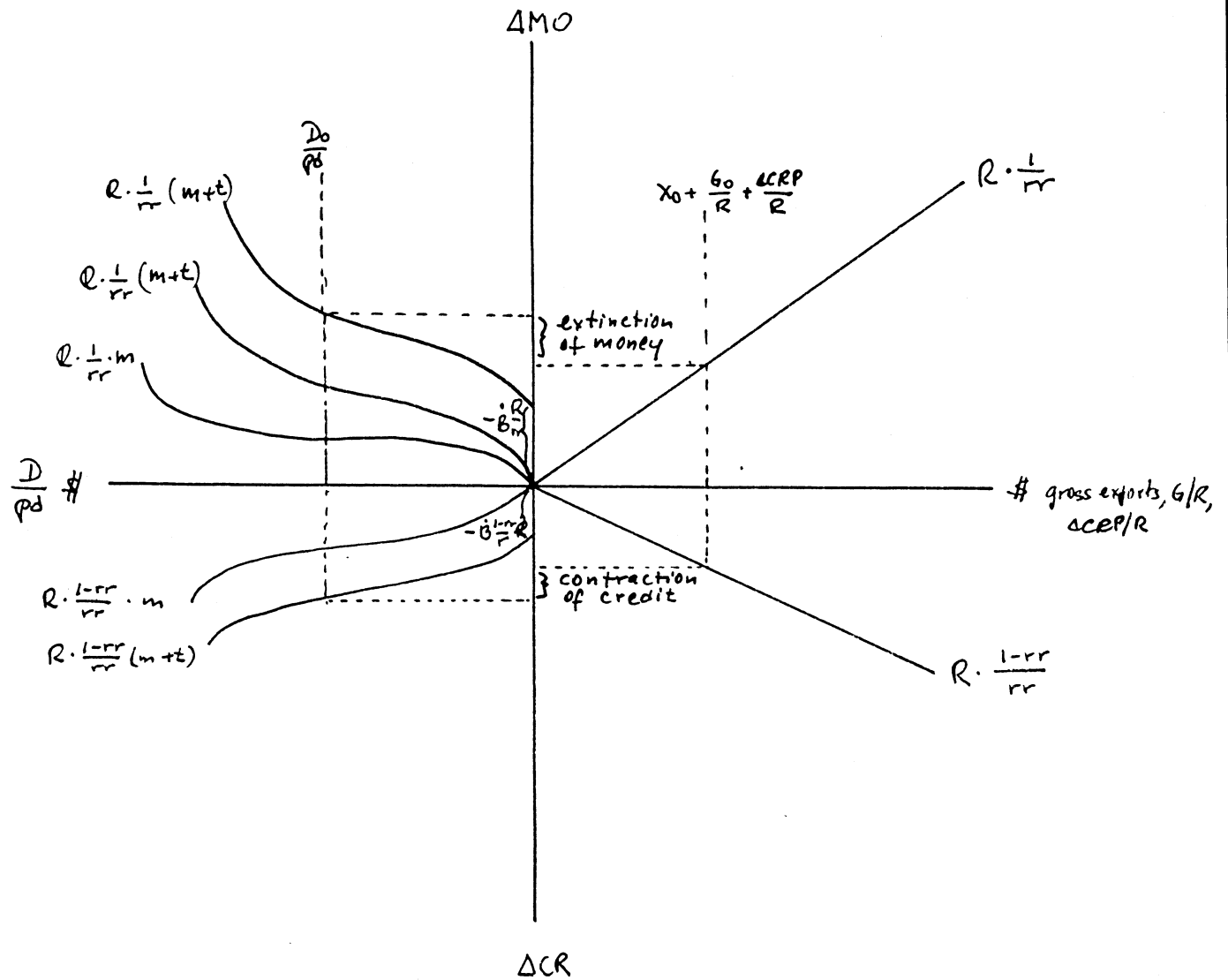
Diagram N° 7

The Macroeconomic System

Agg. Nom. Demand
D ($pesos$)

IL $\frac{1}{pd}$ λR IR

$\frac{D}{pd}$ gross exports, gov'nt exp

pd pd $x_0 + G_0/R + \Delta CRP/R$

S. $S(c\ell)$ D^*

$\overline{II}L$ $\overline{II}R$

R_0

$\frac{D}{pd}$ gross exports

$\frac{D_0}{pd}$ x_{0i}

$\overline{III}L$ $1 - \Sigma r_{ji} m_j$ $\overline{III}R$

m

ΔMO

$R \cdot \frac{1}{rr}(m+t)$ $R \cdot \frac{1}{rr}$

$\overline{IV}L$ $R \cdot \frac{1}{rr} \cdot m$ $\overline{IV}R$

$\frac{D}{pd}$ gross exports, gov'nt exp. credit

$\overline{V}L$ $R \cdot \frac{1-rr}{rr}(m+t)$ $R \cdot \frac{1-rr}{rr}$ $\overline{V}R$

ΔCR

$\frac{D}{pd}$ gross exports

$\overline{VI}L$ $\overline{VI}R$

$\frac{D}{pd}$

L
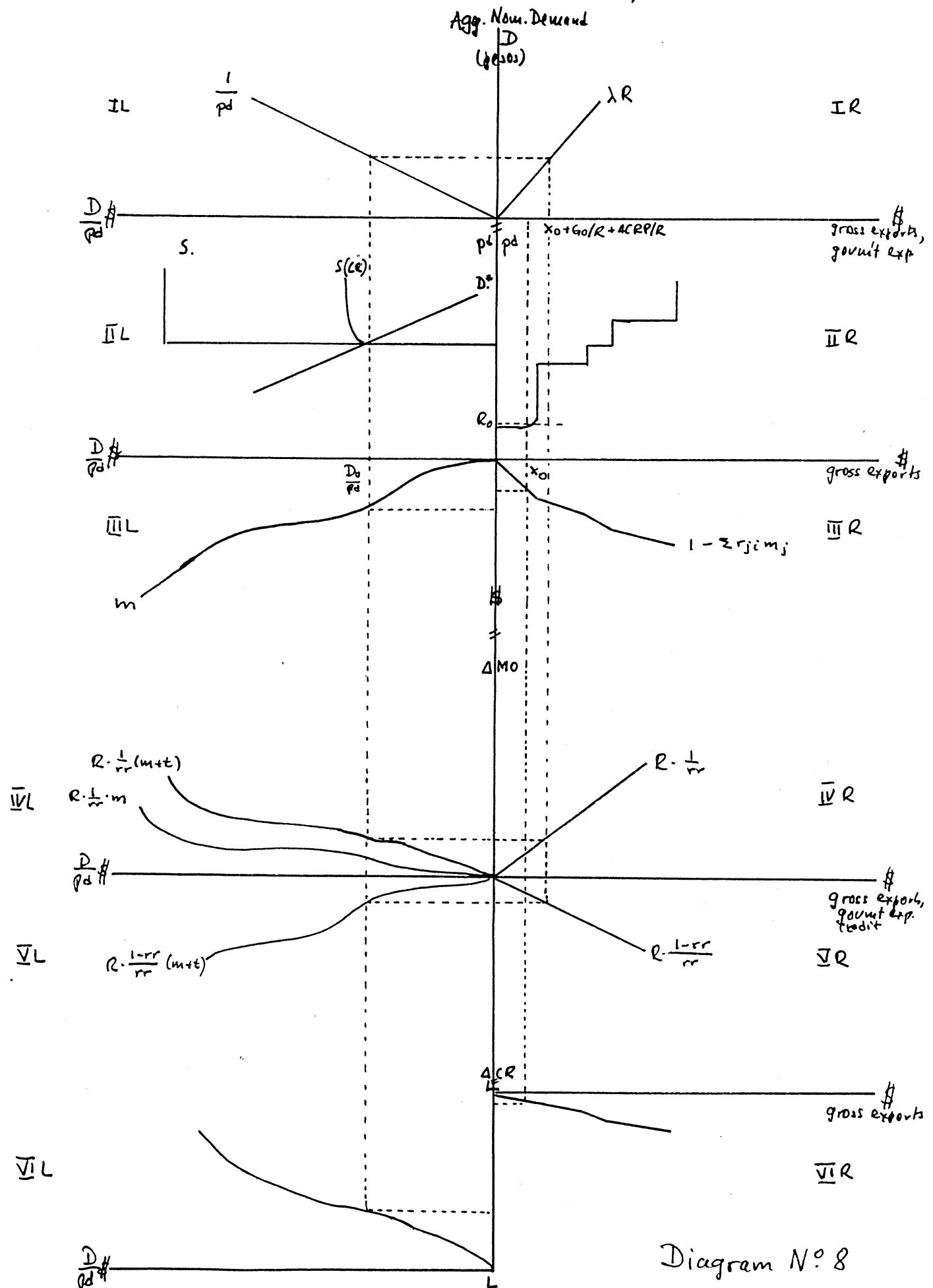
Diagram N° 8

Comparative Statics: More Government Expenditure

Diagram N.º 9

Devaluation

Agg. Nom. Demand D $(\varphi(s))$

$\frac{1}{P^d_3}$ $\frac{1}{P^d_2}$ $\frac{1}{P^d_1}$ $\frac{1}{P^d_0}$

$\lambda_3 R_1$ $\lambda_2 R_1$ $\lambda_1 R_1$ $\lambda_0 R_0$

$\frac{D}{P^d}$ gross exports, gov'mt exp.

S_0 $S_1(CR)$ $S_0(CR)$ P^d P^d $x_0 + G_0/R_0 + \Delta CR P/R_0$ $x_1 + G_0/R_1 + \Delta CR P/R_1$ $S_x(R_1)$

$D_0^*(R_0)$ $S_x(R_0)$

P^d_1 P^d_3

$D_1^*(R_1)$

R_1

R_0

$\frac{D}{P^d}$ gross exports

$\frac{D_0}{P^d}$ x_{01}

$1 - \Sigma r_j i m_j$

m

$R_1 \frac{1}{rr}(m+t)$

ΔMO

$R_1 \frac{1}{rr}$

$R_0 \frac{1}{rr}$

$R_0 \frac{1}{rr}(m+t)$

$R_0 \frac{1}{rr} \cdot m$

$\frac{D}{P^d}$ gross export, gov'mt exp.

$R_0 \frac{1-rr}{rr}$

$R_0 \frac{1-rr}{rr}(m+t)$ $R_1 \frac{1-rr}{rr}$

$R_1 \frac{1-rr}{rr}(m+t)$

ΔCR gross exports

N_x

N_{D_0} N_{D_3}

$\frac{D}{P^d}$

L

Diagram Nº 10

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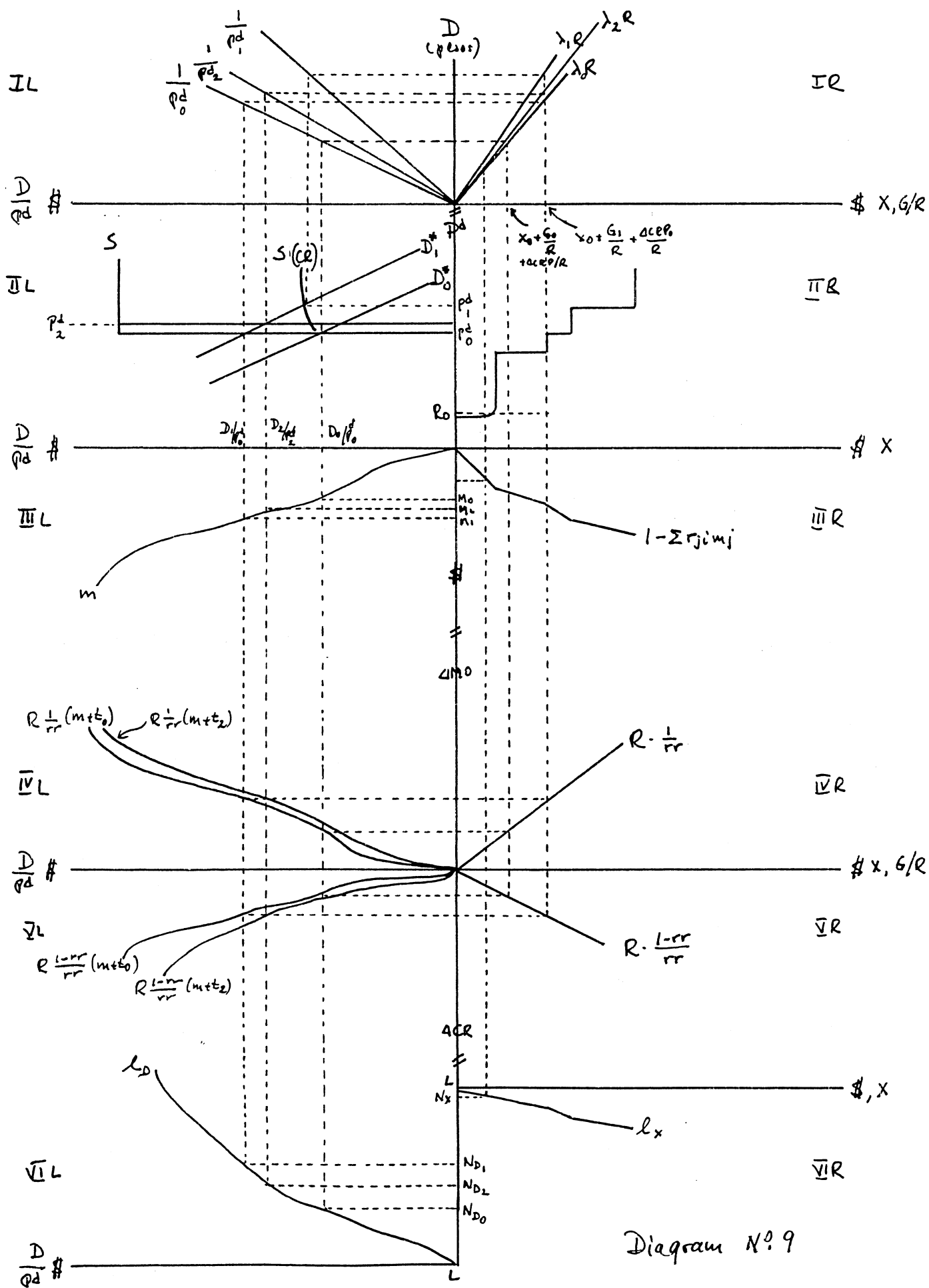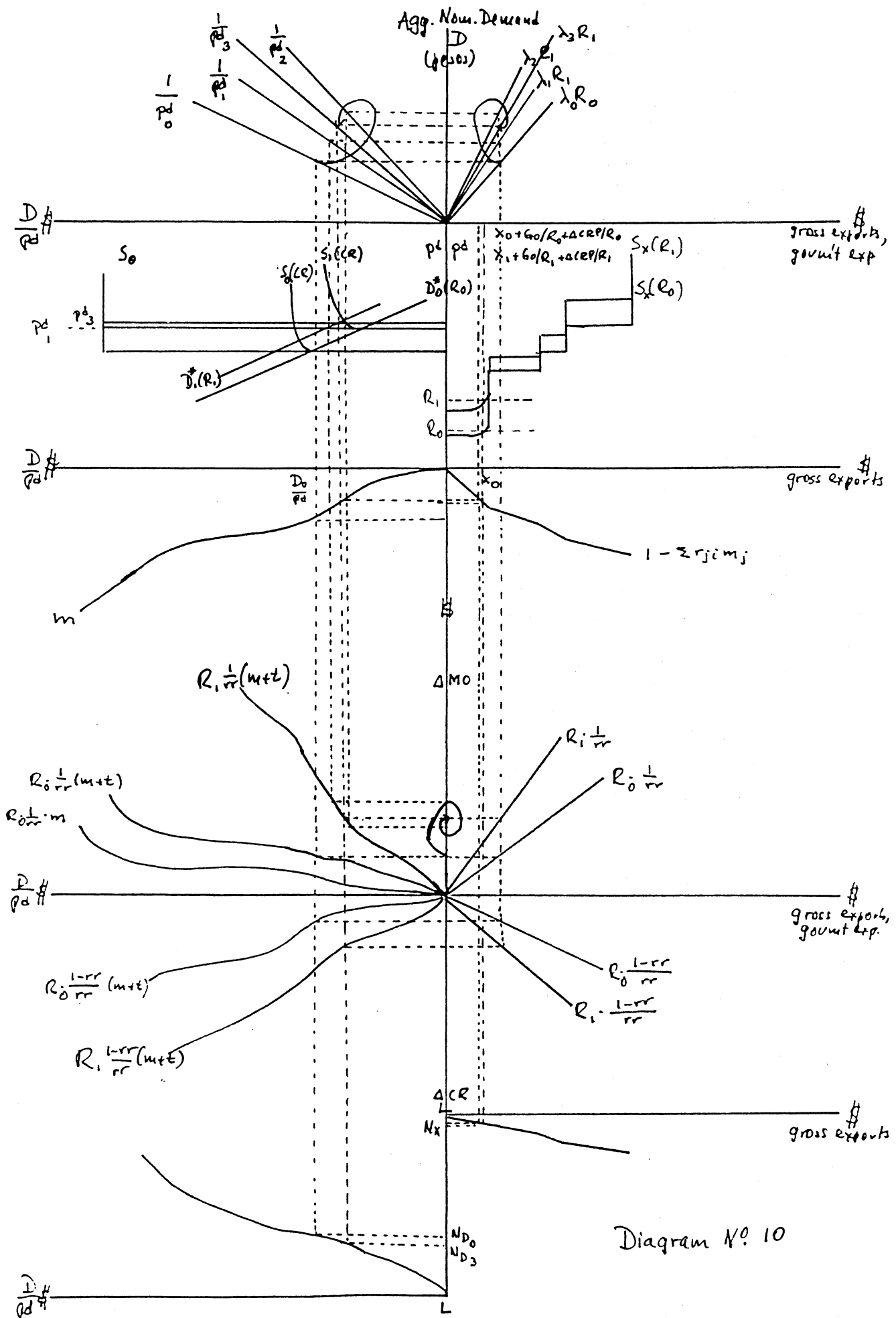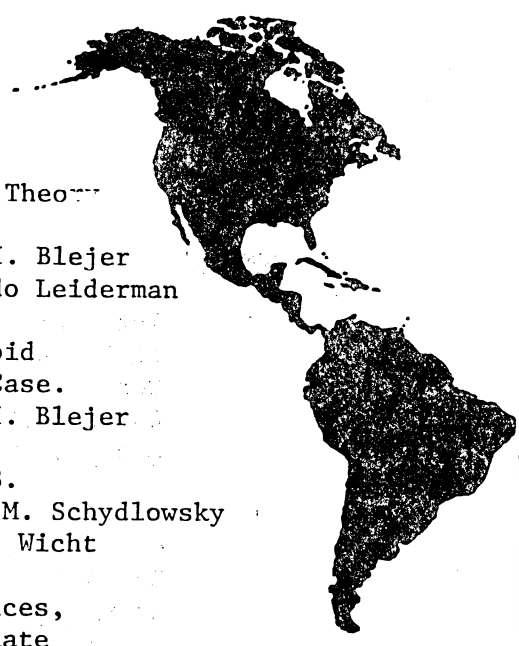
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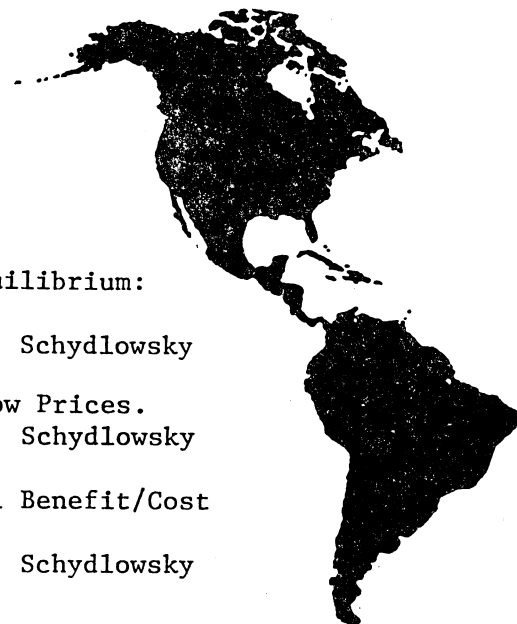
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