Strategy for Economic Growth in Brazil: a Post Keynesian Approach

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Abstract: The paper proposes a Keynesian strategy for economic policy that aims to achieve higher, stable and sustained economic growth in Brazil. Its main hypothesis is that the current poor growth performance of the Brazilian economy is due to macroeconomic and structural constraints rather than to the lack of microeconomic reforms.

Key-words: economic policy; economic growth; Post-Keynesian theory

1. Introduction

This paper proposes a Keynesian strategy for economic policy that aims to achieve higher, stable and sustained economic growth in Brazil. Its main hypothesis is that the current poor growth performance of the Brazilian economy is due to macroeconomic and structural constraints rather than to the lack of microeconomic reforms (labour market, credit market, etc.), as liberal economists in Brazil have suggested.

The paper is divided into four main sections, besides this introduction. The second section briefly discusses the main features of a new economic strategy (based on demand-side and supply-side policies) that aims to overcome the constraints on sustained economic growth. The third section discusses the current economic constraints for a sustained economic growth in Brazil. In the fourth section a simple of the Harrod-Domar growth model is utilized in order to obtain the potential growth rate of the Brazilian economy. Finally, the fifth section presents a new economic policy model for the Brazilian economy, designed to achieve the potential growth rate of the Brazilian economy. This policy should include both demand-side policies, and supply-side policies.

2. Keynesian economic policies: a brief view

2.1 Definition of Keynesian economic policy

Contrary to orthodox economics, for which activist economic policies have no permanent effect on the real variables, such as employment and product, Keynesian policies, in a broader sense, have as main objective the achievement of full employment. In this connection, the meaning of Keynesian policy that we will adopt in this paper is that in which "policy implications arise from the perception of the role of aggregate demand in setting the level of economic activity and the lack of automatic forces leading a market economy to full employment" (Arestis and Sawyer, 1998, p. 181). According to this view, a laissez-faire market economy exhibits normally elements of instability and, importantly, does not create a level of aggregate demand consistent with full employment. As a result, in monetary economies, full employment can only be achieved by accident or through state policies.

Indeed, the concept of monetary economy[1] or entrepreneurial economy results in the possibility of effective demand failures as non-producible money can dominate labour-using capital as a means to

accumulate wealth. Under radical uncertainty, to hold money or other liquid assets is a rational act, since money provides flexibility to the agents in their portfolio composition, due to its attribute of being maximum liquidity. In general, it is highly value when uncertainty increases. Money is not neutral in the long period precisely because it is a form of wealth that, as an asset, competes with other assets, affecting the accumulation path of the economy, and thus the determinants of its actual long term performance. Indeed, the accumulation of monetary wealth define the productive accumulation of an economy as investment decisions and holding monetary wealth are excluding decisions: the production of capital goods depends on the stimulus that the investors have to shift liquid wealth for iliquid wealth, that is it depends of their liquidity preference[2].

Based on the concept of non-neutrality of money and in the principle of effective demand, economic policy – according to the Post Keynesian approach – is able to affect both in the short- and long-run the real variables of the economy. Keynesian policy is related to the implementation of economic policies that intend to increase aggregate demand in order to create a stable environment that stimulate entrepreneurs to make *new* investments. Indeed, employment level and the utilization of productive capacity depend crucially on the determinants of aggregate demand, particularly the entrepreneurs' investment decisions. In other words, economic policy should affect aggregate private investment, as it can create a safe environment that stimulate private agents to make more risky choices – that render profits and generate employment – than just accumulating liquid assets. So, the 'good' policy is that in which economic agents are stimulated to invest in capital assets (new investments). The sphere of action of the government should not however overlap with the private sphere; indeed, it should help to create a stable and safe environment for private agents to act[3].

One should note that the objective of the economic policy in this approach is related to *macroeconomic stability*, a broader concept than just price stabilization, as it aims to reduce the uncertainties that are intrinsic to the business world. Government can reduce macroeconomic risks that affect the economy as a whole. Price stability and higher level of product and employment can be, under certain conditions, compatible; for this purpose, government should make use of a broader tool of economic policy than just monetary policy. In order to reach multiple policy objectives – such as economic growth and price stabilization – it is necessary to have a greater co-ordination of macroeconomic policies (fiscal, monetary, exchange rate, and income policies). Government should evaluate the global impacts of the policies on their objectives as a whole, that is Keynesian policies consist of concerted actions in a multiplicity of arenas. In this context, policy co-ordination is essential in order to achieve macroeconomic stability.

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[1] According to Keynes (1973, p. 55), a monetary economy is defined as that in which "money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period and in the short, without a knowledge of the behaviour of money between the first state and the last".

[2] Therefore, according Post-Keynesian approach, under uncertainty, there is no unique unemployment natural rate that exists in the absence of expectation's errors. The economy can reach infinite positions of unemployment, each one according to a certain expectational state, which is related to a certain state of liquidity preference.

[3] According to Carvalho (1997, p. 40), "the ideal macroeconomic policy proposed by Keynes would in way inflate aggregate demand, expanding the economy like a ballon, leaving to private agents the decisions as to how the available resources would be employed. (...) Boosting aggregate demand reduces both risks and so it should raise demand prices of that kind of asset with respect of money".

2.2. Constraints on economic growth[4]

There are many constraints, both from demand-side and from the supply-side, on the achievement of sustained economic growth. This objective on a long-term basis requires that those constraints are somehow sufficiently eased.

Aggregate demand constraint

As we have already stressed, a laissez-faire market economy does not create a level of aggregate demand consistent with full employment. According to effective demand principle, the level of output and employment in an economy is determined primarily by the demand for goods. Low economic growth and high unemployment results from the lack of effective demand; such demand is determined by entrepreneurs' expectations on future demand, as they decide each period of production what they are going to produce and how many they are going to employ. In other words, the volume of expenditure determines the aggregate demand of an economy, while the level of employment depends on the agents' expected expenditure[5]. In sum, according to the Post Keynesian approach there is a lack of automatic forces within a market economy working to ensure that the level of aggregate demand is compatible with the full employment of labour and the existing capital stock.

Inflation constraint

Inflationary pressures usually emanate from the real side of the economy. Indeed, the process of moving towards sustained economic growth always involves falling unemployment and most of time rising capacity utilisation which are likely to generate inflationary pressures and a climate of inflationary expectations. As Davidson (1994, p. 145) points out "ever significant expansion in economic activity will induce some price increases because of diminishing returns [due to the scarcity of some input such as raw materials or managerial talent]. With rising prices and stronger employment opportunities, workers will try to seek, at a minimum, cost-of-living wage increases. As pools of unemployment dry up, workers can become more impenitent in their wage demands. Managers are more willing to grant wage increases in a rising market". The spread of inflation pressures depends on the degree of monopoly of firms, that can allow them to increase the mark-up of prices relative to costs, and the degree of workers organization, as every increase in money-wage rates not offset by productivity improvements raises production costs. Particularly, if unemployment rates shrink a great deal, it is easier for workers obtain more liberal wage increases.

Post Keynesian view criticises the use of Monetarist 'tight money' anti-inflation policy as it attacks the symptom but not the cause of the inflation. Any inflation pressures that occur in a situation that an economy is below the level of full employment have its cause in the supply side. Orthodox anti-inflation policies are oriented towards maintaining a sufficiently high unemployment rate to constrain inflationary wage demand of workers and profit margin increases of firms. That is, it can be only successful if it perpetuates significant unemployment.

Post Keynesian economists support that inflation is symptom of a fight over the distribution of current income, as it is the result of attempts of alter the existing distribution of money income among economic agents of the same region, and/or interregionally, and/or internationally. In the Post Keynesian view, there are many and different causes for inflation, and, consequently, there are various

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[4] We are following in broader terms the basic structure of the economic constraints for a full employment policy developed by Arestis and Sawyer (1998)

[5] According to Keynes (1964, p.24-5), "(...) in a given situation of technique, resources and factor cost per unit of employment, the amount of employment, both in each individual firm and industry and in the aggregate, depends on the amount of the procceds which the entrepreneurs expect to receive from the corresponding output". On Keynes´s principle of effective demand, see Davidson (2002, ch 2).

types of inflation; for each type of inflation a specific anti-inflationary tool should be used. For instance, *spot* or *commodity price inflation*, that occurs whenever there is a sudden and unforeseen change in demand or available supply for immediate delivery, can be avoided "if there is some institution that is not motivated by self-interest but which will maintain a 'buffer stock' to prevent unforeseen changes from inducing wild spot price movements. A buffer stock is nothing more than some commodity shelf inventory that can be moved into and out of the spot market to buffer the market from disruptions of offsetting the unforeseen changes in spot demand and supply" (Davidson, 1994, p. 158).

Balance of trade constraint

The balance of trade constraint arises when the level of economic activity is constrained to ensure that the level of imports is compatible with the level of exports, as any difference between imports and exports should be covered by borrowing from overseas, what in the long run can increase the external vulnerability of an economy[6].

Developing countries, particularly, can face a structural problem in their balance of payments, due to the effect of what is known as Thirwall's law[7]. This law states a link between rate of economic growth and the income-elasticity of imports and exports of an economy; it states that the in the long run demand-side variables play a key role in economic growth through the 'balance of trade constraint': a country cannot grow at a rate higher than what is consistent with its balance of trade equilibrium. The low income-elasticity of products of smaller aggregate value exported by developing countries vis-à-vis the greater income-elasticity of products imported from developed countries can generate structural deficits in the balance of payments of the former countries. These increasing deficits can result in a significant constraint for economic growth in developing countries, as the maintenance of a non-exploding deficit requires that the domestic growth rate is maintained below the world growth rate so that imports and exports grow in line with one another.

Capital account constraint

The capital account constraint arises when an economy is vulnerable to the changes in the liquidity conditions and/or changes in the mood of global players in the international financial market, whatever maybe the reason. Indeed, as the experiences of 1990s' currency crises showed all around the world, under a context of high capital mobility, such crises can occur for reasons not related directly to deficits in the current account's balance of payment. In other words, economies with small if any current account deficit (over GDP) – a situation in which a country is seen as solvent from the balance of payments' point of view – can face a sudden stop in the capital inflows due to a shift in the international investors' expectations. Sunspots[8], herding behaviour or contagion effect can induce this shift.

Countries with (i) much larger and volatile capital flows in relation to the size of their domestic capital markets and economies; (ii) non-convertible currency; (iii) low level of international reserves, are generally more prone to face capital account constraint. In such countries volatile capital flows can generate very high volatility on exchange rates. Indeed, there are various economic issues related to excessive volatility of exchange rate, particularly related to the management of exchange rate risk and macroeconomic policy (determination of interest rate and public debt).

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[6] Paula and Alves, Jr (2000, p. 597), using Minsky's financial fragility hypothesis approach, state that "external financial fragility may be defined as the degree to which an economy is vulnerable to changes in conditions of financing originating from alterations in external interest rates or in exchange rates".

[7] See, among other references, Thirwall (2002).

[8] Sunspot is an event that affects some economic variable only because the public believes it does. So, it is purely extraneous information that leads to a circle of self-fulfilling expectations.

Lack of capacity

Lack of capacity can constrain economic growth in the long run in two scenarios. During the upturn, high economic growth can fulfil full productive capacity of an economy, a phenomenon that can results in inflation pressures, as we have already stressed. On the other hand, after a period of prolonged low growth the size of the capital stock may fall short of what would be required to sustain economic growth, due to the uncertainty about the future, generating a low level of 'animal spirits' that affects entrepreneurs' investment decisions. Under these conditions, entrepreneurs' expectations should be stimulated in their decisions related to fixed investments by demand-side economic policies.

2.3. Keynesian economic policies

Post Keynesian policies in order to overcome the constraints on full employment put emphasis on the need of both demand-side and supply-side policies. However, aggregate demand and aggregate supply are not independent, as the current level of demand has direct effect on the future supply potential of the economy; that is in both investment and productive capacity.

Fiscal policy can have a strong impact on the level of economic activity, as it is a powerful tool to stimulate aggregate demand, triggering a multiplier effect on the private income. Fiscal policy should be used to push the economy toward full employment, as it affects directly the private income, and the agents' expectations concerning the future, igniting their optimist. For this purpose, Keynes recommended public expenditure or investment rather than on increasing consumption, because of its stronger multiplier effect. Public investment can create a safe environment that can stimulate investment on fixed capital be undertook.

Using as a starting point the distinction made by Keynes (1980) between *ordinary budget* (related to ordinary functions of public administration) and *capital budget*, the former should be balanced all times or even in surplus (that would be transferred to capital budget), while the latter one could be transitory unbalanced, although it should be balanced over the long run; that is it should be adjusted according to the fluctuations of the level of aggregate demand. In other words, capital budget must be operated in a contra-cyclical way, preventing high fluctuations in the private investments through the implementation of a long-term fiscal stabilization programme. The pace of public investments should be set according to the need of sustaining aggregate demand, serving to offset exogenous cyclical changes in investment spending. As Kregel (1994-95, p. 265-6) states: "Looked over time, both the ordinary and capital account should be roughly in balance; when demand declined, capital expenditures would increase and create a temporary deficit that would be eliminated as the capital projects paid off in terms of higher tax receipts and surpluses on the ordinary budget".

There are, however, some limits on policy fiscal caused by the operation of financial system: (i) interest rates (particularly on bonds) may raise with a budget deficit – as they increase the financial burden of the public debt - thereby limiting the government's ability to borrow; (ii) adverse reactions by the foreign exchange markets to particular policies – as 'bubble, fad and herd behaviour' often determine movements in prices (interest rates and exchange rates) – can lead to a fall in the value of the currency[9] (Arestis and Sawyer, 1998, p. 188).

Monetary policy operated by the management of the interest rate can also have a significant impact on the level of economic activity. The management of interest rate can be used in order to influence the private agents' portfolio in favour of both increases of production (using current productive capacity) and the acquisition of capital goods. The managing of monetary policy can be used to provoke a shift in the relative prices of different assets, from the more liquid to the more iliquid

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[9] This effect is more important for those countries that issue public bond in foreign currency – as typically is that case of many developing countries (IMF, 2003).

assets, that is leading changes in the portfolio decisions that can affect real variables of the economy (product and employment). Monetary policy acts through the anticipation of expected movements of the rates of interest. As Carvalho (1997, p. 45) states, "People are supposed to form a view as to what is the *normal* rate of interest and to expect that actual rates gravitate around that level. Those that judge the actual rate to be higher than the normal rate, take measures to anticipate a future reduction of the interest rate, and conversely."

Monetary policy should give clear signal of central bank purposes for the private agents in order to incite them to act according to the objectives of the policy-makers. More clear policy signals can leave private agents more safe and confident to act. Contrary to what became accepted by orthodox economists, Keynes and Post Keynesian economists defend openness, not secrecy, as a condition for monetary policy to be effective[10]. For this purpose, "a monetary policy is required which ensures stability to the financial system and pitches interest rates as low as possible (bearing in mind international constraints) for this may give some (possibly slight) stimulus to demand but also relieves the constraint (…) on the use of budget deficits" (Arestis and Sawyer, 1998, p. 189). So, monetary policy has an important stabilizing function in the economy, as it can signal for the private agents that central bank will adopt interest rate low enough to stimulate productive investment and at the same time will seek to stabilize volatility of interest rate in the short run, since frequent oscillation in interest rate affect negatively entrepreneurs' expectations in terms of their investment decisions.

In global financial markets, financial market prices – including exchange rate – have been excessively volatile, as they fluctuate according to fads and fashions[11]. Indeed, there is an extensive literature which indicates that the excessive volatility in exchange rates affect negatively some real variables, such as investment and output[12]. Aiming at achieving a stabilizing economic policy for sustained economic growth, national government should adopt an exchange rate policy that aim to prevent excessive volatility in exchange rates. The greater degree of stability of exchange rates would encourage entrepreneurs to engage more freely in international production, investment and trading transactions. This suggests an adjustable peg system with arrangements to avoid high volatility in exchange rate, such as accumulation of foreign reserves so that central bank can make use of dirty float, the use of capital controls by some developing countries, etc. Indeed, the success of maintaining an adjustable peg system requires that "the public be convinced that the central bank that actively intervenes in the market has adequate international reserve assets to 'make' the market price. If the reserve holdings of the intervening bank are perceived as being inadequate, then the market sees that selling the currency that is being defended is a 'one-way' bet to success" (Davidson, 2002, 170). Furthermore, institutional and regulations – such as some sort of capital controls, financial supervision, etc – can be required to ensure that the fragility of the financial system does not spill over into instability within the productive economy.

Supply side policies have to deal with two sorts of issues: problem of inflation, unbalance in overseas current account, and organisation of work[13].

As we have already stressed, orthodox stabilization policy is only efficient towards the maintenance of a sufficiently high unemployment rate; furthermore, in most cases, it attacks the symptom but not the cause of the inflation, that is such policy does not solve the problem related to the

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[10] According to Carvalho (1997, p. 46), "A monetary economy could settle down on any one of many possible equilibrium states. Authorities should signal to agents which position was targeted".

[11] Keynes (1964, ch 12) showed in his General Theory that investor and speculator expectations are governed not by real fundamental in the long run related to a prospective yield of an investment over a long term of years, but by how much the market will currently value the asset, in an effort to anticipate the basis of conventional valuation in a few months' time. So, as speculators dominate financial markets, short-run practices provide the rhythm of assets prices. See, also, in this regard, Alves Jr et al (1999/2000).

[12] See, for instance, Guérin and Lachrèche-Révil (2003).

[13] We refer again to Arestis and Sawyer (1998, pp. 190-1).

increase of production costs. Therefore, Post Keynesians suggest some kind of incomes policy as part of the required arsenal in a market economy. Incomes policy requires however the generation of some sort of consensus over the distribution of income among the economic agents (government, entrepreneurs and workers). If money-wage rates and gross margins could be somehow controlled, price levels would decline. For this purpose some degree of centralisation and of coordination of pay setting would be required. Furthermore, the success of an economic policy oriented towards the objectives of macroeconomic stabilisation, as we have defined above, can also contribute for the price stabilisation purposes. For instance, if economic policy succeed in reducing the volatility of exchange rate and interest rate, the more stable macroeconomic environment will have positive effect on both economic growth (as investment decisions are stimulated by business environment and macroeconomic policy) and price stabilisation.

The requirement for a broad balance on the overseas current account at full employment implies to overcome somehow the structural problems of balance of payments that some countries face (mainly those that are producers of commodities) as increasing deficits can result in a significant constraint to economic growth, according to Thirwall's law. To overcome the balance of trade constraint public policies (mainly industrial policy) should be adopted in order to create conditions for a country to decrease the income-elasticity of demand for imports and to increase income-elasticity of demand for exports. These efforts should mean the development of an ability to compete in a range of high technology and/or the technological improvement of some current industrial sectors, what should involve both investment in research and development and the formation of linkages between companies to develop the whole production system[14].

3. Constraints for economic growth in Brazil

The period following implementation of the stabilisation plan known as the Real Plan – that is, from July 1994 onwards – was striking for a remarkable reduction in inflation, even after the major devaluation of January 1999. After two years of economic growth (1994-95) resulting from the initial effects of this stabilisation plan based on an exchange rate anchor, GDP evolution disappointed previous expectations of sustainable economic growth after price stabilisation. Furthermore, the trend took a 'stop-go' pattern[15] and, as a result, formal unemployment rate has been maintained above 10 percent since 1997 (Table 1).

In fact, the Brazilian economy has suffered the impact of a succession of crises: Mexico in 1995, Asian countries in 1997, Russia in 1998, its own crisis in late 1998 and early 1999[16] and, more recently, crises in Argentina since late 2001 and again external crises in Brazil in 2002-03. A wide range of factors have contributed to shaping a very unstable macroeconomic context: the perception of external vulnerability deriving from both the still worrying levels of external indicators – although these indicators improved a great deal in 2004 due to the increase of exports and GDP – and the liberalisation of capital account[17]; semi-stagnation in the economy, that has inhibited productive investments; the central bank's adoption of very high short-term interest rates and the consequent growth in public debt (see Table 1 and 2). Brazil's current macroeconomic constraints stem mainly from the period when an exchange rate anchor was adopted (1994-1999) in a context of trade and capital account liberalisation that generated a notable degree of external

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[14] As Stiglitz (1999, p. 113) states: "for most countries not at the technological frontier, the returns associated with facilitating the transfer of technology are much higher than the returns from undertaking original research and development. Policies to facilitate the transfer of technology are thus one of the keys of development".

[15] Economic growth in 2004 is due mainly to the sharp increase in the trade balance in consequence of the rise in both demand and prices of commodities in the international trade as US and China grow a great deal. However, preliminary 2005 data show a decline in the economic growth possibly due to the increase in the interest rate.

[16] See Paula and Alves, Jr (2000) and Saad-Filho and Morais (2002) for an analysis of the 1998-1999 Brazilian currency crisis.

[17] Although capital account has been gradually liberalized since early 1990s, more recently it has been more eased.

fragility of the economy and consequently some serious macroeconomic imbalances (for instance, high foreign debt, rapidly growing internal public debt, and so on). Private sector expectations have dropped under the impacts of various external shocks, the weak performance of the Brazilian economy, and the very high rates of interest. As a result rate of investment has been reached levels (around 18-21% of GDP since early 1990s) far below the 1970s ones when investment rate was around 21-23%.

Table 1. Brazil - some macroeconomic data - 1991/2004

Year	General price index - domestic supply (IGP-DI)	GDP growth - annual %	Investment rate (percentage of GDP)	Trade balance - US$ million	Current account - US$ million	Net public debt-over-GDP	Real average income - Sao Paulo urban region (1985 = 100)	Formal unemployment rate* - Sao Paulo urban region (%)
1991	496.71	1.03	18.11	10,580	-1,408	38.1	58.5	6.7
1992	1167.17	-0.54	18.42	15,239	6,109	37.1	61.3	8.0
1993	2851.34	4.92	19.28	13,299	-676	32.6	68.4	7.6
1994	908.01	5.85	20.75	10,467	-1,811	30.0	65.9	7.8
1995	15.02	4.22	20.54	-3,466	-18,384	30.6	69.9	8.7
1996	9.22	2.66	19.26	-5,599	-23,502	33.3	71.5	9.2
1997	7.11	3.27	19.86	-6,753	-30,452	34.4	72.4	10.2
1998	1.84	0.13	19.69	-6,575	-33,416	41.7	71.5	10.8
1999	19.91	0.79	18.90	-1,199	-25,335	48.7	65.9	10.5
2000	9.52	4.36	19.29	-698	-24,225	48.8	62.3	10.0
2001	10.23	1.31	19.47	2,651	-23,215	52.6	56.9	11.6
2002	27.66	1.93	18.32	13,121	-7,637	55.5	51.6	11.4
2003	6.95	0.54	17.78	24,794	4,177	57.2	53.5	12.0
2004	11.87	5.18	19.58	33,693	11,669	51.8	52.3	10,0

Source:IPEADATA

Note: (*) Formal unemployment rate does not include informal unemployment

Table 2. Brazil - external vulnerability indicators

| End of period	External debt service/ exports (%)	Interest rate/ exports (%)	Total external debt / GDP (%)	Foreign reserves / external debt ratio	External debt / exports ratio	Foreign reserves / debt service ratio	Current account / GDP (%)
1995	45.0	22.0	22.0	34.0	3.0	3.0	-2.61
1996	55.0	25.0	22.0	35.0	4.0	2.0	-3.03
1997	73.0	24.0	24.0	27.0	4.0	1.0	-3.77
1998	87.0	28.0	28.0	20.0	4.0	1.0	-4.24
1999	126.5	33.7	42.0	16.1	4.7	0.6	-4.72
2000	88.6	29.0	36.0	15.2	3.9	0.7	-4.02
2001	84.9	28.0	41.2	17.1	3.6	0.7	-4.55
2002	82.7	23.6	45.9	18.0	3.5	0.8	-1.66
2003	72.5	19.4	42.4	22.9	2.9	0.9	0.82
2004	53.8	14.8	33.4	26.3	2.1	1.0	1.94

Source: Central Bank of Brazil

The 1999 switch from an exchange anchor to a floating exchange rate regime plus an inflation target regime brought no significant improvement in the macroeconomic variables (see figures in Table 1), although balance of payments have improved their accounts in 2003-04 due mainly to the increase in the trade balance surplus. One might have expected that adopting a floating exchange regime would ease down the interest rate more quickly in Brazil. Although the rate of interest did decline – after a period when the overnight rate was hiked sky-high (to more than 40% p.a.) under the effect of the

Asian crisis until the devaluation of the *real* in January 1999 – it picked up again during 2001, in view of the turbulence on international markets (the Argentina crisis, the effects of 11 September 2001, etc.), and again in 2003 due to the market turbulence in the beginning of Lula da Silva's government.

Indeed, the *modus operandi* of inflation targeting regime plus the adoption of a floating exchange rate regime, under the conditions of high external debt and full opening of capital account, has resulted in sharp instability of nominal exchange rate (Figure 2 and 4). Capital outflows can induce a sharp exchange rate devaluation[18] that can affect domestic prices ('pass through effect') that can jeopardize Central Bank's inflation target. Under these conditions, Central Bank is compelled to increase the interest rate in order to seek to avoid both capital outflow and pass through effect as it affects the aggregate demand. Central Bank reaction to exchange rate movements causes a decline in output and employment, increasing at the same time the volume of public debt.

Macroeconomic framework of developing countries with high external indebtedness
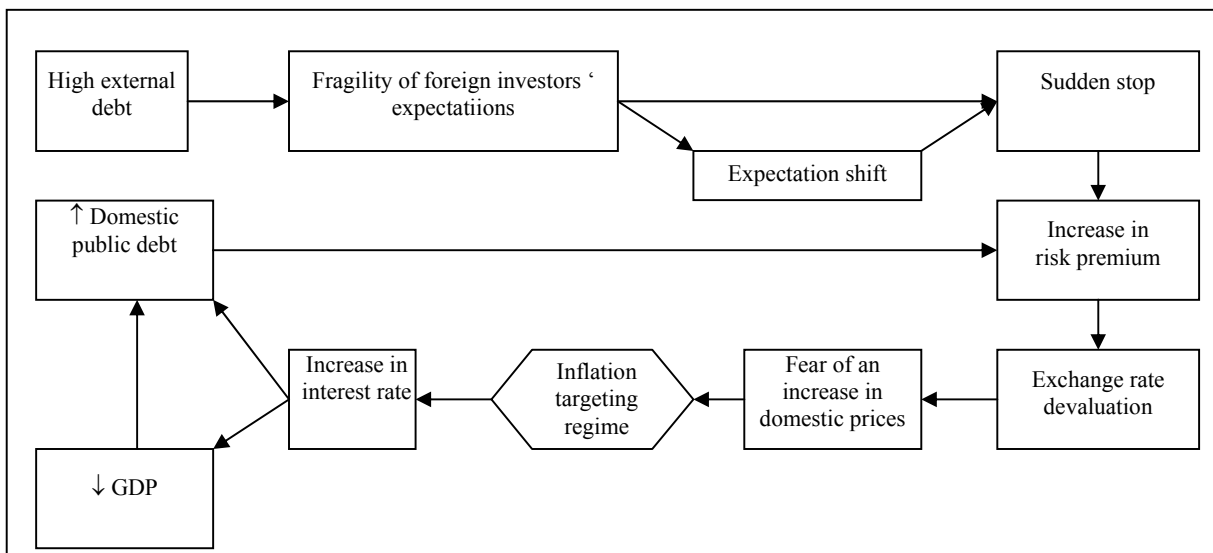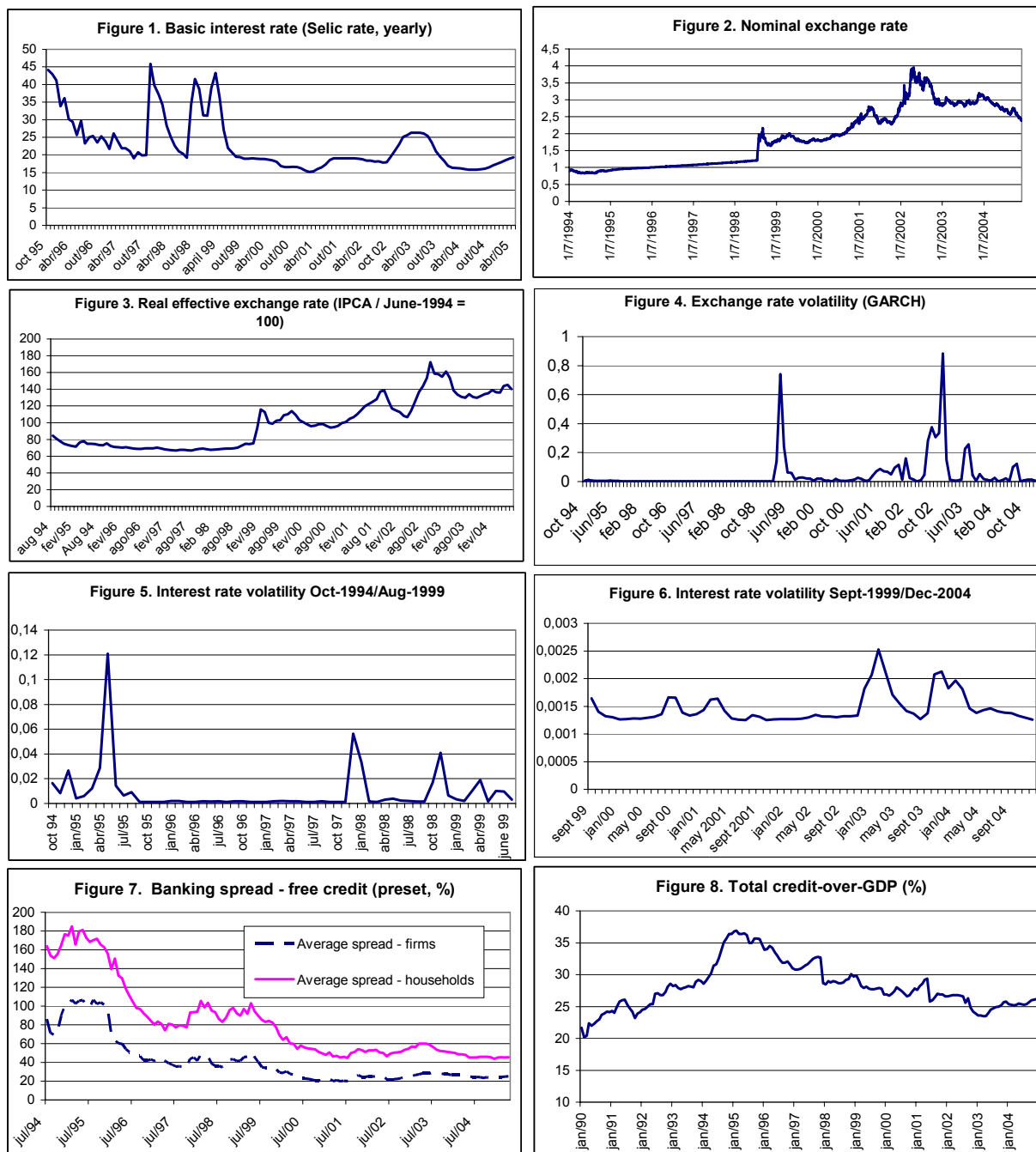

Therefore, Brazil's very high rates of interest are the result of high country risk[19] (due to marked external vulnerability and the risk of fiscal insolvency) and of adopting an inflation-targeted regime in a context of various macroeconomic constraints and a high level of internal debt. High interest rates have had two effects: (i) they constrained economic growth, through the price of credit (loan rates) and entrepreneurs' negative expectations; and (ii) they increased public debt, which is formed mainly by indexed bonds or short-term pre-fixed bonds. Indeed, the strong demand for hedges against exchange devaluation and interest rate changes in turbulent periods has influenced Brazil's internal public debt. The Brazilian government has been obliged to offer exchange rate and interest rate hedges to buyers of securities who charge high risk premiums to roll over public debt. As a result, since the end of 1998, more than 50% of the federal domestic securities have been indexed to the overnight rate, while more

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[18] One should note that while exchange rate volatility was very reduced until end-1998 when Brazil adopted a crawling-peg exchange rate regime, after the adoption of flexible exchange rate regime exchange rate volatility increased a great deal (Figure 4).

[19] Bresser-Pereira and Nakano (2002) suggest that the causality between interest rate and country-risk may be inverse: since short-term interest rates have been very high, foreign creditors believe that country-risk is high. According to the authors, the rate of interest is high in Brazil because it serves multiple functions: to achieve inflation targets, to limit exchange devaluation, to attract foreign capital, to roll over public debt, and to reduce trade deficits by curbing domestic demand. See, also, in this connection, Oreiro (2002).

than 20% have been indexed to foreign exchange.. In addition, the ratio net public debt to GDP rose from 34.4% in December 1997 to 53.5% in December 2003; in 2004 this ratio declines due to both economic growth and exchange rate appreciation (Table 1).

Figure 1. Basic interest rate (Selic rate, yearly)

Figure 2. Nominal exchange rate

Figure 3. Real effective exchange rate (IPCA / June-1994 = 100)

Figure 4. Exchange rate volatility (GARCH)

Figure 5. Interest rate volatility Oct-1994/Aug-1999

Figure 6. Interest rate volatility Sept-1999/Dec-2004

Figure 7. Banking spread - free credit (preset, %)

Figure 8. Total credit-over-GDP (%)

Source: IPEADATA and Central Bank of Brazil. Figure 4: authors' calculations.

The behaviour of the domestic public debt in Brazil has proved particularly vulnerable to changes in the interest or exchange rates. Reducing the public debt depends on reducing the related financial burden by bringing down the interest rate or raising the exchange rate, and/or boosting the primary fiscal surplus. Thus, the Brazilian government has been forced to generate a high primary fiscal surplus (more than 3.5% of GDP), which stands in the way of any anti-cyclical fiscal policy while the fiscal effort itself is partly neutralised by increases in the rates of interest or exchange[20].

Another reason why economic growth in Brazil has remained above its potential growth is that credit has declined since beginning of 1995 (Figure 8). One of the main factors preventing increased credit in Brazil lies in the very large banking spreads[21] (Figure 7), which explain, at least partly, the high profitability of the banking sector in Brazil (Paula and Alves, Jr, 2003). Although the banking spread has declined in recent years in Brazil, it is still very substantial by international standards: in 2000, annual banking spread was 38.72% in Brazil, while it was 11.96% in Mexico, 2.75% in Argentina, 5.64% in Chile, 2.77% in the U.S., and 3.15% in Euro area (Afanasieff *et al* 2001, Table 7, p. 7).

4. Requirements for the sustained growth of the Brazilian economy

In this section we will use simple version of the Harrod-Domar growth model[22] [23] in order to obtain an estimate of the *warranted growth rate[24]* of the Brazilian economy under the conditions imposed by the current economic policy. As we will see, the warranted growth rate under current economic conditions is no higher than 2.5 % per year. This growth rate is clearly unsatisfactory for an economy in which population growth rate is around 1.8% per year and productivity growth is estimated in 2.6% per year. This means that *warranted or equilibrium growth rate* of the Brazilian economy is lower than the *natural or potential* long-run growth rate. This "disequilibrium" between warranted and natural growth rates of the Brazilian economy is the main cause of the high unemployment rate and of the decreasing of real average income observed recently in Brazil (Table 1).

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[20] See more in this connection in the next section.

[21] High banking spreads in Brazil is the result of three main factors: (i) as macroeconomic uncertainty has grown in recent years, the banks have sought – defensively – to offset the greater perceived risk by increasing the banking spread, thus improving their net profit margins; (ii) as the banks have risk-free government securities as an alternative investment to private sector lending, they require very high returns to warrant offering loans, because of the increased opportunity costs of non-bearing reserves; and (iii) as the banking market has become increasingly concentrated, the available evidence indicates that the Brazilian banking market is structured non-competitively, which may be conducive to higher interest spreads. See more on this regard, Belaisch (2003) and Paula and Alves Jr (2003).

[22] We are using the Harrod-Domar growth model since (i) it is still the standard model used to predict the future path of real income by international institutions such as the World Bank (cf. Easterly, 2004, p.43) and (ii) recent developments of the so-called 'New Growth Theory" – specially the development of AK growth models - had increased the academic confidence over the "predictions" of this type of model.

[23] The mathematical derivation of the Harrod´s growth model that we will present below will assume a closed economy without government activities. Although both external and governmental sectors are very important in the brazilian case, the necessary equality between investment and savings (governmental + external + private) in national accounts makes possible to substitute the "propensity to save" in the "closed economy-no government" model by the investment rate of the "open-economy with government" model. By using investment rate instead of a "propensity to save" in the definition of the "warranted rate of growth", we can work with a simple growth equation to analyze the brazilian case.

[24] We recognize that the concept of warranted rate of growth, as originally put by Harrod (1939), is different from the meaning that we are giving on this article. For Harrod, the "warranted rate of growth" is the growth rate of the capital stock (or real output) that, if obtained, will make entrepreneurs satisfied with the rate of increase of productive capacity, enabling then to continue on the same way. So the "warranted rate of growth" is not an equilibrium concept, but just a reference point: there is no mechanism by which the effective growth rate of capital stock will converge, in the long-run, to the "warranted growth rate". On this article, we are not discussing the stability problems of the warranted rate of growth, that is, we are explicitly assuming that the "equilibrium" represented by the "warranted rate of growth" is a stable one.

Let us start with an economy in which firms employ a Leontieff-type technology, being the stock of capital the limiting factor to firms' production level (cf. Marglin, 1984, ch.5). In this setting, the potential output of this economy is given by:

$$Y = \sigma K \qquad ; \quad \sigma \equiv \frac{1}{v} \quad (1)$$

Where: v is the capital-output coefficient, that is the technical coefficient that shows the amount of "capital" that is necessary for the production of one unit of final output..

Taking the time derivative of (1) we arrive at the following expression:

$$\dot{Y} = \sigma \dot{K} \quad (1a)$$

Supposing a constant depreciation rate of the capital stock equal to &, the dynamics of capital stock is given by:

$$\dot{K} = I - \& K \quad (2)$$

Where: I is the gross (planned) investment.

We will also suppose that households save a constant share s of share of their income. So, planned savings are given by:

$$S = sY \quad (3)$$

One requirement for a sustained growth of the economy in the long-run is the equality between aggregate output and effective demand. For such is necessary that planned investment be equal to planned saving. Taking for grant the occurrence of this equality, we can substitute (3) in (2) in order to the following expression:

$$\dot{K} = sY - \& K \quad (4)$$

After substitute (4) in (1a), we got:

$$\dot{Y} = \sigma(sY - \& K) \quad (5)$$

Finally, after substitute (1) in (5) and dividing both sides of the resulting expression by Y, we arrive at the *fundamental growth equation* of the Harrod-Domar model given by:

$$g = \frac{\dot{Y}}{Y} = \frac{s}{v} - \& \quad (6)$$

Equation (6) determines the *warranted growth rate;* that is the growth rate of output that - if obtained – will assure the equality between effective demand and aggregate output over time.

In order to use equation (6) to estimate the *warranted growth rate* of the Brazilian economy we must have realistic values for the following parameters: capital-output coefficient, investment and saving rates and depreciation rate of the capital stock.

Estimates of the first two variables can be easily obtained at IPEADATA (www.ipeadata.gov.br). Capital-output coefficient shows a clear *upward* trend in the last fifty years as we can see in Figure 9. Such an upward trend makes difficult, if not impossible, the occurrence of a reduction in the capital-output coefficient in the near future. However, taking a simple average of the Capital-Output coefficient in the period 1989-2002 we will arrive at a value equal to 3.16, which can be taken as the *minimum possible value* for this parameter in equation (6).

Figure 9: Capital-Output Coefficient in Brazil (1950-2002)
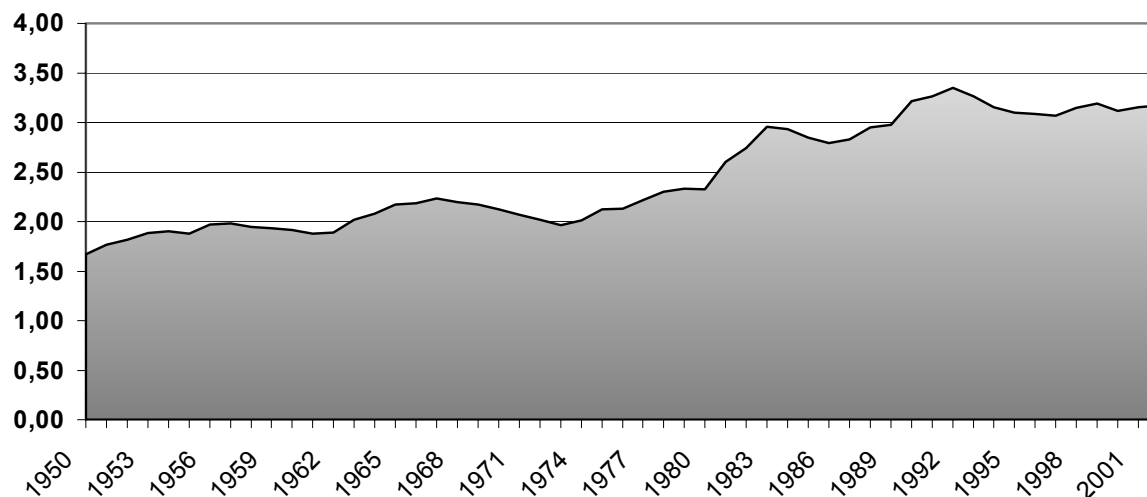
Investment rate, defined as gross capital formation divided by *GDP*, shows a remarkable stability in the period 1991-2003. This rate, according to IPEADATA, had fluctuated around 19.26% of GDP in this period as we can see in Figure 10. If there is no structural reforms in the financial sector that induce a higher rate of capital accumulation by the private sector and supposing the continuity of the current tight fiscal policy of the Brazilian government, which hampers public investment, there is no objective reason to believe that investment rate in the near-by future will be different from the average value of the period 1991-2003. So we can take 19.26% as a realistic estimate for the value of the parameter *s* in equation (6).

Figure 10: Investment Rate in Brazil (1991-2003)
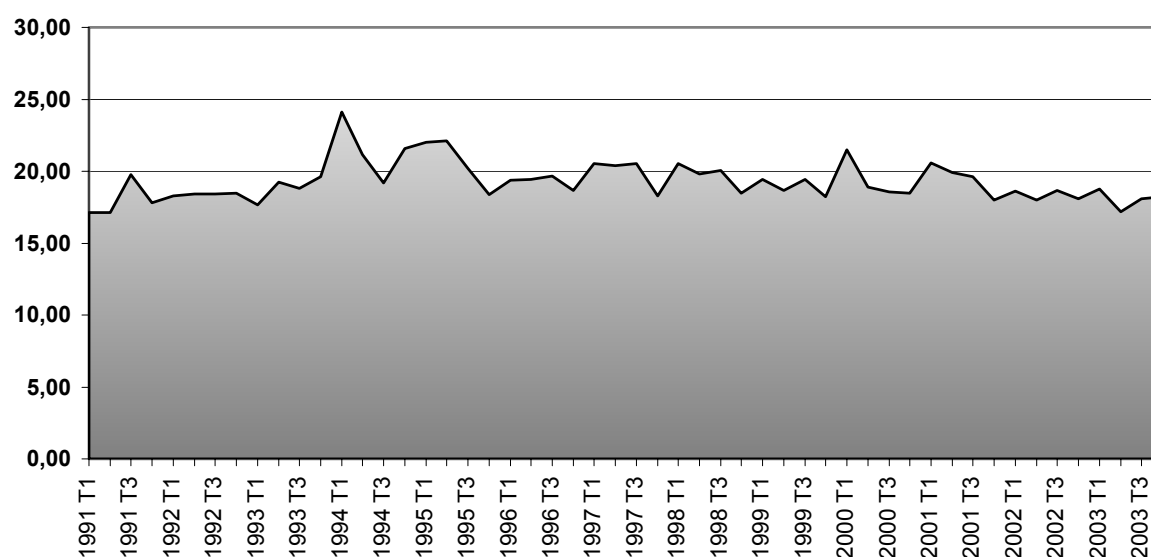
Source: IPEADATA

Unfortunately, we have found no estimates about depreciation rate of the capital stock for the Brazilian economy. So we have no other option than use the values of this parameter for other economies. Romer (2001, p.25) estimates the depreciation rate of the capital stock for U.S. economy as lying between 3 and 4 % per year. So an average estimate for the depreciation rate of the capital stock for US economy is around 3.5% per year. Based on some similarities of the industrial sectors of Brazil and United States, we will use this value as an estimative for the depreciation rate of the capital stock of the Brazilian economy.

Taking $s = 0.1926$, $v = 3.16$ and $\& = 0.035$ in equation (6) we get $g = 0.025$, that is an *equilibrium growth rate* equal to 2.5% per year. For several reasons, this growth rate is completely unsatisfactory for Brazil. First of all, Brazil grew at an average rate of 7.0% per year in the period between 1930 and 1980. Second, this rate is lower than the *natural growth rate;* that is the required growth rate for full employment of the labour force. Estimating a population growth of 1.8% per year[25] and a productivity growth of 2.6% per year[26], output must grow at a minimum rate of 4.4% per year in order to employ the new workers and those who lost their jobs due to technological progress. An average growth rate lower than 4.4% per year implies that unemployment and/or 'underemployment'; i.e. employment in the informal sector of the economy, will increase over time. Last, but not least, this growth rate is clearly insufficient for Brazilian economy to *cath-up* developed economies. Average growth rate of developed countries lies between 2.5 to 3% per year. If Brazilian economy grows at an average rate of 2.5% per year, than income gap between Brazil and developed countries will be constant or will increase in the long-run.

Figure 11 Population Growth in Brazil - 1981-2003

1981-2003 average = 1.81

Source: IPEADATA

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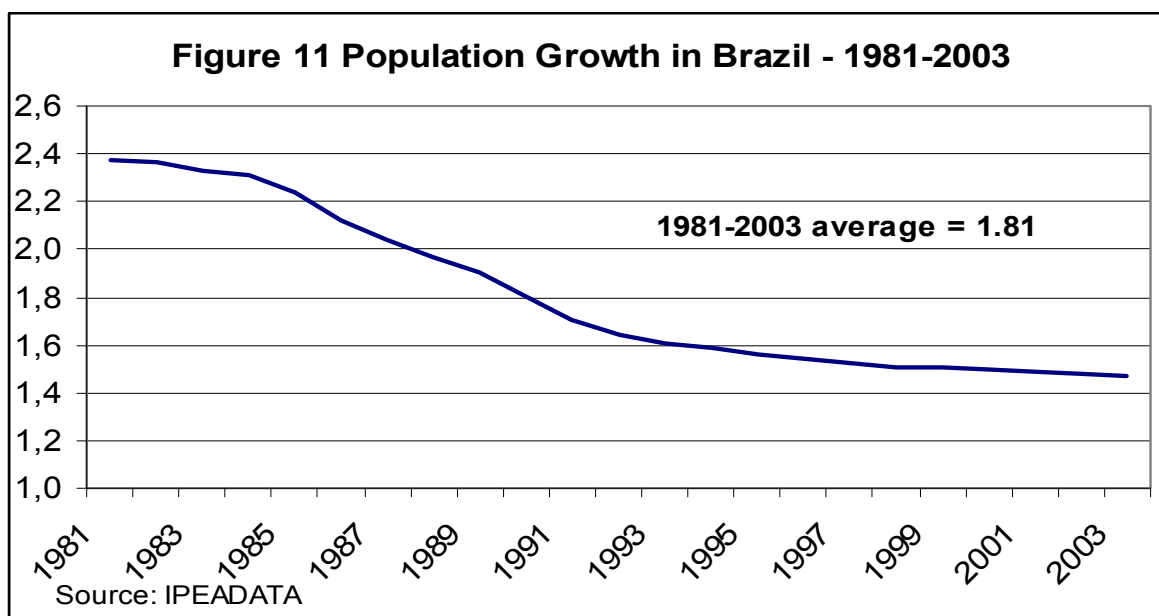
[25] See Figure 11.
[26] See Table 3.

In face of these arguments, we consider an average growth rate of 5% per year a desirable and realistic goal for the Brazilian economic policy[27]. In order to achieve this goal, investment rate – according to equation (6) – must increase to 27% of GDP[28]. In other words, investment rate must increase at almost 8 % of GDP.

Table 3 – Productivity Growth in Brazil (1950-1997)

Period	Average Growth Rate of Labour Productivity
1950-1955	2,7
1955-1960	2,7
1960-1965	2,5
1965-1970	2,5
1971-1973	5,6
1974-1980	1
1981-1985	0,3
1986-1990	-0,8
1991-1997	7,1
1950-1997	**2,62**

Source: Franco (1999, p.150).

5. How to increase the investment rate? An agenda of reform for the Brazilian economy

As we have seen in the last section, average investment rate in the last fifteen years was insufficient to generate a robust growth for the Brazilian economy. This behaviour of investment rate was mainly due to the "economic policy model" adopted by Brazilian policy makers since the beginning of 1990´s. This economic model, as we have already discussed, was characterized by (i) high nominal and real interest rates in order to achieve price stability; (ii) growing liberalization of the capital account in order to integrate Brazil to international capital markets; (iii) overvaluation of domestic currency[29], and (iv) since 1999 an increasing primary fiscal surplus – generated mainly by the reduction of public investment – in order to stabilize public debt/GDP ratio.

This *economic policy model* has only succeeded in achieving a low rate of inflation compared to the period of high inflation; that is before 1994. Indeed, since 1996 inflation rate in Brazil has been lower than 20% per year. However, public debt as a ratio to GDP increased from 30% in 1994 to almost 55% in 2004 and GDP grow at an average rate of 2.4% per year in the period 1995-2004. Price stability is, of course, an important goal of economic policy, but not the only one. A robust economic growth and stability of public debt/GDP ratio are also very important.

In order to achieve a higher investment rate, economic policy model must be changed. Nominal and real interest rates must be reduced for entrepreneurs increase private investment. Primary fiscal surplus must also be reduced. Brazil needs to increase public investment in infra-structure – mainly roads and electricity generation – to generate positive externalities for private investment. Nominal and

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[27] A growth rate higher than the estimated natural growth rate of the Brazilian economy for several years (one decade or so) is possible due to the existence of a high unemployment rate (more or less 10% of the labour force) and, more importantaly, due to the existence of a very big informal (and low producitivity) sector in Brazil.

[28] For the calculation of the required investment rate, solve equation (6) for *s* in order to get the following expression: $s = v(g + \&)$. Taking $v = 3.17$, $g = 0.05$, $\& = 0.035$ we arrive at a required investment rate of 26.94%.

[29] Except in the brief period between June of 2002 to June of 2003 due to the exchange rate crisis of the final of Fernando Henrique Cardoso (1994-2002) administration.

real exchange rates must be kept at competitive levels in order to generate a sustained current account surplus which is required to reduce the amount of external debt and the level of external fragility of Brazilian economy.

The challenge is to make these changes compatible with (i) price stability, and (ii) stabilization or reduction in the level of public debt. Brazil spent almost 15 years fighting against very high inflation rates. The reduction in inflation rates obtained after the Real Plan was a very important achievement and must be maintained. Stabilization in the level of public debt is also important. We simply can not stand with public debt/GDP ratio higher than 50%. With a so higher public debt as a ratio to GDP almost all the efforts of the financial sector was devoted to finance public debt, thereby causing a reduction in the level of banking credit to finance private expenditures. As we saw in section 3, Brazil had a very low credit to GDP ratio. The main reason for this is that banks prefer to buy public bonds, which are very liquid and profitable, rather than to incur in the risks of lend money to private enterprises (Paula and Alves Jr, 2003).

An alternative economic policy model for the Brazilian economy[30] should be based on the following principles:

1. Adoption of a *crawling-peg exchange rate regime* in which devaluation rate of domestic currency was set by the Central Bank at a rate equal to the difference between a *target inflation rate* (determined by National Monetary Council – C.M.N) and *average inflation rate* of Brazil's most important trade partners; that are United States, European Union, China, Japan and Argentina.

2. Adoption of *market-based capital controls* in order to increase the autonomy of the Central Bank to set nominal interest rates according to domestic objectives (mainly to promote a robust growth) and to avoid the likelihood of speculative attacks on the Brazilian currency.

3. Reduction of nominal interest rate to a level compatible with a real interest rate of 6.0% per year.

4. Reduction of primary fiscal surplus from current 4.5% of GDP to 3.0% of GDP on average for the period of 10 years. This reduction must be used to increase public investment in the same amount.

The first principle of the "alternative economic policy model" entails the abandonment of the current *Inflation Targeting Regime* (hereafter ITR). As we know, in the ITR, monetary policy is directed only to price stability. For the workings of this system, however, there must be a *floating exchange rate regime*. This exchange rate regime has not worked well in the Brazilian case. First of all, since the adoption of floating, in the beginning of 1999, there was a huge volatility in nominal exchange rate as we saw in section 3. This volatility increases exchange rate risk and the *uncertainty* surrounding investment decisions. Second, this system was not capable to avoid the problem of exchange-rate over-evaluation. For instance, nominal exchange rate between U.S. dollar and Brazilian currency ('real') felt from R$3.50 in June of 2003 to R$2.70 in January of 2005, an appreciation of almost 23% in 18 months. This huge appreciation in nominal exchange rate can soon reduce sharply current account superavits, thereby increasing the level of Brazilian external debt.

Adoption of a *crawling-peg exchange rate regime* will reduce the *exchange rate risk* – contributing to the increase in the private investment – and will contribute for the maintenance of the nominal exchange rate at competitive levels, provided that the *initial level of the nominal exchange rate* - i.e. the level set in the first day of the new regime - was not over-valued[31].

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[30] The ideas shown here were originally proposed by Oreiro et al (2003, ch 4).

[31] This was one of the problem with the crawling-peg exchange rate regime adopted in Brazil between 1995 and 1998. This system was adopted in march of 1995 as a response to the exchange rate volatility caused by Mexico Crisis. However, real exchange rate had accumulated an appreciation of almost 30% under the *former floating regime* from July of 1994 to January of 1995 (cf. Ferrari Filho *et alli*, 2003, p.189). The crawling-peg was introduced without the necessary correction of the real exchange rate appreciation and without an adequate structure of capital controls. The result was a cumulative

Another interesting feature of the *crawling-peg exchange rate regime* is that it will serve as *nominal anchor* for the Brazilian economy, substituting ITR as a device for inflation control. If *Purchasing Power Parity theorem* (thereafter PPP) holds true, than the (effective) domestic rate of inflation (π)[32] is equal to exchange rate depreciation (Δe) *plus* international inflation rate (π^{*}). In the *crawling-peg exchange rate regime*, Central Bank sets the rate of depreciation of domestic currency, maintaining domestic rate inflation in a level near-by the one dictated by *PPP*.

Accumulated experience during ITR shows that an implicit *target inflation of* 8.0% per year is a realistic goal for economic policy in Brazil. Supposing that international rate of inflation lies between 1.5% to 2.0% per year, Central Bank will set the rate of domestic currency devaluation in 10% per year under the *crawling-peg exchange rate regime*. A competitive level for the initial value of nominal exchange rate under this new regime should be R$3.20[33].

The second principle of the 'alternative economic policy model' is the adoption of capital controls. These controls are necessary for two basic reasons. First of all, to increase private investment is necessary a substantial reduction in the level of domestic interest rates. In fact, in the last six years (1999-2004) real interest rates was up to 11% per year. This level of real interest rates is clearly harmful for private investment. So it has to be reduced. However, under the actual open capital account situation of the Brazilian economy, a sharp reduction in interest rates may cause a huge capital outflow, making impossible for the Central Bank to control the nominal exchange rate devaluation. To avoid this result is necessary the implementation of controls over *capital outflows*. The second reason is that control over *nominal exchange rate* may not be sufficient to avoid a substantial appreciation of *real exchange rate* in the presence of huge *capital inflows*. These flows will make the Central Bank to increase the stock of high powered money due to the buying of foreign reserves, which is necessary to sustain the nominal exchange rate at the level determined by monetary authorities. In absence of sterilization, this may produce an excessive increase in aggregate demand that can generate inflationary pressures in the economy and, given the rate of depreciation of nominal exchange rate, real exchange rate appreciation.

We propose the adoption of *market based capital controls*, that is the introduction of income taxes over the yield of foreign investment in Brazilian assets[34]. These taxes should be proportional to the length of investment in these assets. For example, a one-year investment in Brazilian assets should be taxed at a rate of 35% over all yields generated by these assets during this period. A two-year investment should be taxed at a much lower rate, for example, 28%. A three-year investment must be taxed at an even lower rate of 19%. The idea is to give to foreign investors a clear and strong incentive to make their investment in Brazilian assets as long as possible in order to create *market incentives for the reduction of capital outflows*.

To reduce capital inflows, it is necessary the introduction of reserve requirements over all capital inflows, except foreign direct investment, as done by Chile in the beginning of 1990s. The idea

increase in current account deficit which produced a speculative attack against domestic currency in the middle of 1998, just after the Russian crisis. The Brazilian Central Bank tried to defend the exchange rate regime for almost 6 months with the support of extremely high nominal interest rates, without success. After a lost of almost US$ 30 Billion of foreign reserves, the Central Bank adopted a floating regime in January of 1999. See more on this regard in Paula and Alves Jr (2000).

[32] Effective inflation rate may be different from *target inflation rate,* which is set by National Monetary Council and was a reference for the nominal exchange rate devaluation, due to the occurrence of supply shocks.

[33] This implies that during the transition from the actual *free floating exchange rate regime* to the *crawling-peg regime* there must be a *nominal exchange rate appreciation* of almost 19%. This will generate a *transitory increase* in the rate of inflation due to *pass-through effect* of exchange rate to prices. To avoid a *permanent increase* in the rate of inflation, it is necessary that *real wages* were reduced in order to make possible a *real exchange rate depreciation.* This means that during the transition from the old to the new exchange rate regime, nominal and real interest rates must me kept at high levels to force *unions* to accept a *reduction in real wage.* Once the new exchange rate regime was implemented and inflation has returned to its prior level, interest rates can be reduced.

[34] This proposal was originally set by Paula et al (2003).

is to oblige foreign investors to make a deposit of a fixed percentage of the value of their investment in the Brazilian assets at the Central Bank. These deposits will receive a zero yield over all the investment period. This will reduce the ex-ante yield of these assets for foreign investors, *creating market incentive for the reduction of capital inflows.*

After the implementation of the *crawling-peg exchange rate regime* and *market-based capital controls*, it will be possible to reduce the level of domestic interest rates with-out producing an increase in inflation rate and/or a huge capital outflow. The relevant question now is: how much reduction in the level of interest rates is possible in economic terms?

In a regime of fully open capital account, the answer would be very simple: interest rates can be reduced to a level equal to the one dictated by *uncovered interest rate parity*[35]; i.e. international interest rates plus the risk premium required for foreign investors to buy domestic assets plus the expected rate of depreciation of domestic currency.

In the Brazilian case the relevant international interest rates were the interest rates over U.S. government bonds with the same maturity of the Brazilian government bonds[36]. This rate is near-by 4.0% per year. The risk premium over Brazilian sovereign bonds was near-by 450 basis points in the *beginning of 2005*. Supposing the validity of *PPP* in the long-run, the expected rate of domestic currency depreciation must be equal to the difference between domestic and international rate of inflation. For a domestic rate of inflation of 8% and an international rate of inflation of 2%, the expected rate of currency depreciation should be equal to 6%. So, nominal interest rate in Brazil could be reduced from the current 18.25% per year to 14.5% per year with-out producing a huge capital outflow or an increase in inflation rate. This will imply a real interest rate of 6.5% per year.

With capital controls, however, it will be possible a much higher reduction in the level of interest rates. So, it would be possible to reduce nominal interest rates to 12% per year, generating a real interest rate of 4% per year. However, the high level of public debt as a ratio to GDP may set a *downward limit* to the reduction in the level of nominal and real interest rates. It is true that Brazilian government bonds have a great degree of liquidity since secondary markets were these assets are traded - in Brazil or abroad - are well organized. This means that investors (both domestic and foreign) have a low required rate of return for investment is these assets. But Brazil is not United States or Germany. Investors still have doubts about the *inter-temporal solvency* of Brazilian government. In this case, a very low real interest rate may make impossible for Treasury to roll over the existing debt. Prudence dictates a certain degree of conservatism in the setting of nominal and real interest rate levels by the Central Bank.

This reasoning shows to us that a real interest rate of 6% per year, although still a high level, it is a perfectly realistic value for the Brazilian economy and should be the target of the monetary policy[37].

Once real interest rates were reduced to 6% per year, it will be possible to reduce the level of primary fiscal surplus. The required level of primary surplus is determined by *government inter-*

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[35] For a critical vision about the validity of the interest parity theorems, see Lavoie (2000). We do not agree, however, with Lavoie´s assertion that "(…) *even in an open economy with financial mobility, central banks retain the ability to set interest rates of their choice, within a wide spectrum*" (p.163). As recognized by Lavoie few pages later, if the Central Bank tried to reduce the real interest rate, the consequence of this action in a fully liberalized capital account economy will be a capital outflow and, for those economies with floating exchange rate regimes, a nominal exchange rate depreciation (p.176). This will produce an increase in the rate of inflation due to the pass-through effect of exchange rate variations to prices. So capital controls are necessary to avoid capital outflows due to the reduction of domestic interest rates relative to the international level of those rates.

[36] The average maturity of Brazilian government bonds is near-by 30 months.

[37] Here we see another function of capital controls. In a fully open capital account regime, according to the Mundell-Fleming model, it is impossible for the Central Bank to determine interest rates and the exchange rate in an independent way. The only alternative for those countries that want to have an autonomous monetary policy and fixed exchange rate regime is to adopt capital controls. See more, on this regard, Tobin (2000).
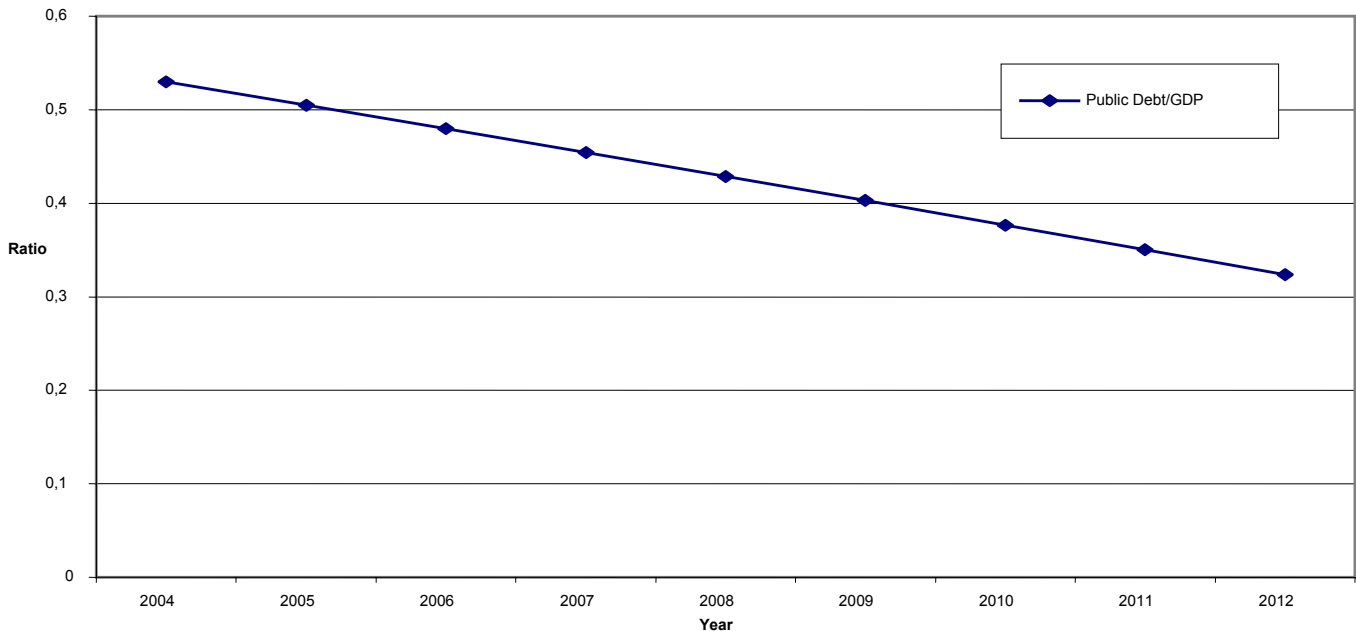
temporal solvency condition. This condition determines the *minimum level of primary surplus that is compatible with a constant public debt to GDP ratio*. This condition is given by the following equation[38]:

$$s = \left[\frac{r-g}{1+g} \right] b \qquad (7)$$

Where: s is the primary surplus as a ratio to GDP, r is the level of real interest rate, g is the growth rate of real GDP, and b is the ratio of public debt to GDP.

Under the conditions imposed by the current economic policy model, we have $r = 0.11$; $g = 0.025$; $b = 0.53$. So the minimum level of primary fiscal surplus must be 4.4% of GDP. However, a successful implementation of the alternative economic policy model may change the values of these parameters to: *r = 0.06; g = 0.05; b = 0.53*. In this case the minimum level of primary surplus can be reduced to 0.5 % of GDP.

Figure 12 - Expected Dynamics of Public Debt as a Ratio to GDP in Brazil Under the Alternative Economic Policy Model

So the reduction of primary surplus from actual 4.5% of GDP to 3.0% of GDP is not only compatible with the inter-temporal solvency condition, but also with a cumulative reduction of public debt as a ratio to GDP. Under the conditions supposed by the alternative economic policy model, the public debt as a ratio to GDP will be reduced to 32% of GDP in 2012, as we can see in Figure 11[39].

The reduction of primary surplus is essential for the increase in public investment. We propose that the *entire reduction in primary surplus is used to increase public investment*. In this case, public

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[38] See Oreiro (2004a) for a detailed discussion of this condition. A similar – although not identical – condition can be found in Palley (2004).

[39] This figure was obtained by the numerical simulation of the equation $b_t = \left[\frac{1+r}{1+g} \right] b_{t-1} - s_t$, taking $s = 0.03$; $r = 0.06$; $g = 0.05$ and $b(0) = 0.53$.

investment will be increased by 1.5% of GDP. Supposing a one-to-one relation between public and total investment, the average rate of investment will be increased to 20.67% of GDP and potential growth rate will be increased to 3.04% per year.

However, there are good reasons to suppose that an increase in public investment will increase total investment (public *plus* private) at a rate greater than one to one. First of all, as recognized even by Neoclassical Growth Theorists such as Barro (1990), public investment generates *positive externalities* for the private sector. So an increase in public investment will increase profits in the private sector, stimulating entrepreneurs to increase their investment spending. Second, a reduction in the primary fiscal surplus will certainly increase aggregate demand due to the well-known *government spending multiplier*. In a *regime of excess capacity* as the one that characterized the Brazilian economy since the beginning of the 1980s, firms will increase output in order to meet the additional demand for their products. The increase in the production level will generate also an increase in the degree of capacity utilization, stimulating firms to increase their investment spending in order to make the adjustment between effective and *desired* degree of capacity utilization (cf. Oreiro, 2004b). In other words, the increase in the level of capacity utilization will produce an increase in private investment due to the well-know *accelerator effect*.

So we can assume that an increase in public investment will produce a higher than one-to-one increase in total investment. We do not have a precise estimate of this magnitude, but an 'educated guess' is that an increase in public investment will induce a 1.5 increase in total investment. Under these conditions, an increase in public investment by 1.5% of GDP will increase total investment by 2.25% of GDP. This means that potential growth rate of real GDP will be increase up to 3.3% per year. This effect combined with the positive stimulus over private investment from the reduction in the level of real interest rates and from the elimination of uncertainty due to the exchange rate risk will generate the required increase in the investment rate for a sustained growth of the Brazilian economy at a rate of 5.0% per year.

6. Conclusion

This paper presented a Keynesian strategy of economic policy that aims to achieve higher, stable and sustained economic growth in Brazil. The basic features of this strategy are: (i) adoption of a *crawling-peg exchange rate regime* in which devaluation rate of domestic currency was set by the Central Bank at a rate equal to the difference between a *target inflation rate* and *average inflation rate* of Brazil's most important trade partners; (ii) adoption of *market-based capital controls* in order to increase the autonomy of the Central Bank to set nominal interest rates according to domestic objectives (mainly to promote a robust growth); (iii) reduction of nominal interest rate to a level compatible with a real interest rate of 6.0% per year; (iv) reduction of primary surplus from current 4.5% of GDP to 3.0% of GDP. These elements are fundamental for the required increase in the investment rate of Brazilian economy from current 20% of GDP to 27% of GDP needed for a sustained growth of 5% per year.

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