THE PERVERSE MACROECONOMICS OF DEBT, DEFICIT AND INFLATION IN BRAZIL

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Stagnation and high rates of inflation are the main characteristics of the Brazilian economy in the 1980s. A country that in the last century developed at very high rates suddenly stopped its growth path in 1981. In 1988, per capita income was below 1980s. In a first period — between 1981 and 1983 — the slow down was correctly attributed to the adjustment effort imposed by the debt crisis; in a second – 1984 to 1986 – the crisis seemed overcome, the adjustment process, successful; but since 1987 the crisis has returned. In that year GDP grew at the same rate of population; in 1988 GDP growth rate was negative (0.3%) and in 1989 GDP will again grow at the same rate of population increase: 2.5%.

This crisis can be explained in several ways. Its connection with the external debt is quite clear. The fiscal crisis that developed from the debt is obviously in the core of economic stagnation. The acceleration of inflation that took place during the 1980s may be partially explained by the fiscal crisis, but certainly the distributive conflict, that characterizes an economy where income is so unevenly distributed as the Brazilian economy, is the fundamental cause of inflation and its acceleration. The external debt, as long as it aggravated directly and indirectly the distributive conflict, played obviously an important role in the acceleration of inflation. On its turn, inflation feeds back the crisis of the real sector of the economy as it aggravates the public deficit, hinders investments and lowers the productivity of capital. Inflation is so damaging and disturbs so much economic activity that, between 1984 and 1986, when the current account reached equilibrium, the belief that the debt crisis was overcome, that the budget deficit was under control, and that the only cause of Brazilian troubles was inflation became popular in Brazil.

All these factors are interrelated. There is a dictum that nothing succeeds like success; the reverse is true, the vicious circle of a crisis is or seems to be endless. There is a perverse logic in the stagnation process of the Brazilian economy. In this paper I will try to describe and formalize this logic. I will try to define the perverse macroeconomics of stagnation in Brazil. In Section 1, I discuss the external debt which is part of the origin of the present crisis – a crisis defined by the fiscal crisis of the state, by the reduction of the rate of investment and by the loss of efficiency of the stock of

capital. In Section 2 I define this crisis as a stock crisis besides a flow crisis, and in Section 3 the perverse character of adjustment in these circumstances is analyzed. In Section 4 the fiscal crisis is discussed in terms of public deficit and the reduction of public savings; the relation between the two phenomena is presented. In Section 5 we see how the debt crisis turns into a fiscal crisis. Section 6 is an analysis of the high rates of inflation that prevail in these circumstances; inflation becomes inertial or autonomous while it tends necessarily to a slow but firm process of acceleration. In this process money plays a passive role; this is the subject of Section 7. The paralysis of the state due to the fiscal crisis is discussed in Section 8. In Section 9 we will be ready to discuss the overall logic of stagnation in a country plagued by debt, deficit and inflation. But since we expect stagnation not to be a permanent situation, I finish the paper in Section l0 with a discussion of the pattern for financing investments that will be consistent with growth in Brazil. In this section the requirements for overcoming the crisis and resuming growth are briefly presented.

The Perverse Logic of External Debt

The crisis of the Brazilian economy starts clearly in 1979, when Brazil, as all the highly indebted countries, should have engaged in a strong adjustment process. The second oil shock, the rate of interest shock and the recession in the U.S., were a clear indication that this was the one to follow. Korea was one of the few highly indebted countries that decided to adjust at that moment. Brazil, as all other Latin American countries, did not. When it started adjusting in 1981, after two years of accelerated growth,[1] it was too late. The debt had turned too high to be paid.

The perverse logic of the external debt appears when it becomes "too high." But when does a debt become too high and what is a debt too high?

A debt becomes too high under the standpoint of the creditors when they decide to suspend its roll over – the financing of the interests to be paid. In a first moment, when the process of indebtedness begins, the country receives loans to finance real expenditures (consumption or, hopefully, investment). After some time, however, the interests due become so high that the financing of interest is halted. Actually the process of indebtedness undergoes consecutive phases; first, loans finance additional expenditure; second, additional expenditures and interests; third, just interests; fourth, only part of the interest to be paid on the old loans; finally, new loans are definitively suspended.

The suspension of new loans for Brazil, in 1982, was certainly part of a more general decision of the bankers after the Mexican default in August of that year. But it is based on some objective considerations that make the bankers to consider the Brazilian debt too high. There are basically two parameters. First, there is a "stock" rule of thumb that says that the relation between the external debt, D_x, and exports, X, of a country should never exceed 2 (in Brazil the debt/export ratio achieved this limit in 1989). Second,

[1] A populist developmentist economic policy adopted by the rightist authoritarian government during these two years achieved rates of GDP growth above 8%, while the external debt increased from 38 to 60 billion dollars. Populism may be distributivist, when it has origin in the left, or developmentist, when its origin is in the right. Its results are not much different in terms of internal and external unadjustment.

there is a "flow" reasoning that says that, when this ratio is achieved, the rate of interest, *j*, should not exceed the rate of growth of exports, *x'*.

$D_x / X < 2$

and if

$D_x / X > 2 -- j < x'$

After the suspension of the "market," i.e, of voluntary loans to a debtor country, there are three conditions where a debt turns too high under the standpoint of the debtor. Basically it is too high if, after a reasonable internal adjustment process, it remains impossible to serve fully the debt. In this case the external interests, J_x, in order to be fully paid, (1) have to be financed with additional loans, that lead to an increase in total debt, dD_x, and/or (2) can only be paid if a too large trade surplus, *R*, has to be produced. A "too large trade surplus" is a trade surplus which implies a transference of real resources to the creditor countries that, to be achieved, depends on the reduction of imports, *M*, rather than the increase of exports, *X*. The reduction of imports is basically achieved by reducing investments, I, rather than consumption, *C*. In this case the actual trade surplus, *R*, is bigger than the potential surplus, R^M, since we define potential surplus as the trade surplus that can be achieved while maintaining the "necessary" level of investments, I^M

A third situation where the debt is too high is the one where the debt is almost entirely a state responsibility, D_{xGt}, while the revenues from exports are private, X_{pr}. In this case the external debt becomes a basic reason for the crisis even if the country is producing a trade surplus. The interests paid on the external public debt become a basic cause of the public deficit. As the public deficit cannot anymore be financed by an increase in the external debt, it is financed by increasing the internal debt or by printing money. Fiscal crisis and inflation are the obvious outcomes.

Thus, an external debt is too high when, in order to pay fully the respective interests, we have:

(1) $D_{xt+1} > D_{xt}$

and/or

(2) $R > R^M \ -- I < I^M$

and/or when

(3) D_{xGt}, versus X_{pr}.

In Brazil, during the 8Os, the three conditions are present. Let us take 1980 as a basis, since it was in the end of this year when the adjustment process began in Brazil due to the debt crisis. Since then (1) total foreign debt practically doubled, (2) the rate of investments fell around 5% below the previous level, and (3) the public external debt, which was 68% in 1979, today is 87% of total foreign debt, while exports and the trade surplus continue to be almost entirely private.

Stock Disequilibrium Leading to Flow Disequilibrium

Let us start this section reasoning in terms of conventional or text book models of stabilization, Suppose that, in the first half of the 70s, the Brazilian macroeconomic

variables were basically balanced, i.e., aggregate demand was equal to aggregate supply, so that

$$I + G + X = S + T + M$$

where G is state expenditures, including expenditures of public owned enterprises, S, private savings, and T, state revenues (taxes and sales of public owned enterprises).

This nice equilibrium, where interests are disregarded, was completed by an equilibrium in each sector:

in the private sector

$$I = S,$$

in the public sector

$$G = T,$$

and in the foreign trade sector

$$X=M.$$

External indebtedness during the 70s disrupted the three equilibriums. The external indebtedness of the public sector was synonymous of public deficit ($G > T$) that had as counterpart a trade deficit ($X < M$), financed by external savings, S_x. Following text book or conventional economics of adjustment — so much used and misused by policymakers everywhere — the private sector remains in equilibrium. When we come finally to the moment of stabilization (1981 to 1983), the adjustment of the public sector was given priority.

The basic objectives of adjustment were, externally, to produce an equilibrium in current account, and internally to eliminate public deficit, E. Both objectives were supposed to be achieved simultaneously. By reducing and eventually eliminating the public deficit the country would reach current account balance.

$$E = G + J_x - T = \text{O}$$

and so

$$M + J_x = X$$

where M, now, excludes explicitly interest and J_x represent net interests paid on the external debt.

We already saw that the reduction of public deficit was achieved, yet perversely through the reduction of public sector investments, given that the reduction of current public expenditure is always very difficult, even for an authoritarian government. Anyway, some results were achieved in this area by reducing salaries of public officials and state owned enterprises' employees. After the end of the authoritarian regime, the new democratic government that took office in 1985 was unable to maintain this reduction of salaries, and the public deficit increased again.[2]

[2] Between 1980 and 1984 state expenditures with personnel were reduced form 6.18% to *5.59%* of CDP; in 1988, however, total government expenditures with personnel were back to 7.80% of GDP. It is interesting, however, to note that a considerable part of the reduction was reached at municipal and state level. In this level it decreased from 2.71 to 2.39% of GDP between 1980 and 1984 and increased to 3.30 in 1988.

Table 1. Internal Macroeconomic Variables

(%)

Year	GDP	Invest/GDP (curr. Prices)	Invest/GDP (const. Prices)	Gross Savings/GDP (curr. Prices)
1979	6.8	23,4	22.9	18.3
1980	9.3	22.9	22.9	17.9
1981	-4.4	22.8	21.0	18.6
198a	0.6	21.4	19.5	15.3
1983	-3.5	17.9	16.9	13.2
1984	5.1	16.4	16.2	15.0
1985	8.3	17.0	16.7	16.9
1986	7.6	19.2	19.0	17.3
1987	3.6	22.2	18.3	21.8
1988*	-0.3	23.2	17.5	-

Source: Instituto Brasileiro de Geografia e Estatística.
* Preliminary Data.

On the other hand, the basic objective of the creditors — the equilibrium in current account — was basically achieved or nearly achieved starting in 1984.

It is interesting, however, to observe that, contrarily to conventional adjustment models, achieving current account did not imply achieving budget equilibrium; or, in other words, the permanence of a large public deficit was consistent with a large trade surplus and an equilibrium of current account.

The explanation for this fact is not difficult. Conventional macroeconomic adjustment models are just "flow models." They only take into account the basic flows of an economy. This is a reasonable approach when the stock of debt (particularly the public debt and the external debt, which, by the way, may have large intersection as it is the case of Brazil) is modest. When it is too high the conventional models just do not apply. Besides a flow model, one needs a "stock model", or a flow model that takes into account the stock of debt. The unbalances in the economy are not just flow unbalances, but also stock unbalances. The economy may achieve current account equilibrium, but, due to the volume of interest paid by the state, the public deficit may remain high.

In these circumstances, the basic macroeconomic equation must be rewritten by making explicit in the left side the interest paid by the state on its external debt, J_{Gx} (assuming that the debt is fully nationalized and there is not yet internal debt), and in the right side the interests paid on the foreign debt.

$$I + G + J_{Gx} + X = S + T + M + J_x$$

Now we cannot anymore say that it is the nonfinancial public deficit $(G > T)$ that leads to excess demand and causes trade deficit $(X < M)$. Trade balance, as well as the non financial public accounts, may be balanced, but the country remains with a current account deficit $(X < M + J_x)$. And the more likely causal relation is just the opposite of conventional models. It is the current account deficit caused by the payment of interests that causes total public deficit including interests paid by the state. We have a public deficit that does not lead to excess demand but is a consequence of the external (and, as we will see in the next sections, also of the internal) indebtedness of the state.

The Perverse Character of Adjustment

The adjustment process so described was perverse, self-defeating, in several ways: first, because it was achieved by reduction of imports, increase in transferences of real resources, and reduction of investments; second, because it was accompanied by the nationalization of the external debt, that aggravated the unbalance of public accounts; third, because the increase in interest bills to be paid by the state implies the reduction of public savings and – as current expenditure and public investments have to be minimally maintained – increase of public deficit; fourth, because real devaluations of the exchange rate, besides accelerating inflation, increased further the public deficit; fifth, because the foreign banks decided not to increase their exposure in highly indebted countries, the financing of the public deficit caused by interest to be paid on a high external debt had to be done by increasing internal indebtedness or printing money.

Theoretically public deficit, *E,* may be financed by increasing public external indebtedness, dD_{xG}, by increasing public internal indebtedness, dD_{lG}, and the state printing money, *dB, that* is, by increasing the monetary basis (high powered money):

$$E = dD_{xG} + dD_{lG} + dB$$

During the 70s and early 80s public deficit in Brazil was financed more or less evenly by these three sources. But in the moment that the debt crisis appeared, the source of external finance for the state was reduced and finally closed. The state had to pay the interest on the external public debt but could not anymore finance it externally. Thus, the only solution was to increase internal debt and/or to print money.[3] The increase of internal debt could be achieved only by increasing the interest rate and/or by reducing maturities; the increase of the interest rate aggravated the public deficit. The alternative of printing money validated the going rate of inflation.[4] The perverse character of the suppression of external indebtedness as a source for financing public deficit is so quite obvious. While a great effort was being done to reduce public deficit,[5] the suspension of external finance for the public deficit that was not eliminated by the 1981 - 83 adjustment, led to an increase in internal indebtedness, to an increase in internal interest rates – that aggravated public deficit, since interests were mostly paid by the state – and to a reduction in the maturities of public debt.

Public Sector Savings and Public Deficit

Another consequence of the increasingly high interest burden, besides the increase in public deficit, is the reduction of public sector savings. Public savings, *SG*, are equal to state revenues, *T,* minus current public expenditures (total public expenditures, *G*, here already including interests in order to simplify) minus public investment, I_G,

$$S_G = T - (G - I_G)$$

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[3] Brazilian economists realized that early in 1985. See Arida, 1985; Fraga Neto and Lara Resende, 1985, and Bresser-Pereira, 1985.

[4] About the validating character of the money supply in the Brazilian inflation see Rangel (1963); Bresser-Pereira (1980); Bresser-Pereira and Nakano (1983). It is interesting to observe the pioneering character of Rangel's contribution, made seven years before Kaldor's well known paper (1970).

[5] After and as a result of the 1981-83 recession public deficit was not eliminated but achieved its lowest level in the decade, 3% of GDP, in 1984 (see Table 2).

Table 2. Public Sector Accounts

(% of GDP)

Year	Tax Collection	Personnel Expenditure	Public Investment	Public Savings	Public Deficit
1979	24.6	7.0	2.4	3.8	8.3
1980	24.7	6.3	2.3	2.2	6.7
1981	24.5	6.4	2.6	2,3	6.0
1982	25.0	7.0	2.4	1.8	7.3
1983	24,6	6.5	1.8	0.6	4.4
1984	21.4	5,5	1.9	0.8	3.0
1985	22,9	6.8	2.3	0.3	4.3
1986	25.9	7.2	2.9	1.9	3.6
1987	22.2	7.5	3.2	–1.2	5.9
1988*	21,6	7.6	–	–1.9	4.3

Source: First three columns, IPEA; last two, Central Bank.
Note: The first four columns refer to the public sector in the strict sense; the last includes state corporations.
* Preliminary data.

Thus, we have that public deficit, E, is equal to public savings minus public investments.

$$E = G - T = I_G - S_G$$

During the 70s public savings were strongly positive in Brazil. In 1987, given the level of interests paid by the state (see Table 3) and the reduction of the gross tax burden (see Table 2) they are near zero.[6]

Public savings are supposed to finance public investments. When public savings are around zero – as is the case of a highly indebted country where a fiscal crisis developed – public deficit is equal to the public investment that has to be done, that cannot be reduced. In this case we may speak of a structural public deficit. The real cause of the deficit is the interest burden originated in the external and internal debt, but, as long as public savings are around zero, the unpleasant relation between public deficit and public investment becomes evident.

Minimum public investments in Brazil is relatively high (around 5% of GDP) given the fact that state, directly or through state owned enterprises, is responsible for most of the investments in electricity, oil, communications, transportation and steel production.

Given the circumstances (1) that the state was reduced to zero savings due mostly (not exclusively) to interests it has to pay (around 6% of GDP) and (2) that it must invest at least 5% of GDP, public deficit becomes at that level "structural," that is, very rigid downwards.

This does not mean that it is impossible to reduce and eventually eliminate public deficit. But, first, it emphasizes that reducing public deficit without increasing public

[6] There are no figures about total public savings in Brazil. The figures published according to the methodology adopted by the national accounts are limited to the public sector *stricto senso,* excluding state owned enterprises (see Table 2). According to theses figures public savings were around 6% in mid-70s and turned almost 2% negative in 1987. If we add savings (profits plus depreciation) of state owned enterprises, the declining tendency will be the same, and public savings will be probably around zero.

Table 3. Public Sector's Interest Payments

(% of GDP)

Year	External debt	Domestic Debt	Total
1983	3.70	3.01	6.71
1984	3.89	3.30	7.19
1985	4.47	3.44	6.91
1986	2.89	2.23	5.12
1987	2.62	2.17	4.79
1988*	2.85	2.88	5.73

Source: Central Bank, DEPEC.
* Estimated.

savings makes no sense; that this reduction without the recovery of public savings is possible, as the experience of the highly indebted countries in the 80s demonstrated, but extraordinarily damaging for growth prospects of the country: it is enough to reduce public investments, Actually the reduction of public investment is only viable in the long run, after a successful program of privatizations; in the short run, if the state is charged with the responsibility for investments in crucial sectors of the economy, this strategy is self-defeating. Second, it says that the elimination of public deficit is very difficult when the public sector is highly indebted while responds for an important share of investments in the economy.

Debt Crisis and Fiscal Crisis

The previous discussion demonstrates in several ways how the debt crisis developed into a fiscal crisis. The increase of the public external debt was in the 70s a consequence of a growth strategy (the Second National Plan of Development - II PND) based on public deficit. The internal adjustment, between 1981 and 1983, was accompanied by the nationalization of the private external debt. In Brazil, as practically in all highly indebted countries, the adjustment was also an opportunity for the private business enterprises to pay their debts in local currency and pass over to the public sector the responsibility for the external debt.[7]

The 1981-83 adjustment process reduced (in an unsound manner) but did not eliminate public deficit. Internally its major consequence was to accelerate the reduction of public savings as it estimated the nationalization of the external debt. The reduction of public deficit was obtained by reducing investment rather than reducing current expenditures (and so increasing public savings). The limited reduction in current expenditures between 1981 and 1983 — particularly achieved by reducing wages and salaries, instead of deregulating the economy and reducing the labor force in the public sector — were compensated by the increase of the interests bill, that took place, first, due to the increase of public external debt, and, second, due to the public internal debt.

[7] Table 7 presents the figures showing the nationalization of the debt. Business enterprises paid in cruzeiros, usually before real devaluations of the local money, their external debts, depositing the cruzeiros in Central Bank.

Table 4. Money and inflation growth

Year	Inflation		Monetary Base	M 1	M 4	Internal Debt [a]
	INPC	IGP-DI				
1979	70.7	77.2	84.4	73.6	65.1	26.4
1980	88,6	110.2	56.9	70.2	69.1	55.2
1981	93.5	95.2	67.2	87.6	140.5	137.8
1982	100.3	99.7	100.4	66.6	110.7	126.7
1983	178.0	211.0	79.8	97.4	150.5	95.7
1984	209.1	223.8	264.1	201.8	292.7	457.3
1985	239.0	235.1	257.3	304.3	303.9	387.0
1986	58.6	65.0	293.5	306.8	94.8	39.0
1987	396.0	415.8	181.5	127.4	352.6	531.2
1988[b]	993.3	1037.6	622.3	571.7	1019.6	1275.2
Accum.[c]	33101.0	47437.4	18142.7	13820.8	55485.4	67773.3

Source: Bank Central's Bulletin, Vol. 20, April, 1984; Economic Program, Central Bank, Vol. 20, March, 1989.

[a] Internal debt stands for Federal Bonds and Bills outside Central Bank.

[b] Preliminary data.

[c] Times instead of percent.

As the internal public debt increased as result of the impossibility of obtaining additional external funds, the rate of interest on the internal debt – and the public deficit – increased or tended to increase.[8] The public deficit, which was reduced in an unhealthy form (curtailment of public investment and wages and salaries reductions instead of firing personnel, deregulation and privatization) during the adjustment process, started growing again since 1985, as the level of real wages and salaries in the public sector recovered their previous level.

I am not discussing in this paper solutions for the external debt crisis and the fiscal crisis that is being described. The fiscal crisis is clearly an outcome of the debt crisis. Everyday the fiscal crisis is aggravated, while the debt crisis remains the same, given the practical absence of new external loans. It is clear, however, that in order to overcome this crisis, a reduction of the external debt to around 50% of its present value and a radical fiscal adjustment will be necessary. The public deficit is today structural in Brazil, but this does not mean that it is impossible to eliminate it. The unilateral reduction of external debt will legitimate internally the fiscal adjustment, while the elimination of the public deficit will legitimate externally the unilateral measures that are necessary to reduce the external debt in the context of the Brady Plan (see Bresser-Pereira, 1988d and 1989b).

[8] The interest rate did not necessarily increase due to the trade off with maturities. In 1986 the creation of the LBCs (Letras do Banco Central) with very short maturity (practically one day) was *a* recognition that, with very large rates of inflation it was impossible to have long term financing for the Brazilian state, but it was also a form of controlling speculation and reducing the interest rate to near zero in the open market operations.

The Perverse Macroeconomics of Adjustment and Inflation

As long as an external debt too high precludes additional external finance, the only form of financing this deficit is perversely increasing internal indebtedness and/or printing of money.

The perverse macroeconomics of adjustment, when the public sector is externally and internally highly indebted, leads us now to inflation. The external debt acquired in the 70s was a basic cause of the fiscal crisis in the 80s; on their turn, both the external debt and the fiscal crisis will be in the roots of the acceleration of inflation rates during the 80s.

As inflation accelerates, it tends to become more and more rigid downwards, because economic agents become more and more inflation conscious. The maintaining factors of inflation – the formal and informal indexation of the economy – assume a growing importance and gives rise to an autonomous or inertial type of inflation. On their turn, high and accelerating levels of inflation lead to a larger public deficit, reduction of the investment rate and reduction of the efficiency of accumulated capital. Let us see, briefly, these three aspects: the acceleration of inflation, its autonomization or inertialization, and its perverse consequences. Before, a few words about the theory of inertial or autonomous inflation.[9]

According to the theory of autonomous or inertial inflation, let's define the rate of inflation, p', as a result of past inflation, p'^{It-1} (where the superscript I stands for the different indexators economic agents use for past inflation), plus the action of exogenous supply shocks, G^z (where the superscript z stands for the several possibilities of supply shocks), and/or the action of exogenous demand shock, u, where u stands for the unemployment rate to the Philips curve.

$$p' = ap'^{It-1} + bu + cG^z$$

where a, b, and c are coefficients adding one; in most occasions b and c may be equal to zero.

In this model the maintenance of the level of inflation is defined by the indexation of prices according to past inflation, while its acceleration can be explained (1) by an endogenous change of indexators used by the economic agents as they perceive that the going rate of inflation is too high so that the indexator they are using to correct their prices is not anymore a safe protection in the distributive conflict, (2) by an exogenous (to the model) pressure of demand manifested by the reduction of the unemployment rates, and (3) by an exogenous (again to this specific model) supply shock caused by the exertion of some kind of power over prices (state power, labor power, monopoly power of business firms).

This endogenous acceleration of autonomous or inertial inflation is important because it shows clearly that it is impossible to expect high and, simultaneously, stable rates of inflation, as we believed while formulating the theory of inertial inflation. High rates of inflation are always accelerating rates of inflation. In spite of its name, inertial

[9] For a general presentation of this theory, including a survey of the main initial contributions to it, see Bresser-Pereira and Nakano (1987) and for a reevaluation of it, Bresser-Pereira (1989a).

inflation is permanently in a slow process of acceleration.[10] The endogenous mechanism of acceleration of autonomous inflation is based on the tendency of economic agents to change of indexators as they perceive inflation to be higher and more threatening to their income share. I call "endogenous" this mechanism just because it is based on the definition of inertial or autonomous inflation: present inflation determined by past inflation. Actually, however, it works only in combination with the "exogenous" (just because it is not based to past inflation) accelerating factors of inflation. In a first moment, while autonomous inflation is perceived as relatively low, economic agents define "past inflation" as their cost increases; to a second moment, as the rates of inflation is perceived to be higher — and indeed is higher due to some exogenous shock —, the "past inflation" defined as the indexator by economic agents is the rate of inflation proper; in a third moment, when the rate of inflation is too high, economic agents tend to define as their indexator the price increases above the rate of inflation of some relevant sector. Each change of indexator represents an endogenous acceleration of autonomous inflation (see Bresser-Pereira, 1988c, for the explanation of this endogenous accelerating mechanism). Besides this strict sense endogenous mechanism of acceleration of inflation, all the factors that we are analyzing in this paper relating the acceleration of inflation with external and internal public debt and with public deficit are also endogenous factors of acceleration of inflation.[11]

During the 70s the annual rate of inflation in Brazil averaged 40%. The acceleration of inflation to 100% that took place in 1979 and remained at this level up to the end of 1982, coincided with appearance of the debt crisis. This crisis actually began in 1979, with the second oil shock, the increase in nominal and real interest rates and the recession in the United States. The major supply shocks in this period were a maxidevaluation of the cruzeiro in 1979, the increase in the internal interest rates, a new wage policy, and the increase in some public prices in order to correct relative prices ("corrective inflation").

In 1983 inflation accelerated again to 200% and stayed at this new level until the end of 1985. The major accelerating factor was again a maxidevaluation of the cruzeiro, directly related to the debt crisis. Agricultural prices also had some part in the general price increase.

The deep recessions of 1981 and 1983 were unable to control inflation. In 1981 inflation kept its previous level of 100%; in 1983, it doubled to 200% (see Table 4). The first recession led a group of economists in São Paulo (at Getulio Vargas Foundation) and in Rio de Janeiro (at PUC – Catholic University) to formulate the theory of inertial inflation; the second recession, to propose as a solution for it a general price freeze, which we called "heroic solution to control inflation" (Bresser-Pereira and Nakano, 1984) and came to be called "heterodox shock" (Lopes, 1984). The Cruzado Plan, in February 1986, was the result of this theoretical proposal. Its subsequent failure has to do with its populist administration and not with its original conception.

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[10] Actually the expression "inertial" is not the best one to define this high and chronic type of inflation. In our (Nakano and mine) first papers on the subject we used the expression "autonomous" inflation.

[11] For an interesting analysis of the endogenous acceleration of inflation based on a rational expectations (but not monetarist) approach, see Antonio Kandir: "in conditions of financial fragility of the public sector, the expectational dimension of prices, that usually has a fundamental role, becomes dominant in the process of acceleration of inflation" (1988: 170).

This plan, as the Bresser Plan (June, 1987) and the Summer Plan (January, 1989), was unable to eliminate inflation. As an emergency plan, adopted to cope with the acute crises of the Cruzado, the Bresser Plan did not have this objective (see Bresser-Pereira, 1988a), but the other two were clearly aimed to reduce inflation to a rate similar to the one prevailing in the OECD countries. The literature about the causes of the failure of the Cruzado Plan is growing everyday. During a certain time it became popular to say that the Cruzado Plan failed because it was unable to combine heterodox with orthodox measures.[12] Starting from this assumption the Summer Plan tried to adopt an orthodox monetary policy by putting the real rate of interest in a very high level, but failed as well. Actually the Cruzado and the Summer Plans ended with an acute economic and financial crisis, that can be explained by its populist implementation in the first case and by its orthodox conception in the second.

If we are to look for the basic reasons why just a price freeze combined with monetary policy is unable to control the autonomous inflation prevailing in Brazil, the answer is quite simple: while a definitive solution is not found for the debt crisis and for the related fiscal crisis, inflation will not be controlled in Brazil. A solution for the debt crisis means its reduction to around 50% of its present level; a solution to the fiscal crisis means – besides the reduction of the public debt – the elimination of the budget deficit.

However, while inflation is not controlled, it is, besides a consequence, a cause of the fiscal crisis, and, more largely, of the economic crisis.

The O1iveira-Tanzi effect, by reducing state revenues as inflation accelerates, is a basic cause of the public deficit. High rates of inflation – together with the public deficit and the dimension of the internal public debt – make economic agents distrustful of the indexation on the internal debt. As a compensation for continuing to finance the state they tend to demand higher interest rates, which imply higher public deficit. In the recent Summer Plan – when the loss of confidence of the economic agents leading to a loss of credit of the state became evident – this vicious circle was aggravated by the decision of the government of promoting the deindexation of the internal debt and putting the interest rate in an artificially high level.

Financing the Public Deficit, InternaI Indebtedness and Seigniorage

In this type of economy where high rates of inflation prevail, and where the source of external financed was cut out, the financing of the nominal public deficit (nominal public sector borrowing requirements), Ep, where p is the price index, plus the increase in external reserves, dV, is achieved by increasing in the monetary basis, dB and the internal debt, dD_{IG}:

$$Ep + dV = dB + dD_{IG}$$

The question, now, is to know how this financing process will be shared by the increase of the monetary basis and of internal indebtedness. According to the monetarist view, the increase of internal indebtedness would be the independent variable. The limit to internal indebtedness would be the crowding out process manifested by the increase of the interests on the treasury bills. The residue would be financed by seigniorage, i.e.,

[12] For a very interesting critique of this view see Baer and Beckerman (1989).

by the increase of the monetary basis. Since this residue tends to be high – given the intrinsically populist character of governments in these countries – inflation will be high and accelerating.

The neo-structuralist theory of inertial inflation takes the inverse position. There is not, necessarily, a limit to internal indebtedness, if the economy – as it happens normally in Brazil, except during the Cruzado Plan – is working in conditions of unemployment and undercapacity, and if private business enterprises are liquid and unwilling to invest more than the strictly necessary to maintain their market shares. Actually, internal indebtedness is the residual variable, while the nominal growth of the monetary basis is endogenously determined by the demand for money.

In this model, the real demand for money, B_d/P, is a decreasing function of the rate of inflation: the higher the rate of inflation, the smaller the real demand for money (and the higher the income-velocity of money). In consequence, as nominal gross domestic product, Y_p, increases, the nominal demand for money increases less than proportionally. The real demand for money is a decreasing function of the rate of inflation and the nominal demand for money a decreasing function of nominal income because, as inflation accelerates, economic agents reduce their liquidity preference and a process of demonitization takes place. These relations can be expressed by Cagan's money demand equations (1956):

$$B_d / P = aYp/P\ e^{-bp'}$$

$$B_d / Yp = a\ e^{-bp'}$$

where a is a coefficient that corresponds to the share of money in GDP, when the rate of inflation is zero; b is a coefficient that expresses the negative elasticity of money demand to the rate of inflation; and e is the basis of the Napierian logarithm (2.7182).[13]

The increase in the nominal demand for money defines the required increase in the monetary basis. Given the rate of autonomous inflation, the nominal monetary basis necessarily increases while the real monetary basis decreases (see Table 5). If the nominal money supply does not increase as required by the increase of inflation, that is reflected in the increase of nominal GDP, a liquidity crisis will develop. Thus, given the required increase in the monetary basis, the difference between it and the nominal public deficit plus the change in external reserves will determine the residual increase of internal indebtedness.

According to this point of view, the attempt to control inertial inflation with monetary policy is self-defeating. Not only because the money supply is endogenous and is already decreasing in real terms as inflation accelerates (see Table 5), but also because an active monetary policy would have the perverse effect of aggravating the fiscal unbalance. We know that an active monetary policy means, basically, to increase the interest rate. In Brazil, as in all countries were autonomous inflation prevails, it is the state that is highly indebted, not the private sector. It is the state that pays interests. When interests increase, public deficit increases and the internal debt increases.

If the real interest rate is higher than rate of growth of GDP (what is very easy since the country is stagnated) and if it has to be financed by increasing internal indebtedness, the internal debt will increase in such way that economic agents will develop negative

[13] These equations were originally developed in Phillip Cagan's classical paper on hyperinflation (1956). But he did not conclude from these relations the essentially endogenous character of the money supply.

Table 5. Money and Domestic Debt

	Monetary Base		Internal Debt*	
Year	Balance* NCz$ Million	% GDP	Balance US$ Million	% GDP
1979	0.3	4.7	-	-
1980	0.5	4.1	-	-
1981	0.8	3.2	-	-
1982	1.4	2.8	38,804	13.6
1983	2.4	2.0	34,787	16.9
1984	5.8	1.5	42,363	19.9
1985	17.8	1.3	49,084	21.5
1986	120.6	3.3	58,400	21.5
1987	170.1	1.4	60,888	20.1
1988[c]	911.0	1.0	67,726	19.1

expectations as to the future payment of the internal debt. In the first two months of the Summer Plan, when the Brazilian government decided to raise the real interest rate to very high levels, the consequent loss of confidence in the government and loss of credit of the state reached an all time high, capital flight and the public deficit increased, and the eminence of an hyperinflation became evident.

Seigniorage, the issuing of money, is the independent variable for financing the public deficit, but it is a decreasing source of resources for the state as long as the real monetary basis decreases and so also the inflationary tax (the devaluation of cash balances) decreases as inflation accelerate. The real resources obtained by the public sector by issuing money (inflationary tax = $p' M/p$) corresponds to the difference between real seigniorage (the increase of the monetary basis in real terms = dM/p) and the reduction of the outstanding monetary basis = $d(M/p)$.[14]

The monetary basis, that was around 5% of GDP in the end of the 70s, was no more than 1% of GDP in 1988 (see Table 5). Thus, the reduction of the monetary basis ($d(M/p)$) is increasingly bigger. Inversely, the trend for the internal debt is to increase in relation to GDP (see also Table 5). The reduction of the real monetary basis is for sure a source of ineffectiveness of monetary policy. But is also a possible source of hyperinflation. As inflation accelerates the issuing of money, the seigniorage process, must be bigger and bigger in relation to the prevailing monetary basis in order to finance the same public deficit, i.e., to order to collect the same inflationary tax. And the share of the deficit financed by internal indebtedness must be bigger and bigger. If, in a given moment, economic agents loose confidence and stop financing the state, hyperinflation will be the necessary outcome.

[14] The rate of inflation, p', may be also expressed as dp/p. If we define real seigniorage as dM/p, we have

$dM/p = (dM/M)\ (M/p) = d(M/p) + p' M/p$

$p' M/p = dM/p - d(M/p)$

See the application of these concepts to the Brazilian economy in Eliana Cardoso (1988) and Fernando M. Dall'Acqua (1989).

The Paralysis of the State

Inflation plays a decisive role in the overall crisis of the economic crisis that we are examining — a crisis that is defined by relative economic stagnation. But before examining the perverse logic of stagnation we have to understand the paralysis of the state for structural reforms. The fiscal crisis and its more terrible outcome – the acceleration of inflation – have as a consequence the paralysis of the state for long term economic policy. And nothing is more important for less developed countries than an overall strategy of economic development.

A deep economic crisis, as the crisis of the 80s in Brazil, is a clear signal that the old strategy of economic development is exhausted. The fiscal crisis is an indication that the model of state in Brazil is as well exhausted.

This crisis is also a sign that, in addition to the model of state, the model of society in Brazil is also exhausted. Brazilian society is characterized by a very high degree of income concentration. While the country was growing fast, income concentration was not a major problem. But in the moment that development stopped, it became a major source of continuous and aggravating social conflict – a conflict that lies in the root of the public deficit and the acceleration of inflation.

The three basic strategies of the Brazilian state for promoting industrialization were (i) trade protection, (ii) subsidies for the private enterprises and (iii) state direct investments in public services and basic input industry (electricity, oil, steel, communications, railroads). The change, now, is necessarily towards (i) elimination of subsidies to fight public deficit, (ii) trade liberalization in order to stimulate international competitiveness, and (iii) privatization that will help to solve the financial crisis of the state.[15] Given the fact that Brazil is a large country, trade liberalization will be necessarily limited in comparison with smaller countries, but it will be an essential feature of any future industrial policy. State owned enterprises had a decisive role in the first phase of industrialization, but now, when efficiency becomes crucial and when the state needs urgently financial resources to balance its accounts, privatization is a natural solution,

There is an increasing consensus about these reforms, but they are not completed and put to work, because one of the basic characteristics of an economic crisis and particularly of a fiscal crisis is the paralysis of the state. A fiscal crisis means that the state has no funds to finance a new economic policy; the policymakers do not have either time or tranquility to formulate and implement the new strategy. If a fiscal crisis is added to a social crisis due to excessive income concentration, the consequence is that a legitimacy crisis is permanently threatening the political system and aggravating the paralysis of the state.

[15] It is relevant to note that one of the outstanding Brazilian economists that helped to formulate the industrialization strategy via protection and state investment, Ignácio Rangel, has become a supporter of privatization of public services in order to promote needed investments in this area since he wrote the “Postfácio” of the third edition of *A Inflação Brasileira* (1978).

The Perverse Logic of Stagnation

We have now all elements to define the perverse macroeconomic logic of stagnation in highly indebted countries, where a fiscal crisis developed and inflation reached unimaginable levels nearing hyperinflation.

An external debt too high to be paid – that is, inconsistent to growth and price stability in the indebted country – leads to a transference of real resources (surplus in trade balance including services) and to the elimination of external savings (deficit in current account), that have a direct effect in reducing the global (private and public) rate of investment. This same debt, as it turns basically state responsibility in the adjustment process, provokes the reduction of public savings and consequently the reduction of public investment.

Table 6. Brazilian Foreign Accounts

(US$ million)

Year	Exports FOB	Imports FOB	Real Transfers	Current Account	External Debt Registered
1979	15,244	18,084	-5,200	-10,742	49,904
1980	20,132	22,955	-5,775	-12,807	53,847
1981	23,293	22,091	-1,463	-11,734	61,411
1982	20,175	19,395	-2,816	-14,755	70,198
1983	21,899	15,429	3,956	-6,837	81,319
1984	27,005	14,916	11,175	45	91,091
1985	25,639	13,153	11,718	-242	95,857
1986	22,349	14,044	5,649	-5,304	101,759
1987	26,224	15,052	8,742	-819	107,514
1988*	33,784	14,688	16,004	4,819	102,367

Source: Bank Central's Bulletin, Vol. 25, January 1989.
* Preliminary data.

The increase in the public external debt, as the private external debt is transferred to the state, and the increase in the payment of interests by the state provoke a fiscal crisis. This fiscal crisis is aggravated in the moment that the public deficit cannot anymore be financed by external loans and has to be financed by the increase of the internal debt and the printing of money. The increase of internal debt leads to an increase of the internal interest rate, and, in consequence, to further increase in public deficit. Printing money validates the going rate of inflation.

Prevailing high rates of inflation lend to become inertialized or autonomous. This means that they are rigid downwards, have an endogenous accelerating mechanism and are subject to exogenous supply and demand shocks. In consequence, inflation tends to be higher and higher.

High rates of inflation plus an increasing internal debt and a decreasing maturity for this debt lead economic agents to fear the finance breakdown of the state and provoke an increase in capital flight. Capital flight, which used to be minor in Brazil, has become

substantial in recent years.[16] All these factors have, obviously, a depressing effect on the rate of investment (already depressed by the transference of real resources, the disappearance of external savings, the reduction of public savings).

Table 7. Brazil's Foreign Accounts Ratio

(%)

Year	Real Transfer / GDP	Ext. Sav. / GDP	Ext. Debt / GDP	Ext. Debt / Exports	Pub. Ext. Debt / Total Debt	Second Market Price Ext. Debt (% Face Value)
1979	-2.1	4,8	0.2	3.3	68.2	–
1980	-2.2	5.4	0.2	2.7	69.2	–
1981	-0.3	4.4	0.2	2.6	68.0	–
1982	-0.7	5.7	0.3	3.5	67.5	–
1983	2.3	3.3	0.4	3.7	74.1	–
1984	5.4	0.0	0.4	3.4	78.8	–
1985	5.1	0.1	0.4	3.7	82.1	78.0 Jul
1986	2.5	1.9	0.4	4.6	85.6	75.7 May–Dec.
1987	3.2	0.5	0.3	4.1	86.6	54.2
1988*	5.0	-1.3	0.3	3.0	87.4 Jun	47.6

Source: Central Bank's Bulletin, Vol. 25, January 1989; Central Bank's Annual Report 1984/85/86; Garantia Bank.
* Preliminary data.

Finally the new investments and the existing stock of capital lost efficiency, as can be seen by the increase of the capital-output ratio. This increase is very large if we calculate the investment ratio at current prices; it is smaller if we measure investment at constant prices.[17] In current prices the rise of the capital-output ratio is bigger because prices of capital goods – imported and internally produced – increased in relative terms. In constant prices, where the variation of relative prices is neutralized, the capital-output ratio also rises. It should not, since investments in the 80s tended to be less capital intensive than in the 70s, when the II PND was launched. The best explanation for this reduction of the efficiency of capital in the 80s is probably the rate of inflation. It is usually said that the Brazilian economy is used to inflation, that indexation neutralizes most of its evils. This was not true when inflation was 40 to 50% a year; it is nonsense when inflation is not anymore counted at year basis, but at a month basis, when inflation is 10, 20, 30 % a month. This type of inflation disorganizes the economy, turns economic calculation increasingly difficult, stimulates speculation, conduces economic agents to spend most of their lime trying to gain or, at least, not to lose with inflation.

[16] Figures about capital flight are always imprecise, but, according to estimates made in the Brazilian financial market, capital flight, that was around 1 billion dollars in the 70s, mounted to around 3 billion dollars since the debt crisis became evident, in 1983; in 1988 it would have doubled and in 1989 it would be higher than 10 billion dollars. According to *World Financial Markets* (December, 1988), the accumulated flight of capital assets from Brazil would be 6, 8 and 31, respectively in 1980, 1982 and 1987. From a relatively low level it would be growing at a faster pace than, for instance, Mexico, whose respective figures were 19, 44 and 84 billion dollars. In 1980 accumulated capital flight was more than three limes higher in Mexico, while, in 1987, 2.7 times higher. In both countries the relation between capital flight and the internal crisis that followed the debt crisis is quite clear.

[17] Capital-output ratio, that was around 3 in the 70s, averaged *5.5* in the 80s if we take the investment rate in constant prices.

New investments are not necessarily less efficient, but the measurement of the marginal capital-output ratio shows an increase because the existing stock of capital turns idle, loses efficiency, as the economy is disorganized by inflation and an increasing number of people in the business enterprises are much more worried with inflation than with production. Actually what is increasing is the total capital-output ratio, but this ratio cannot be measured.

A New Pattern for Financing Investiments

It is quite clear today that, in order to overcome this economic crisis, besides the reduction the burden of the external debt and the overcoming the fiscal crisis, it is necessary to find a new pattern of accumulation of capital, or, in other words, a new scheme for financing investments in Brazil.

A pattern of accumulation is defined by the way investments are financed. We may define financing in terms of source of savings:

$$I = S_p + S_G + S_x$$

where I is total investment, S_p, S_G and S_x, respectively private, public and external savings.

The pattern of financing investments suffered deep transformations in Brazil (see Bresser-Pereira, 1987). Before the 70s external savings were negligible and savings were roughly divided between the private and the public sector:

$$I_{50s \text{ and } 60s} = 0.5S_p + 0.4S_G + 0.1S_X$$

During the 70s, with the increase of private savings and the huge current account deficits being financed by external indebtedness, the "tripod model" is defined. The state remains an important actor in the process of accumulation, but public savings begin to be reduced. Again in very rough terms we have:

$$I_{70s} = 0.5S_p + 0.3S_G + 0.3S_X$$

In the 80s, public and external savings practically disappear, become residual. Public savings are still positive because savings of public owned enterprises are still positive. Anyway, the source of savings for financing investments is now almost exclusively private:

$$I_{80s} = 0.8S_p + 0.1S_G + 0.1S_X$$

The present pattern for financing investments is clearly unsound. Neither the external sector nor the public may have such a small role in the process. And, in relation to the public sector, we already saw that it continues to be responsible for around one third of total investments (5 to 6% of GDP). Such small if not zero savings means necessarily public deficit, fiscal crisis, stagnation.

The required reduction of the external debt, the internal fiscal adjustment and the structural reforms must have as one of their objectives to change this pattern of financing investments. This will be the challenge of the 90s. The 80s were a lost decade for Brazil. But, as long as we now understand much better than in the beginning of the decade the logic of debt, deficit, inflation and stagnation in Brazil, as long as we have been able to criticize populism and neoliberal orthodoxy, it is plausible to hope that this vicious circle will be broken down.

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