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Recession and Interest Rates:
Brazil's Industry in the Early
1980s*

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The Brazilian economy faces the deepest contraction in its economic activity of the last sixty years. The decline per capita of output for the period 1980-1983 merits comparison with that of the period 1928-1931. Using semi-official, conservative estimates for 1984, the decline in the 1980-1984 period will be more severe than that of 1928-1933. The previous crisis of 1963-1965, which paved the way to the military regime of the past twenty years, was surely less dramatic than the present one.

As in the 1963-1965 depression, the current one was unleashed by growing difficulties in meeting obligations in foreign exchange. Whether this recursive shortage of convertible currencies reveals in a subtle way the unfolding of an endogenously determined business cycle is an open question. The evidence, however, for an endogenous view of Brazilian Balance of Payments problems is less compelling for the present crisis than for its predecessor of twenty years ago. For it is clear that current account deficits may emerge even when domestic relative prices are properly set and real expenditure is within the (external shocks purged) GNP. External debt accumulation along the seventies and early eighties derives from deteriorating terms of trade (the two oil shocks), interest rate shocks (in 1979 and 1981) and the ensuing world recession. Failure to provide prompter response to these external shocks in terms of budget control and policies oriented to enhanced tradability of the economy surely added to the already large debt problem. Nonetheless, it makes sense that domestic policy actions cannot be blamed as responsible in the last instance for the overall indebtedness of the country.

In this paper, we focus on the form of domestic adjustment to the external crisis in vigour since 1981. We argue that the burden of the external debt was needlessly magnified by policies that erroneously identified the interest rate as the crucial adjustment variable. After discussing in some detail the functioning of the economy under highly positive interest rates, we suggest an alternative adjustment path that may hopefully promote recovery in the remainder of the decade.

The paper is organized as follows. Section 1 singles out two facets of the legacy of the 1970's. Section 2 emphasizes arbitrage processes in trying to capture, at a high level of abstraction, the functioning of the Brazilian economy in the 1981-1983 period. After bringing to light some pitfalls of adjustment via interest rates, Section 3 examines an alternative path. Two final remarks are presented in Section 4.

I. External Debt and Indexation Mechanisms

The Brazilian economy emerged from the 1970's under the double strain of an already large and still expanding external debt and accelerating inflation. By the end of 1980, the threat of external bankruptcy became real. Annual inflation rates reached 100%. The persistence of widespread indexation mechanisms put aside prospects of rapid disinflation while lenders distrust was reflected

in abnormally high country risk premiums charged for Brazilian loans.

The exchange asphyxia moulded domestic policy throughout the entire 1981-1983 period. At the end of 1980, long before the so-called Black September of 1982, Brazil was forced to rely on short-term indebtedness in order to cope with obligations in foreign currency. From the beginning of 1981 on, voluntary adjustment policies based on highly positive interest rates were put into vigour. The depletion of reserves after the Mexican moratorium of 1982 imposed upon Brazil an agreement with the IMF. The tense and frictional bargaining with the IMF during 1983 brought no relief in terms of the capacity to honour obligations in foreign currency. Reserves in convertible currencies remained negative. Solvency was solely insured by rescue operations carried out by official authorities of developed countries.

We shall not discuss here the causes of the exchange asphyxia of the 1980's, yet it is important for our purposes to note that it was neither produced nor ignited by artificial overvaluation of domestic currency. In this regard, the Brazilian case is to be sharply distinguished from the cases of Chile and Argentina. Largely, nominal exchange devaluation accompanied domestic inflation throughout the 1981-1983 period. The maxi-devaluation of February 1983 was the major exception to this parity rule. The real exchange rate remained approximately constant from January 1981 to January 1983, suffered a 30% depreciation in February and was kept at the level set by the maxi-devaluation during the remainder of 1983.

The indexation of the nominal exchange rate to inflation is just one out of many indexation mechanisms developed before the 1981-1983 period to obviate the distortions caused by inflation. Indexation, however, does not suffice to render inflation neutral, for prices rise continuously whereas contracts are readjusted in discrete periods. The higher the inflation rate of the smaller the frequency of readjustments, the smaller the average real value of contracts even when they contemplate full recovery from losses due to past inflation.

Two non-neutrality effects of inflation turned out to be crucial in the 1981-1983 recession. Firstly, minimum wages were by law fully indexed to past inflation every six months. For three-digit inflation rates, it makes sense that average real minimum wages were eroded by inflation. Given an approximately constant structure of relative wages across work categories, accelerations of inflation increased real profits at the expense of workers. Secondly, rates of interest on subsidized credit were either fixed in nominal terms or set at a proportion smaller than one of monetary correction, an index legally established which in tum, with the notable exception of 1981, underestimated inflation. Consequently, an acceleration of inflation magnified the real value of subsidies, increasing real profits at the expense of public budget equilibrium.

II. Arbitrage Processes

In any capitalist economy, an arbitrage process at the margin between the rate of interest and the average return on non-financial capital operates continuously. If the rate of interest is too high (or too low) relative to the average rate of return on non-financial capital, portfolio demand by wealth holders changes in benefit of financial assets (or of capital assets). The relative price of financial assets (or of capital assets) tends to increase, consequently reducing the difference between the rates of return in the two types of assets.

In the Brazilian economy of 1981-1983, this arbitrage presented an important specificity. A sophisticated menu of policy instruments assured that the real domestic rate of interest, in spite of being set at levels much higher than external rates, remained insensitive to arbitrage processes. Consequently, arbitrage could only take place through an increase in the rate of return on non-financial capital to levels compatible with the pegged interest rate. Since the insensitivity of domestic interest rates to arbitrage was a crucial feature of internal adjustment, we shall now discuss briefly the three policy instruments responsible for this feature.

The first instrument is the classical one: open market operations. Monetary Authorities sold securities, contracting monetary base and raising rates on government bonds. Since private bonds offer a higher rate of return than government bonds because of default risk, tight money policies led to higher funding costs for commercial banks and therefore increased interest on loans to private business. The impact of the reduction in the rate of expansion of high-powered money on inflation remained nevertheless doubtful whereas the already large impact of non-monetary forms of debt finance on interest was magnified by higher compulsory banking reserve to deposits ratio.

The second instrument was legal credit rationing. Lending by commercial banks to private business as well as consumers' credit was dramatically cut on real terms. Unrestrained credit supply was circumscribed to selected activities such as energy substitution, exports, mining and agriculture. The adoption of quantitative limits to domestic credit expansion was designed to stimulate external borrowing to finance the current account of the Balance of Payments. The anticipation of exchange devaluation, however, increased the expected cost of foreign borrowing and prevented the aimed switch from internal to external private borrowing to occur. In face of credit rationing, equilibrium in private credit markets could only obtain through higher interest rates and external borrowing took place through state enterprises.

The third instrument was provided by the Resolution 432 of the National Monetary Council. This legal decree allows firms with debt in dollars to repay their loans prior to maturity by making a deposit in the Central Bank, with the Central Bank carrying the loan to maturity. The anticipation of real exchange devaluations makes 432 deposits attractive since after the deposit the Central Bank

bears the exchange rate risk. Therefore, anticipation of exchange devaluation stimulates the domestic credit demand up to the point in which the cost of credit in cruzeiros exceeds the expected cost of credit in dollars by a margin, which renders firms willing to bear exchange risk. Exchange speculation tends therefore to increase domestic interest rates unless Monetary Authorities accommodate the higher demand for cruzeiro loans. The adoption of tight money policies coupled with Resolution 432 rendered the domestic interest rate an increasing function of exchange risk.

The relative importance of these three instruments was not constant over the 1981-1983 period. During 1981, the first two were decisive in keeping interest rates at high levels. As the sustainability of the strategy of rolling over external debt without promoting significant real exchange devaluations became more and more an open question, the adverse impact on domestic interest rates of exchange uncertainty became more pronounced. The role of Resolution 432 was accordingly larger in 1983. For our purposes, it suffices to observe that those instruments were effective in pegging the interest rate over the period. Arbitrage in those circumstances meant an increase in the rate of return of non-financial assets.

By definition, the rate of return on non-financial capital is given by the ratio NP/VC , where NP are net profits, i.e., operational profits minus depreciation of fixed capital and VC is the market value of capital. VC is the value of the firm at market prices. VC includes both fixed capital and organizational capital. Fixed capital is the sum at market prices of physical items of capital stock (machines, buildings etc.). Organizational capital is the residual of the value of the firm left over after deducting the value of fixed capital. Alternatively, organizational capital consists in the monetary equivalent of the effort of structuring the firm, the latter being understood as an organic entity endowed with memory, identity and a network of stable relations with employees, customers and suppliers.

Since the rate of return on capital is given by NP/VC , the process of arbitrage between rates of return on financial and non-financial capital can proceed along two non-exclusive paths: increases in NP or decreases in VC.

NP is given by operational profits minus depreciation of fixed capital. The Keynesian concept of user cost shows that a relevant concept of depreciation should allow for the effects of interest rates and expectations. In an environment of profound pessimism, high interest rates and generalized excess capacity, the reduction in the value of fixed capital due to using it as compared with not using it is small. As an approximation, we shall regard NP as a constant fraction of operational profits, a fraction smaller than but close to the unity value. Operational profits, in turn, depend upon real wages, real costs of imported materials, real interest rates (because of finance), and the real amount of subsidized credit. These are the four determinants of NP. The higher real wages, real imports, and the real interest rate, the smaller NP; the larger the amount of subsidies, the larger NP. An acceleration

of inflation thus increases NP in that it decreases average real wages and increases the real amount of subsidies. A maxi-devaluation reduces NP because the real cost of imports depends upon the real exchange rate. An obstinate monetary policy pegging the real rate of interest at a level higher than normal reduces NP.

In the period 1981-1983, an acceleration of inflation was needed to offset the depressing effects on NP caused by monetary policy and the real depreciation of domestic currency. Whether or not the observed acceleration of inflation made for increasing NP values by outweighing these depressing effects is ultimately an empirical question. The acceleration from 100% per year in January 1981 to 200% per year in December 1983 may have been enough to partially counter-balance both the increase in the prime rate of interest from -20% (during 1980) to +25% (in 1981) and the 30% real exchange depreciation shock of 1983, yet it did not prevent the other form of adjustment between the interest rate and the rate of return on non-financial capital to take place. Apart from the acceleration of inflation, the arbitrage process in the Brazilian economy between 1981 and 1983 also worked through decreases in VC, that is, through the devaluation of capital.

Capital devaluation increased industrial concentration, for the ability to become a net saver varied considerably within the industrial sector. Some firms decreased output to a minimum scale and directed profits to the purchase of financial assets. The receipts in the form of interest frequently more than compensated for the sharp decline in operational profits. In contrast, capital devaluation was felt most acutely by firms unable to enjoy the high interest rates on financial assets. The larger the degree of indebtedness inherited from the past, the greater the costs of phasing out planned investment, and the more myopic expectations regarding the permanence of Central Bank policies, the larger the burden of capital devaluation. High real interest rates thus created a cleavage between liquid and illiquid firms in industrial structure.

This cleavage in the industrial structure has an additional dimension: the degree of access to the external market. It is possible to define two cases. In the first case are firms that, given the essentially non-tradable characteristics of their activities, have no possibility of access to the external market. In the second case are firms that have always been mainly directed to the external market, or that, having correctly anticipated the extension and the duration of the domestic recession, launched aggressive export programs in the recent past.

Combining the liquidity and the access-to-the-external-market dimensions, it is possible to classify firms into four categories represented in Matrix 1. Along the negatively sloped diagonal are the two extreme cases: first, firms that are illiquid and do not export, and second, firms that have a high degree of liquidity and are mainly exporters. Along the positively sloped diagonal are the two intermediate cases: firms which are liquid but do not have access to the external market and firms, which are illiquid but are mainly exporters.

Matrix 1

| | |
|-------------------------------|--------------------------------|
| Low Liquidity Non-exporter | High Liquidity Non-exporter |
| Low Liquidity Exporter | High Liquidity Exporter |

As the current crisis extends over time, the polarization in the two extreme cases along the negatively sloped diagonal tends to be intensified. On one hand, liquid but non-exporting firms will either invest in new areas thus opening their way to the external market or eventually lose their liquid position through prolonged losses in their industrial activities. On the other hand, exporting but illiquid firms will be able to capitalize themselves through the high returns obtained in their sales to the external market. The impositions of the external restriction will eventually concentrate firms along the negatively sloped diagonal with the domination of the dimension of access-to-the-external-market over the liquidity dimension. A policy-induced and less costly turn to the export-non-export dimension, in contrast to the emphasis on the liquid-illiquid dimension, is the essence of the structural adjustment discussed in section III.

The accumulation of financial receipts in firms whose previous history was entirely devoted to non-financial activities generated tensions, which tended to be solved by waves of mergers and acquisitions. Instead of metamorphosing into financial intermediaries, non-financial firms benefiting from the high interest rates absorbed firms verging on bankruptcy. The emphasis on the liquidity dimension of current policies, besides distributive effects, brought also destructive effects. In the case of fixed capital, destruction from the society point of view is confined to items of physical capital, which become unusable to any firm or sector in the economy. These items form a relatively small portion of total fixed capital, a portion generally highly correlated to the age distribution of capital. Devaluation accelerates obsolescence and in consequence increases the economic rate of depreciation. A portion of fixed capital, which in more circumstances that are favourable would remain productive for some years more, undergoes early scrapping.

Destruction, however, was more important for organizational than fixed capital. As to organizational capital, it led, first, to the dismissal of employees trained in and identified with the firm, and, second, to the dissolution of customary ties with buyers and suppliers. Prolonged and deep recessions shrink the net of implicit and explicit contracts that forms the firm as an organic entity. The aphorism “a recession destroys jobs, but not capital” can hardly be maintained in the context of the 1981-1983 Brazilian experience.

The increasing concentration of industrial structure coupled with the destruction of capital point of irreversibility impairing the functioning of the economy by the adjustment via high interest rates.

They are to be properly balanced, however, against the Creative dimensions of the recession. The destruction of organizational contracts, for instance, gives way to new nets of contracts, which partially offset the social costs of recession. Examples of the revigourating, impact of destruction are the revival of the “submerged” familiar economy based on tax evasion, the establishment of small-scale venture capital firms, and the enhanced exertion of effort and awareness of non-exploited opportunities. The Schumpeterian description of capitalism as a process of Creative destruction applies to depression as well as to recovery. Greetings to the lustral virtues of depression, however, are outrageous to any balanced assessment of present form of adjustment to the external crisis.

Figure 1 below shows possible adjustment paths. With it, the process of arbitrage between the rate of interest and the rate of return on capital NP/VC can be visualized. The straight line OR_0 represents the combinations of values of NP and VC compatible with the rate of return on capital R_0 prevailing before the 1981 recession. Straight line OR_1 represents those combinations that generate rate of return R_1 greater than R_0 . R_1 is the rate of return on capital established by the arbitrage process facing an interest rate higher than that before. A is the position of the economy before 1981.

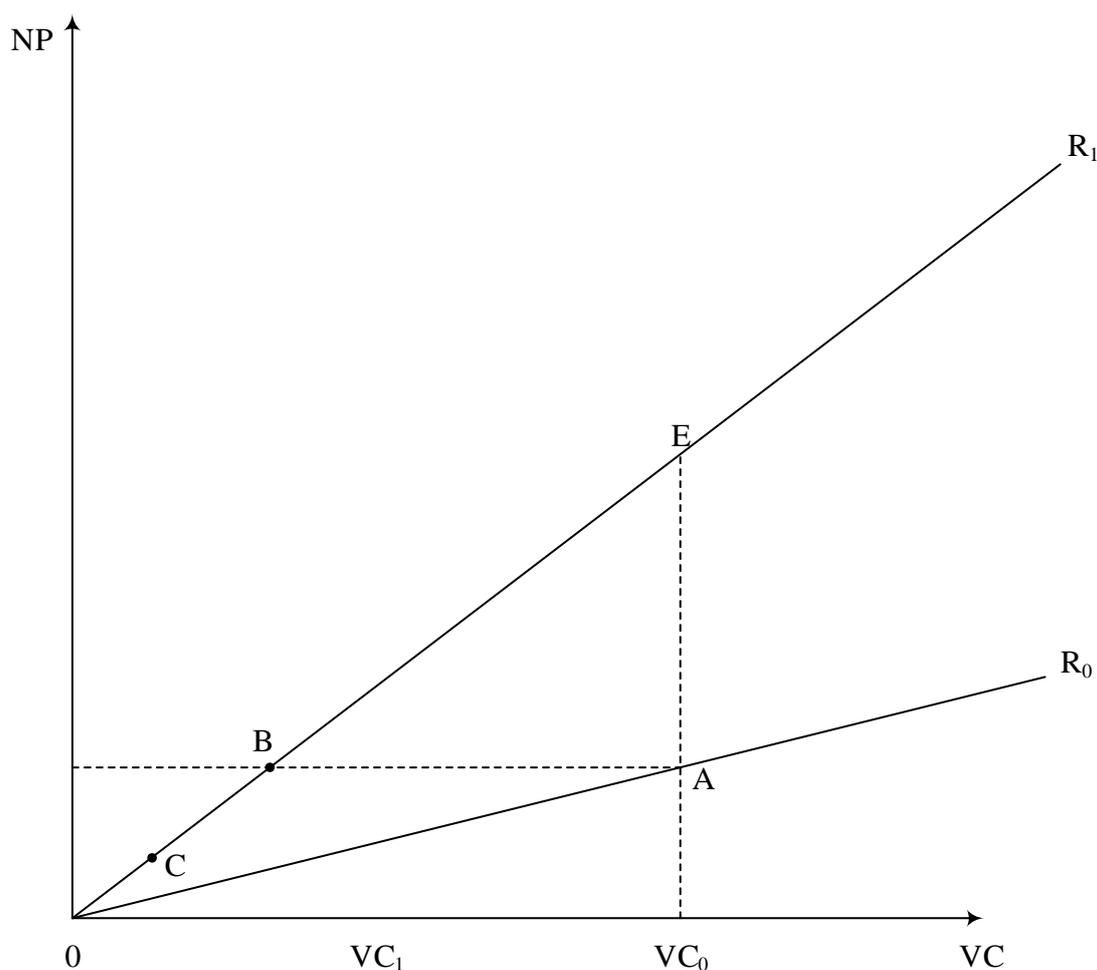


Figure 1

The movement from A to B shows an adjustment based on both capital devaluation and inflation. Capital stock at B is smaller than at A because of the destruction effect; industrial structure is more concentrated at B than at A. At B, inflation is greater than at A for the acceleration of inflation was necessary to preserve the real value of net profits in face of higher interest rates and the maxi-devaluation of 1983. In contrast, inflation is constant in the adjustment from A to C. In this case, net profits declined. The devaluation of capital required by the arbitrage process is even larger. Finally, the movement from A to E shows an extreme case in which the value of capital is preserved. The arbitrage process operates in this extreme case only through an enormous acceleration of inflation.

Figure 1 illustrates the dilemma of the Brazilian economy: inflation is a mechanism of protection of firms' net worth at the expense of workers (because it reduces real wages) and to the sacrifice of public budget equilibrium (because it increases the real value of subsidies). Inflation was constant from 1980 to 1981, increased in 1982, and underwent a strong further acceleration in 1983 after the real exchange rate depreciation of February. In suggestive terms, the Brazilian economy moved from A to B. Workers lost because real wages fell; firms lost because market capital value declined from VC_0 to VC_1 ; pressures on public deficit increased; industrial structure became more concentrated. With less inflation, workers would be better off, and the public budget would be more balanced, however the processes of capital devaluation, industrial concentration and capital destruction would be intensified.

These trade-offs follow inevitably from arbitrage processes when the real interest rate is pegged at abnormally high levels. Two remarks are in order.

Firstly, an acceleration of inflation works as a mechanism preserving firms' net worth only under certain limits. Accelerations, which are too strong, may bring about a hyperinflation in which the functional role of inflation disappears. Inflation has certainly been functional throughout the 1981-1983 period, but this cannot be taken for granted in face of even higher (and unexperienced) rates of price increase.

Secondly, the higher rates of return on non-financial capital resulting from arbitrage processes had little effect on investment, for these higher rates reflected profits obtainable out of existing capital. The decision to invest, however, depends on interest rates and expectations. Feeble animal spirits conflated with highly positive interest rates to discourage private investment. On the one hand, capacity expansion was severely restrained. The present value of additions to existing capital stock tends to be negative when future demand flows are perceived as being weak and uncertain while expected returns are discounted at high interest rates. On the other hand, investment in stocks was penalised because carrying costs depend on the interest rate. The severe reduction in the two forms of private investment resulted from the highly positive interest rate prevailing in the period. It led to a reduction in domestic demand, which, as will be seen in the next section, was deemed necessary for

the adjustment to the external crisis.

III. Relative Prices and Interest Rates

The extraordinarily high rates of interest that have prevailed 1981 to 1983 were a deliberate result of policy. What is the rationale for policy? It starts from the macroeconomic equality between aggregate demand domestic aggregate supply (AS):

$$AD = AS \quad (1)$$

Aggregate demand can be decomposed into consumption (C), private investment (I), government expenditures (G) and exports (X). Therefore,

$$AD = C + I + G + X \quad (2)$$

Domestic aggregate supply can be expressed as the internal product (Y) plus imports (M) minus payments of interest and amortization of the foreign debt (D):

$$AS = Y + M - (r + a).D \quad (3)$$

where r stands for the interest rate and a stands for the net rate of amortization on the foreign debt.

The internal product in turn can be decomposed into consumption, private savings (S) and taxes (T):

$$Y = C + S + T \quad (4)$$

From equations (1) to (4) a well-known macroeconomic identity is deduced:

$$(M - X) - (r + a).D = (I - S) + (G - T) \quad (5)$$

The current account deficit in the balance of payments (the left-hand side of (5)) is thus expressed as the excess of private investment over savings (the private deficit) plus the excess of government expenditures over taxes (the public deficit).

This identity may be interpreted as stating that the current account deficit is *caused* by the country's private and public deficits. The interpretation appeals to common sense through the analogy of an individual whose deficit is simply the consequence of spending more than his income. As in the case of the individual, the country is said to be "living beyond its means". If this interpretation holds true, elimination of the current account deficit requires only a reduction of aggregate demand. Private investment and government expenditures have to be reduced while savings and taxes have to increase.

This is where the interest rate comes into play. Acting as a deterrent to investment and a stimulus to savings, a higher rate of interest will, in accordance to the "living beyond its means" interpretation, be translated into a smaller current account deficit. The higher the interest rate, the more intense would be the adjustment to the balance of payments crisis.

This interpretation of (5) provides the basic theoretical framework behind the adjustment policy adopted in Brazil since 1981. Until the international credit market crisis of September 1982, high

domestic interest rates were also instrumental in stimulating domestic firms to borrow abroad, therefore reducing the net rate of amortization of the foreign debt. This allowed for a less dramatic reduction in domestic aggregate demand than required otherwise. With the complete shut-down of the international credit market for Latin American countries after the Mexican moratorium, however, the net amortization rate was drastically increased and high interest rates were left with the single role of inhibiting investment and stimulating savings.

There are several pitfalls in this theoretical framework and in the adjustment policy, it inspires. Atomistic analogies and too aggregate identities lead to erroneous diagnoses of a balance of payments crisis. Firstly, a country facing a deficit in its current account is not necessarily “living beyond its means”. The previously accumulated debt might have been perfectly reasonable for a fast growing developing country exploiting the opportunities offered by the international capital market. An international interest rate shock – in the context of long-term debt contracted at floating interest rates – coupled with an adverse change in the exports/imports price ratio, might turn what was, under previous circumstances, a reasonable debt structure into an unbearable burden. If this was indeed the case, the moral judgment implied by the “living beyond its means” interpretation of (5) is unwarranted.

Secondly, the “living beyond its means” interpretation depends critically upon the hypothesis of constancy of internal product. If internal product is in-variant to the values of the individual terms of (5), then, indeed, a reduction of current account deficit necessarily follows from a decrease in private investment (or public spending) and an increase in private savings (or taxes). For a given product level, every reduction in aggregate demand (a reduction in $(I - S)$ or in $(G - T)$) translates into a proportional decrease in the trade deficit $(M - X)$. This is not, however, necessarily true. What is not internally consumed is not automatically exported. A reduction in aggregate demand might simply reduce internal output and create unemployment if exports do not increase proportionally. In a one-good economy facing no external demand restrictions at current relative prices, the contraction of internal output absorption would correct current account deficits without sacrificing employment. The attempt to apply therapies true for such an artificial economy to Brazil in the early 1980s proved disastrous as the country was forced to transform large trade deficits into expressive trade surpluses in short periods.

The procurement of a surplus of tradable goods may be rendered compatible with economic recovery under two conditions: correct relative prices and an appropriate industrial structure.

Correct relative prices, of which the real exchange rate is the key element, are a sine-qua-non for non-recessive adjustments. True, a given trade surplus $(X - M)$ may be obtained through contractions in economic activity and *ipso facto* in imports $(-M)$; true, highly positive interest rates are effective in depressing economic activity by reducing domestic absorption. While successful in

meeting target trade surplus, recessive adjustments lead to a distorted miniaturization of economic life in which exporting sectors vegetate whereas the remaining sectors exhibit feeble enterprise. In the absence of correct relative prices, the space opened up by reduced domestic absorption will not be filled by exports, but merely transformed into unemployment and idle capacity; trade surpluses come through import contraction (-M) instead of export promotion (+X). The more expressive the target trade surplus, the larger the change in relative prices needed to meet the target by rendering exports competitive in international markets and thusly-expanding economic activity and employment.

The establishment of an appropriate industrial structure requires new investment. True, indexes of idle capacity run very high after three years of recession; yet the conveyed image of an economy able to grow by a more intense utilization of existing capacity is misleading. The present industrial structure is not suited for the transformation of the country into an export-led economy and cannot be operated at full capacity without running the risk of trade deficits. Indexes of idle capacity based on either engineering or statistical accounts of potential output ignore the binding restriction of generating expressive trade surplus. In present circumstances, Brazil is much closer to the economic concept of full capacity than commonly realized. Economic recovery depends crucially upon new product and factor mixes, which can only come about through new investment.

Not every form of investment, however, contributes to the structural transformation into an export-led economy. Correct relative prices put a premium on investment conducive to trade surplus. Moderately positive interest rates are required as a selective mechanism preventing widespread investment to flourish.

In the structural adjustment, domestic real interest rates are given by current external real rates. In contrast to the recessive path based on interest rates far above external rates, the structural adjustment envisaged here is based on moderately devaluated exchange and moderately positive real interest rates.

Structural adjustment ought to be regarded as an incentive problem. Highly positive interest rates tend to inhibit any form of investment – including those requested by the structural transformation of the economy. To stimulate investment leading to trade surplus in face of highly positive interest rates, one has to counterbalance its depressing effects by a largely devaluated exchange rate. Since the latter pushes up inflation, as seen above, structural adjustment under highly positive interest rates would bring forth inflationary rates substantially higher than those observed during the recessive adjustment. Political support for structural adjustment may fall away under these circumstances. A politically feasible structural adjustment supposes a permanent reduction in interest rates. Under a negative real interest rate, however, practically any form of investment becomes attractive – including those detrimental to the structural transformation. The solution to the incentive

problem resides in stimulating adequate investment by a moderately devaluated (below historical parity) exchange and discouraging other forms of investment by moderately positive real interest rates.

Figure 2 below illustrates possible structural adjustment paths. The transformation of productive structure steered by moderate interest and moderately devaluated exchange rates cannot be visualized in Figure 2, yet it serves to the function of mapping out alternatives for capital value and inflation. A is the current position of the economy with rate of return R_1 ; R_2 is the rate of return on capital that would prevail by force of arbitrage processes after the reduction in interest rates.

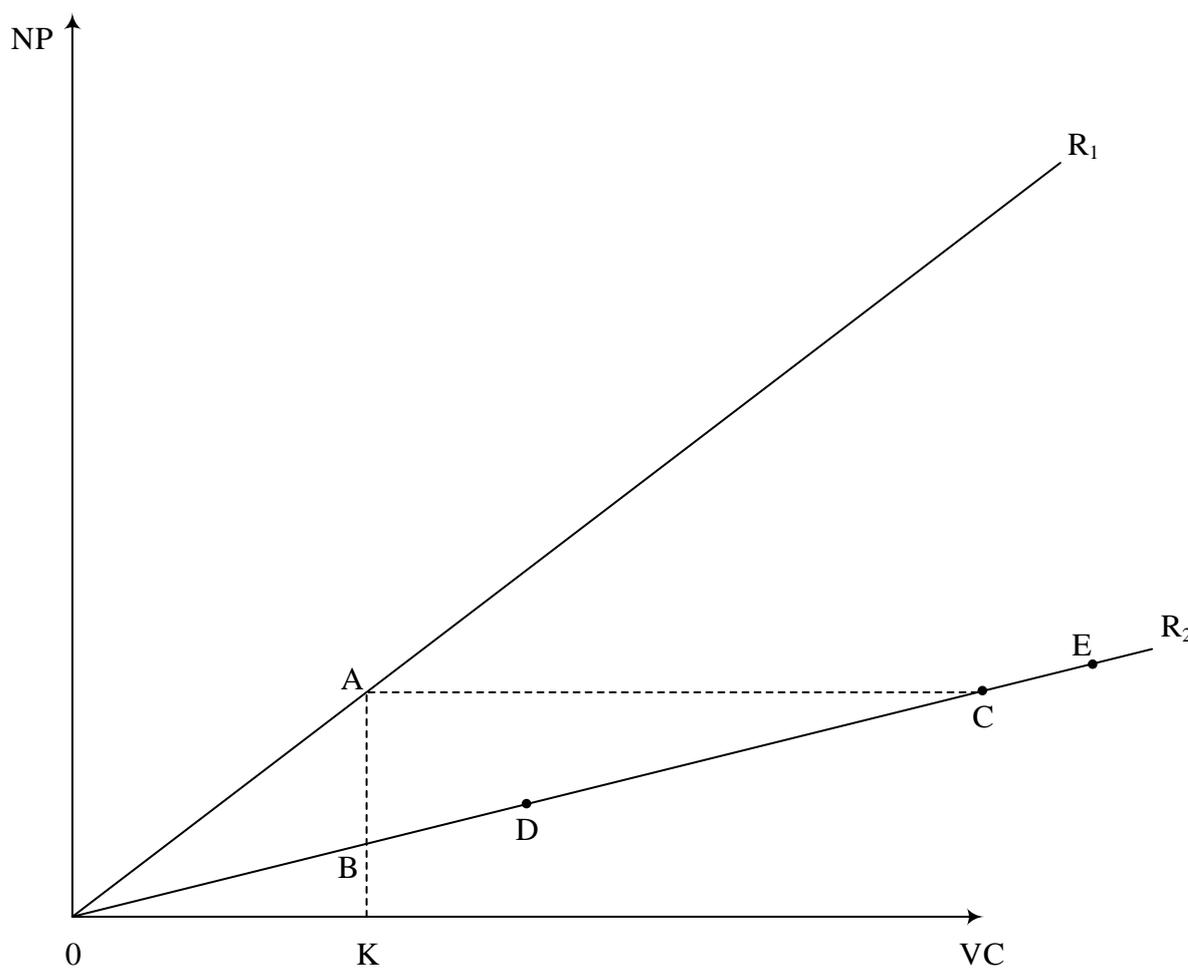


Figure 2

The decrease in interest rates contemplated by the structural adjustment increases NP because it lowers financial costs, but the moderate real devaluated currency prescribed by structural adjustment has the opposite effect of decreasing NP because it increases the real cost of imported materials. Suppose the two effects on NP cancel out. The movement from A to B is then accompanied by a decline in inflation. In the movement from A to C inflation is constant but capital value appreciates. It becomes possible either to reduce inflation without altering the firms' net worth or to

increase the latter without increasing the former. The movement from A to D shows an intermediate possibility in which both capital valorisation and disinflation occur.

Suppose now that the decline in interest rates more than compensates for the currency devaluation effect. If inflation remained constant, NP would increase. The movement from A to C means, therefore, both capital value appreciation and less inflation; only at a point like E would the economy settle with the same rate of inflation. This case is obviously more favourable than the previous one in which the two effects neutralize each other. For any given target rate of inflation, capital value appreciation is larger than when the two effects cancel out.

Finally, suppose the devaluation effect predominates. If inflation remained constant, NP would decrease. If NP for a constant inflation rate falls to a point between A and B in Figure 2, disinflation can occur without losses in the firms' net worth, or capital value appreciation occurs without necessarily leading to more inflation. However, if NP for the same rate of inflation prevailing before falls to a point between B and K, these possibilities no longer exist. It follows that the adverse trade-off between inflation and capital value resulting from the recessive adjustment can be broken down under the structural adjustment except when the depressing effects on profits caused by devaluation dominate by a large margin the stimulation caused by interest rate decline. Note, however, that even under this perverse case it is still preferable to implement the structural adjustment by moderate interest and moderately devaluated currency than by highly positive interest and largely devaluated exchange. For when the devaluation effect predominates, the impact on inflation is even worse if the contemplated exchange rate is largely devaluated.

Considered in all its bearings, structural adjustment adheres much closer to accepted notions of fairness than recessive adjustments. In the 1981-1983 period, both real wages and employment fell dramatically. Under structural adjustment, real wages in terms of tradable goods would suffer a moderate decline because of the moderately devaluated exchange rate. The suppression of the adverse trade-off between inflation and firms' net worth opens up the possibility of disinflation, which means higher real wages in terms of non-tradable goods. The net effect on real wages depends thusly upon the proportions of tradable and non-tradable goods in workers' consumption basket. This *a priori* indeterminacy of the impact of structural adjustment on real wages is to be properly balanced, however, against its positive impact on employment. The revival of investment envisaged by structural adjustment can hardly be expected to generate in the short run the Brazilian historical growth rate of 7%; yet it is surely sufficient to put an end to the decline in per capita income observed since 1981. In the medium run, the historical growth rate may again become feasible as the structural transformation of the economy allows the attainment of normal growth and expressive trade surplus simultaneously.

The burden of the 1981-1983 recession was felt most keenly by workers. The superiority of

structural over recessive adjustment from their point of view steams from the termination of current recession. Malthus' argument on the distress caused by long recessions applies well to Brazil, 1981-1983: "In prosperous times the mercantile classes often realize fortunes, which go far towards securing them against the future; but unfortunately the working classes, though they share in the general prosperity, do not share in it so largely as in the general adversity" (*Principles of Political Economy*, 1836, 2nd ed., p. 437). The reversal of the State of "general adversity" will not be at sight if recessive adjustments based on high interest rates persist.

III. Final Remarks

Two subjects have been left out of the discussion in this note: the role of public investment and the possibilities opened up by foreign debt renegotiation. Their relevance to the future course of the Brazilian economy in the 1980's is undeniable, and some comments are appropriate.

Large cuts in public investment have contributed to the contraction of aggregate demand in the last three years. As very high interest rates totally prevented any possible crowding-in movement of private investment, the undisputable complementary character of public and private investment in late industrialized economies helped to accentuate investment retraction. Large and indiscriminate cuts in public investment are in accordance to the merely recessive adjustment strategy inspired by (5). They play the same role in reducing domestic absorption as does private investment contraction in the presence of abnormally high interest rates.

Apart from the rationale derived from the "living beyond its means" interpretation of (5), reductions in public investment have also been advocated because their productive efficiency was smaller than that of private investment. It is clear, however, that public investment can work as a powerful instrument in the remodelling of the industrial structure towards an export-led economy. Rationalization of public sector in light of the required structural reshaping of the economy goes from bringing some investments to an immediate stop to largely increasing some others. Specific and detailed knowledge of the economy's industrial matrix is required, and acquiring this is not a simple task as the performance of centrally planned economies in adjusting to external shocks has demonstrated. However, there is no reason to totally give up on this powerful instrument or to conclude *a priori* that public investment should be severely curtailed.

With international credit markets virtually closed, Brazil has to rely on some form of renegotiated or semi-mandatory rollover of its debt. There is no adjustment strategy capable of generating the trade surpluses necessary to make viable the net transfers abroad required by creditors' retraction. The debt crisis is a global, problem, which will inevitably require a politically negotiated arrangement if a collapse of the international monetary System is to be avoided. The degrees of

freedom of a debtor country in the 1980's will be heavily dependent upon the development of these negotiations. However, irrespective of how successful these negotiations are and how soon a satisfactory institutional solution to the international debt crisis is implemented, Brazil will have to generate trade surpluses in order to eliminate or significantly reduce its current-account deficit. Debt negotiations bear solely on pace of adjustment but do not eliminate its necessity. Therefore, the relevance of the previous argument on recessive versus structural adjustments remains unaltered no matter how the debt crisis evolves, for it proceeded under the hypothesis that a (politically) given trade surplus was to be obtained. The issue recessive versus structural adjustment as treated here would only become irrelevant in face of a collapse of the international monetary system. In this unlikely event, only the path of autarky would remain open to the country.