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Getulio Vargas

Nº 656

ISSN 0104-8910

***The Political Economy of Exchange Rate in
Brazil***

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Outubro de 2007

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The Political Economy of Exchange Rate in Brazil*

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Abstract

This paper reviews part of the political economy literature on exchange rate policy relevant to understanding the political motivations behind the Brazilian exchange rate policy. We shall first examine the distributive role of the exchange rate, and the way it unfolds in terms of the desired political goals. We will follow by analyzing exchange policy as indicative of government efficiency prior to elections. Finally, we discuss fiscal policy from the point of view of political economy, in which the exchange rate results from the macroeconomic equilibrium. Over this review, the Brazilian exchange rate policy is discussed in light of the theories presented.

1 Introduction

Governments define their economic policy by considering both economic constraints and political considerations. Policy choice is made in two steps. Policymakers face firstly the definition of political economic goals, followed subsequently by the selection of policies to be adopted to reach those goals. Let us consider the first step, that is, the definition of the goals of the policymakers' economic policy. Limited resources and the inter-relation among variables impose the priority of certain goals over others. Governments, for example, may not have the administrative or financial resources necessary to solve, simultaneously, problems related to education, health, or housing in large urban centers, forcing some to take precedence over others. Or, in a different scenario, policy designed for the eradication of poverty may clash with measures of fiscal austerity intended to fight the growing pressure of inflation. What is, thus, the determining factor for economic policy?

*I thank Marco Bonomo, Samuel Pessoa, Thierry Verdier and seminar participants at Casa das Garças and at Cergy-Pontoise for comments and suggestions. Financial support from CNPq is gratefully acknowledged.

Economic policy may be determined as a response to acute crises in sectors of the economy. This was the case, for example, of the exchange rate crisis in the 1990's that resulted from abrupt reversals in capital flows. In cases such as this one, economic constraints determine the focus of economic policy: i.e. the need for a solution for the crisis. On the other extreme, during favorable economic periods, in which there are neither imminent economic crises nor mounting vulnerabilities, it is possible to state that national economic goals are determined, essentially, by political goals. Policy makers will determine policy according to their own leanings, but also with an eye on which economic groups will stand to gain or lose with the policies adopted and the political pressure being exerted, whether on the part of lobbyists or of the ballot.

Secondly, once the main goal of the economic policy has been determined, there follows the task of structuring it to meet overall goals. Returning to the currency crisis of the 90's, two different routes presented themselves for solving the crisis, a currency devaluation that would allow for a trade balance adjustment, or alternatively, the adoption of high interest rates that would attract foreign capital while leaving the exchange rate unchanged. The economic policies adopted would each impact economic and social agents in distinct ways. While currency devaluation benefits sectors producing tradable goods, it also feeds inflation and adversely affects the poorer part of the population with less access to the financial markets and their indexation mechanisms. It is clear, thus, that political factors will take on an important role in determining economic policy, even when economic constraints are accounted for.

It is our aim in this paper to analyze political choices such as the ones described above, pertaining to Brazil's exchange rate policy over the last 30 years. The period has been marked by alternating periods of currency devaluation policies adopted when the economy reeled from international crises, and periods of exchange rate appreciation, when the focus was fighting inflation.¹

In the beginning of our period of analysis, steep currency devaluations resulted from the brutal deterioration of the terms of trade due to the two successive oil crises in the 1970's, and the foreign debt crisis in the early 1980's.

The ten years that followed the first democratically elected government to take office in 1985 were marked by soaring inflation and a series of economic plans designed to stabilize prices that enclosed, in one way or another, the exchange rate as a nominal anchor, which led in turn, to the valorization of

¹See Bonomo and Terra (2001) for an analysis of Brazil's exchange policy history based on this trade-off.

the real exchange rate. Thus periods of exchange rate appreciation governed by price stabilization policies alternated with periods of sharp devaluation, their undoing.

Inflation was finally controlled under the price stabilization plan known as Plano Real, put into effect in 1994. Since then, Brazil's monetary policy has been centered on maintaining price stability. Brazil went through various currency crises caused by turbulence in the international financial markets, such as the Asian crisis of 1997 and the Russian crisis of 1999. The response given to the currency crisis in the 1990's however, differed sharply from policies adopted in the 1970's and 80's. While in the past the Brazilian government imposed steep currency devaluations, in the 90's the response was of a different nature, with the adoption of a high interest rate policy that, by attracting foreign capital relieved the pressure on currency devaluation. A concern with keeping inflation under control thus became the prevailing goal of economic policy in Brazil.²

Our analysis of the political goals as expressed in the adoption of exchange rate policies is divided in three parts. Firstly, we shall stress the distributive effects of the exchange rate. On the one hand, the more devalued an exchange rate is, the more the tradables sector will benefit, to the detriment of consumers in general, and those associated to non-tradable goods in particular, lowering their purchasing power. On the other hand, currency devaluation may feed inflation, and inflation affects diverse sectors of the economy in different ways. The setting of the exchange rate is based on conflicting interests in different economic groups. The second part analyzes the exchange rate policy as an indicator of competency of the policymaker. Finally, we will analyze the economy's fiscal policy. In face of the fact that the fiscal policy influences the real exchange rate's equilibrium value, we analyze the political determining factors as they affect fiscal policy in a democratic regime.

After the introduction, this paper is divided into four sections. In the next section we analyze economic policy as reflected in the distributive effect of exchange rate policies. Section 3 discusses the exchange rate policy as a tool to signal the government's competency. Section 4 covers economic policy as applied to fiscal policy and its effect on the exchange rate. Finally, section 5, concludes.

²It should also be noted that the interest rate has a distributive effect: higher levels of interest rates will transfer income from those in debt to credit holders. The underlying conjecture here being that low income population will suffer more under high inflation than with high interest rates.

2 Distributive effects of the real exchange rate

There are two main channels through which the exchange policy may have distributive effects, a direct and an indirect one. The direct one is due to the fact that the real exchange rate is the relative price of tradable and non-tradable goods, and it will be studied in section 2.1. The indirect channel is due to the fact that the variations in the nominal exchange rate may also exert an influence on the inflation rate, especially in an economy with price indexation. This channel is covered in section 2.2.

The analysis carried out in this section is based on the assumption that the government has the tools necessary to influence both the nominal and the real exchange rate at its disposal, which is true, at least in the short run. Let us start by considering then the nominal exchange rate. The nominal exchange rate is no more than the price of the foreign currency. Just as with any price, its value is set according to supply and demand, and the government has at its disposal economic policy tools that affect these variables. The level of interest rates for one, influences the demand for domestic bonds, which in turn has direct incidence on the supply of foreign currency, once foreign investors are forced to buy domestic currency in order to acquire local bonds. The very action of the government buying and selling foreign currency as it adjusts its currency reserves will also affect supply of the foreign currency in the domestic market.

As for the real exchange rate, it is the relative price between tradable and non-tradable goods. There are basically two ways the government may exert its influence on the real exchange rate. Firstly, through real variables that affect supply and demand in these two sectors in distinct ways. One way to do this is through government spending. An increase in spending in the sector of non-tradable goods, such as the service sector, will increase the relative demand for these goods, thus raising its relative price. That is, it will cause an appreciation of the real exchange rate. Secondly, an economic policy that affects the nominal exchange rate as discussed above may also have an impact on its real level whenever there is price rigidity in the economy. When the nominal exchange rate varies and prices do not adjust themselves instantaneously, the real exchange rate changes. There is, in fact, convincing evidence that nominal and real exchange rates will vary at the same rate, at least in the short term.

2.1 The tradable versus non-tradable sectors

The real exchange rate is the relative price between tradable and non-tradable goods. A more devalued real exchange rate means a higher relative price of tradable goods, and is therefore associated to gains for tradable goods producers to the detriment of non-commercial goods producers. The conflict of interest between these two groups in the economy may be expressed in a simple model describing a small and open economy, in which there are only two types of goods, tradables and non-tradables.³ For simplicity let us assume that consumer preferences can be described by a Cobb-Douglas utility function:

$$U(C_T, C_N) = \alpha \ln C_T + (1 - \alpha) \ln C_N, \quad (1)$$

where C_i stands for the amount consumed of the good i , for $i = T$ (tradable good), N (non-tradable good), and α is a parameter that indicates the relative weight of the tradable good in the utility function.

Every citizen will select his or her own basket of goods in a manner that maximizes its utility, subject to budget constraint that establishes that the total expenditure with consumption must not exceed his or her income. Each individual's income is made up of an endowment of tradable or non-tradable goods, depending on the sector that the citizen belongs to. Letting e be the relative price between tradable and non-tradable goods, i.e. the real exchange rate, the budget constraint of citizens in the tradables sector may be described as:

$$eC_T + C_N \leq eD_T, \quad (2)$$

while, in the other sector, budget constraint is:

$$eC_T + C_N \leq D_N, \quad (3)$$

where D_i is the endowment of good i , for $i = T, N$.

We may thus find that the maximum utility that may be reached for each type of citizen by substituting his or her optimal consumer choices in the utility function. Thus we obtain the indirect utility function, that represents utility as a function of the real exchange rate. For citizens of the tradables sector, the indirect utility function is written as follows:

$$V_T(e) = h_T + (1 - \alpha) \ln e, \quad (4)$$

³This model is inspired in Bonomo and Terra (2005).

and, for the non-tradables sector,

$$V_N(e) = h_N - \alpha \ln e, \quad (5)$$

where $h_i \equiv \alpha \ln \alpha + (1 - \alpha) \ln(1 - \alpha) + \ln D_i$.

Evidently we see that citizens from the tradables sector prefer higher values of e , i.e., a more depreciated real exchange rate, while citizens of the non-tradables sector are happier the more appreciated the real exchange rate is. In mathematical terms,

$$\frac{\partial V_T(e)}{\partial e} > 0 \text{ and } \frac{\partial V_N(e)}{\partial e} < 0 \quad (6)$$

Let us now consider the choice the government must make in terms of the exchange rate level. For simplicity's sake we shall not specify which tools the government will use to affect the real exchange rate. We assume that the government sets the level of the real exchange rate within certain confines set by economic constraints, that is $e \in [\underline{e}, \bar{e}]$.⁴ If the economic policy, in this case the real exchange rate, were set by a benevolent policymaker whose single goal is the citizen welfare, he would chose an exchange rate that would maximize the social welfare function, that may be expressed as an average of the citizens utility, that is:

$$W(e) = \gamma V_N(e) + V_T(e), \quad (7)$$

where $\gamma \equiv \frac{n}{1-n}$, and n is the fraction of citizens in the non-tradables sector of the economy. It is easy to show that, when the fraction of citizens in the tradables sector is relatively high, the government chooses the most devalued exchange rate, \bar{e} , and when this fraction is sufficiently low, policymakers will opt for the most valued the exchange rate, \underline{e} . Thus the exchange rate chosen by a benevolent policy maker, e^b , will be:

$$e^b = \begin{cases} \bar{e} & \text{for } \gamma \leq \frac{1-\alpha}{\alpha} \\ \underline{e} & \text{otherwise} \end{cases} \quad (8)$$

When taking into consideration political issues in selecting policy, policymakers stop being merely benevolent and add other elements to the conditions

⁴It must be noted that the real exchange rate will always be the relative price that clears the markets of tradable and non-tradable goods. The policy instrument employed by the government must be a variable that affects the respective markets' relative supply and demand. Bonomo and Terra (2005), for example, assume that the government taxes the tradables sector and spends in non-tradable goods in order to manipulate the equilibrium real exchange rate. By adopting this policy the government can chose an exchange rate within a certain range, determined by the fact that government spending must be positive and smaller than a given upper limit

of maximization. It is evident that the policymaker is still concerned with the well-being of the citizens, as represented in the welfare function. However, other variables may affect the policymaker choices. The policymaker, for example, may be concerned with re-election, and any policy adopted prior to elections may be, under specific circumstances, liable to affect the probability of re-election. Alternatively, in a different scenario, a government without the support of the majority of the House of Representatives may find itself forced to create a coalition in order to govern. Further still, certain sectors of the economy may lobby the government, offering advantages for a policy in keeping with their own interests. Such offers may be perfectly legal and conform to democratic rules, such as campaign donations, or conversely, illegal, such as the case of corruption. Given the distributive nature of the exchange rate, when policymakers adopt specific elements of economic policy, they will be essentially affecting the relative weights given to the non-tradable goods sector of the economy. Policymakers thus select the level of the economy's real exchange rate so as to maximize the function:

$$W(e) = \gamma_P V_N(e) + V_T(e), \quad (9)$$

where γ_P is the relative weight of the non-tradable goods sector, taking political factors into consideration.

Bonomo and Terra (2005, 2006) show how lobbying can alter the relative weight of different sectors of the economy in their objective function when faced with private benefits offered in exchange for a policy that is skewed in their favor. Such benefits may come under many different guises. They may amount to campaign donations or the offer of future placement in the board of directors of one of the lobbying companies once the term in office is over, or simply the performance of financial transactions in the form of corruption.

Agreements of this nature are customarily kept secret, and are legally unenforceable. In order to be successful, agreements such as these rely on factors such as mutual trust among the parties involved, and the nature of the social and professional relationships being played out over the long run. Such factors serve to discipline the behavior of the actors involved, since it is not possible to resort to the Courts of Justice. Nevertheless agreements may be broken, either for lack of compliance from one of the parties, or because information leaks to the public, at a high cost to the government's popularity.

Policymakers must therefore assess how much they stand to gain from a

successful agreement and potential costs if the agreements flounder. Whenever policymakers believe deals of this nature carry a sufficiently high probability of success, they enter into an agreement and elect an economic policy that will benefit lobbyists.

It is fair to conjecture that lobbyists come from the tradable goods sector, the sector composed mainly of the industrial and agricultural sectors. The industrial sector is the setting of a few oligopolists, which makes it easier to solve the problem of free-riders, and where individual gains are high enough to warrant the effort of lobbying. There are some parts of the agricultural sector, especially those involved with exports, which can be similarly described. This leads us to assume that, in our bare-bones model, the sector of tradable goods organizes itself to lobby the government.

To further simplify we assume that there are two types of policymakers: those close to lobbyists and those distant to lobbyists. We suppose that ‘close’ policymakers are so intimately linked to lobbyists that there is a very low probability of failure and therefore no impediment to making agreements. This class of policymakers will be co-opted by lobbyists. ‘Distant’ policymakers will not enter into agreements with lobbyists because they rate the potential agreements with too low a probability of success. Bonomo and Terra (2006) show that, in this context, $\gamma_{dist} < \gamma_{cl}$, where γ_{cl} is the weight given to the non-tradable sector by policymakers that are deemed ‘close’ to lobbyists and γ_{dist} given to policymakers ‘distant’ to lobbyists.

We further suppose that $\gamma_{dist} > \frac{1-\alpha}{\alpha}$ and $\gamma_{cl} \leq \frac{1-\alpha}{\alpha}$. According to the equation (9), it means that policymakers ‘close’ to lobbyists confer very low weights to the non-tradable sector and thus choose the most devalued exchange rate. On the other hand, so called ‘distant’ policymakers will benefit the non-tradable goods sector by choosing a more appreciated exchange rate.

In a closed economy such as Brazil’s, the majority of the population belongs to the non-tradables sector and would always be interested in electing policymakers that are distant to lobbyists. However, the general public has difficulty in identifying the precise degree of proximity between lobbyists and the government. Voters will take note of how policymakers chose economic policy prior to elections and try to infer whether the government can be classified as ‘close’ or ‘distant’ to lobbyists. Informed of the behavior of voters, policymakers will choose an economic policy that favors reelections. In the case of ‘close’ policymakers, they will chose policy that is not so highly beneficial to lobbyists so as to disguise any proximity. Analogously if policymakers are of the ‘distant’

type, they will benefit the non-tradable goods sector even further in order to stress their distance in relation to lobbyists. As a result we have an exchange rate cycle coming up in the proximity of elections: the exchange rate will, on average, be more appreciated prior to elections than once elections are over.⁵

There are, in fact, various empirical studies that document this type of electoral cycle in the exchange rate. Frieden et al. (2001) identified an electoral exchange rate cycle in a study based on 26 countries in Latin America and the Caribbean, and Pasço-Fonte and Ghezzi (2001) do the same for Peru. There is similar evidence with respect to Brazil in Bonomo and Terra (1999). In that paper the authors study real exchange rate misalignments in relation to its equilibrium value, with the aim of studying fluctuations of the real exchange rate that cannot be explained by purely economic variables. Results show that the misalignments of the real exchange rate may be attributed to two regimes: one that has been overvalued and the other undervalued. Furthermore, the probability of being in an overvalued regime is higher prior to elections, while there is higher probability of there being an undervalued regime in the periods after elections are held.

Another interesting empirical result is found in Blomberg et al. (2005). The authors show that among Latin American economies those with the largest sector of tradable goods also have a lower probability of maintaining a fixed exchange rate. The result is in keeping with the notion that the tradables sector may organize itself into lobbying groups so as to pressure the government into adopting policies that result in more devalued exchange rates. Given the levels of inflation prevalent in the region, the fixed exchange rate regime is invariably associated to the appreciation of its real rate. When the sector is large, there is higher probability that the government is held hostage to its interests. This would result in non-fixed rate regimes, and consequently, regimes less prone to appreciation.

2.2 The trade-off between external competitiveness and inflation fighting

Another important aspect to be taken into consideration in exchange rate policy is its impact on the rate of inflation. As discussed previously, nominal exchange rate devaluation will also result in a real devaluation when the economy presents

⁵Bonomo and Terra (2006) introduce a model of asymmetric information according to which the choice of economic policy works to indicate the type of policymaker involved. The model is applicable to a variety of contexts, including the choice of exchange policy.

price rigidity, i.e., whenever the prices of non-tradable goods do not adjust themselves instantly and proportionately to variation of the nominal exchange rate. However, nominal devaluation is responsible for raising the price of tradable goods, thereby raising the overall prices in the economy. Further still, if there are indexation mechanisms present in the economy, the price increase will result, at least in part, in an increased inflation rate. The impact of nominal devaluation over inflation, or 'pass-through', depends on variables such as the degree of openness of the economy, and existing indexation mechanisms.

The previous section established the distributive character of the exchange rate, due to its relative price function between tradable and non-tradable goods. This section adds yet another element to the analysis, which is the exchange rate's impact over inflation. Inflation has its own distributive effects. Individuals with access to the financial markets have a wider array of indexation mechanisms made available to them. Lower income individuals do not have access to the financial markets, and consequently, suffer greater losses with inflation.

The previous model showed that citizens from the non-tradable goods sector prefer an appreciated exchange rate. The cost of inflation will reinforce their preference. This section shows that there may be also citizens of the tradables sector who prefer the appreciated exchange rate due to devaluation's perverse effect over inflation.

We may describe this setting with only a few changes to the model of the previous section. In order to capture the effect of exchange rate devaluation over inflation we will conduct an analysis in a two-period environment. Citizen preferences correspond to those in equation (1), only in two subsequent periods written as follows:

$$U(\cdot) = \alpha \ln C_{T,t} + (1 - \alpha) \ln C_{N,t} + \delta [\alpha \ln C_{T,t+1} + (1 - \alpha) \ln C_{N,t+1}], \quad (10)$$

where $\delta \in (0, 1)$ is the inter-temporal discount rate.

Budget constraints will now be changed to incorporate the effect of inflation over welfare. We suppose that individuals must sell their endowment one period prior to buying their consumption. In a setting that includes inflation, the price of their consumption basket may differ from the price for which their endowments were sold. Individuals nevertheless have access to an indexation mechanism, albeit incomplete: their income is readjusted according to only a fraction of inflation

Let us suppose that citizens from the tradables sector are split into two types, those who differ with respect to their endowment of tradable goods and

access to indexation mechanisms. The 'poor' have a smaller endowment and are less protected from inflation than the 'rich'. For the purposes of simplicity, and without impairing our analysis, we may suppose further, that budgets must be met during each period, i.e., there are no income transfers in between the two periods.

Budget constraints of the citizens of the tradable goods sector for each period may be written as follows:

$$p_{T,t}C_{T,t} + p_{N,t}C_{N,t} \leq p_{T,t-1}D_i\pi_t^{\beta_i}, \quad (11)$$

where D_i is the endowment of an individual i , $i = \mathcal{R}$ (rich), \mathcal{P} (poor), with $D_{\mathcal{R}} > D_{\mathcal{P}}$, $\pi_t \equiv \frac{P_t}{P_{t-1}}$ is the rate of inflation, i.e. the ratio between the price indices at t and $t - 1$. Note that each endowment is priced according to the previous period prices, and β_i is the fraction of inflation according to which citizen's i income is readjusted. β_i varies between the two groups according to the indexation mechanisms each group has access to. In particular, we assume that $\beta_{\mathcal{R}} > \beta_{\mathcal{P}}$, or, in other words, that wealthier individuals have access to better mechanisms of indexation.

As for the non-tradable sector citizens, we assume, for simplicity, that they receive the same endowment and have the same level of access to indexation mechanism. Thus, the budget constraint of this group is written as follows:

$$p_{T,t}C_{T,t} + p_{N,t}C_{N,t} \leq p_{N,t-1}D_N\pi_t^{\beta}. \quad (12)$$

By the same token, our next step is to calculate the indirect utility function of each citizen following the same procedures adopted in the previous model. This will show us individual preferences with respects to the policy adopted by the government, which, as we will see in the following, will have an effect both on the exchange rate and on inflation. The indirect utility function of an individual from the tradables sector, rich or poor, is written as follows:

$$V_i(e_t, \pi_t) = \bar{h}_i + (1 - \alpha) \ln e_{t-1} - (1 - \beta_i) \ln \pi_t + \delta [(1 - \alpha) \ln e_t - (1 - \beta_i) \ln \pi_{t+1}], \quad (13)$$

where $e_t \equiv \frac{P_{T,t}}{P_{N,t}}$ is the real exchange rate and

$$\bar{h}_i \equiv [\alpha \ln \alpha + (1 - \alpha) \ln (1 - \alpha) + \ln D_i] (1 + \delta),$$

for $i = \mathcal{R}, \mathcal{P}$.

Just as with the previous model, equation (13) shows that citizens from the tradable goods sector prefer a more devalued exchange rate. The equation shows, additionally, that the two types of citizens, rich and poor, prefer low inflation rates, although inflation is more prejudicial for the poor who have lower β .

The indirect utility function for individuals from the non-tradable sector is written as:

$$V_N(e_t, \pi_t) = \bar{h}_N - \alpha \ln e_{t-1} - (1 - \beta) \ln \pi_t - \delta [\alpha \ln e_t + (1 - \beta) \ln \pi_{t+1}], \quad (14)$$

where $\bar{h}_N \equiv [\alpha \ln \alpha + (1 - \alpha) \ln (1 - \alpha) + \ln D_N] (1 + \delta)$.

We put forward two daring hypotheses in order to describe, in a simple way, the government's influence over the real exchange rate and its impact over inflation. Firstly, we suppose that non-tradable prices are under constant inflation: $\frac{P_{N,t}}{P_{N,t-1}} = \eta$. Secondly, we hypothesize that, for the purposes of this model, this is a small country and that international prices are fixed, so that the price variation of the tradables sector is proportional to the variation of the nominal exchange rate, i.e., $\frac{P_{T,t}}{P_{T,t-1}} = \frac{E_t}{E_{t-1}}$, where E_t is the nominal exchange rate.

We know that, given individual preferences, the price index is as follows:

$$\ln P_t = \alpha \ln p_{T,t} + (1 - \alpha) \ln p_{N,t}. \quad (15)$$

Hence, the two hypotheses above define the following relation between the rate of inflation and the exchange rate variation:

$$\pi_t = \eta \left(\frac{e_t}{e_{t-1}} \right)^\alpha. \quad (16)$$

According to equation (16), a devaluation of the real exchange rate over time is associated to higher rates of inflation, and the effect of the exchange rate over inflation is proportional to the relative weight of the tradable good in the utility function. For the sake of simplicity we assume that government's only choice variable is the exchange rate in the current period. In order to do that, let us consider the real exchange rate in $t - 1$ a given, and we assume that the real exchange rate for the subsequent period will be equal to one chosen for the current period, i.e., $e_t = e_{t+1}$. Once these additional hypotheses are considered, equations (13) and (5) may be rewritten as follows:

$$V_i(e_t, \pi_t) = \bar{k}_i + [\delta(1 - \alpha) - \alpha(1 - \beta_i)] \ln e_t, \text{ and} \quad (17)$$

$$V_N(e_t, \pi_t) = \bar{k}_N - \alpha[\delta + (1 - \beta_i)] \ln e_t \quad (18)$$

where $\bar{k}_i \equiv \bar{h}_i + (1 - \alpha\beta_i) \ln e_{t-1} - (1 + \delta)(1 - \beta_i) \ln \eta$, for $i = \mathcal{P}, \mathcal{R}$ and $\bar{k}_N \equiv \bar{h}_N - \alpha\beta \ln e_{t-1} - (1 + \delta)(1 - \beta) \ln \eta$.

Even with the cost of inflation, citizens from the tradable sector will continue to express a preference for exchange rate devaluation when they see themselves sufficiently protected from inflation, or more precisely, when $\beta_i > 1 - \delta \left(\frac{\alpha}{1 - \alpha} \right)$. Let us consider the case in which $\beta_{\mathcal{R}} > 1 - \delta \left(\frac{\alpha}{1 - \alpha} \right) > \beta_{\mathcal{P}}$, i.e., wealthy individuals have sufficient means of indexation so that they continue to express a preference for exchange rate devaluation while the poor suffer so much loss from inflation that they persist in their preference for an appreciated exchange rate, even if the exchange rate valorization lowers the relative price of the goods they produce. In this setting, a fraction of the tradable goods sector will prefer an appreciated exchange rate, just as the entire non-tradable goods sector.

The results just described can be summarized by the following inequalities:

$$\frac{\partial V_{\mathcal{R}}(e)}{\partial e} > 0, \quad \frac{\partial V_{\mathcal{P}}(e)}{\partial e} < 0 \text{ and } \frac{\partial V_N(e)}{\partial e} < 0. \quad (19)$$

Similarly to what we have done in the previous model, we assume that the government chooses a real exchange rate, within the ranges established by the economic conditions, resulting in a choice in a certain interval: $e \in [\underline{e}, \bar{e}]$.⁶ This choice is made in such a way as to maximize the government's utility function that weights each group's welfare according to political motivations. The objective function of the government can, therefore, be written as:

$$W(e) = \gamma_{\mathcal{P}} [V_N(e) + V_{\mathcal{P}}(e)] + V_{\mathcal{R}}(e). \quad (20)$$

If the relative weight given to citizens in the sector of non-tradable goods and to poor citizens of the tradable goods sector is sufficiently high, the government will choose the more valued exchange rate, \underline{e} . Otherwise, the exchange rate chosen will be the most devalued one, \bar{e} . More specifically, we can show that

⁶ More precisely, according to this model the government will set a nominal exchange rate such that, given a pre-established price trajectory, it results in a given real value.

the exchange rate chosen by politician P , e^P , is given by:⁷

$$e^P = \begin{cases} \bar{e} & \text{for } \gamma_P \leq \frac{\delta(1-\alpha) - \alpha(1-\beta_{\mathcal{R}})}{\delta\alpha + \alpha(1-\beta) - \delta(1-\alpha) + \alpha(1-\beta_{\mathcal{P}})}, \\ \underline{e} & \text{otherwise.} \end{cases} \quad (21)$$

Regarding the factors that determine the relative weight given to each group, let us begin by analyzing the difference between a democratic regime and a dictatorship, to address the important political transition that took place in Brazil in 1985. Democratic governments must please their electorates in order to stay in power, while dictatorships are concerned with those groups that keep them in power. In the case of the Brazilian dictatorship, the regime did not do away with elections altogether, regulating political representation according to its needs. Therefore, the fact that there were elections, in no way imposed limits to the government's economic choices.

With the transition to democracy, the will of the people certainly began to carry greater weight in the government's decisions. In order to be reelected, or elect its successors, the government needed the support of the majority of the population. In a closed economy such as Brazil's, the majority of the people belong to the sector of non-tradable goods. One should expect, therefore, that the democratic regime that followed the unpopular dictatorship would give a bigger weight to the sector of non-tradable goods. For the same reason, during the period of transition to democracy, the weight given to the lower classes should have increased too. In our model, this corresponds to $\gamma_{dict} < \gamma_{dem}$. The result would be a real exchange rate that is more appreciated on average in the democratic regime than in the dictatorship.

2.3 The Brazilian exchange rate policy from the perspective of its distributive impact

From the beginning of the dictatorship in 1964, to the first oil crisis in 1974, the international scenario was very favorable. The exchange rate was kept, on average, appreciated throughout the entire period. At the same time, the wage policy adopted at the time led to real salary loss, and assured the competitiveness of the exports sector. This scenario, despite exchange rate appreciation, protected the domestic industry, the main beneficiary of the combined economic policies.

⁷The simplifying hypotheses assumed here render a corner solution to the problem, that is, the government will always choose either the most devalued or the more valued exchange rate, within its set of possible choices.

The government did not promote the necessary external adjustment in face of the first oil crisis in 1974. Taking advantage of the high international liquidity, it raised the foreign debt to deal with the current account deficit that was caused by the deterioration of the terms of trade. Bonomo and Terra (2001) argue that government failure to enforce an immediate adjustment of the economy is due to the fact that the military government at the time was concerned with gathering legitimate political support. The Brazilian Army was split in two political trends, a moderate group that included President Ernesto Geisel (1974-1979) to one side, and to the other a hard line group that included his predecessor Emílio Garrastazu Médici (1969-1974), whose term in office coincided with the so-called economic “miracle”. The search for political legitimacy would have led the President to prioritize inflation fighting to the detriment of balance of payments balance.

There was light exchange rate devaluation after the second oil crisis in 1979, followed later by a sharper devaluation after the foreign debt crisis in 1982. The real exchange rate was devalued at approximately 100% in the period from 1981 to 1985. The devaluation of the real exchange rate carried out based on exchange rate devaluations which, combined with indexation mechanisms, resulted in rising inflation rates. In 1985 with the return to democracy the government begins a period of inflation fighting.

From 1985 to 1994 we note the presence of exchange rate cycles that can be explained by a trade-off between inflation and devaluation. The decade was marked by various price stabilization plans that, in one way or another, used the exchange rate as a nominal anchor. Since price stabilization did not happen overnight, there was room for exchange rate appreciation. The plans ended up failing and were abandoned, inflation returned and the exchange rate was devalued.

Some of these stabilization plan/currency appreciation cycles followed by abandoning plan/devaluation coincided with elections, such as was the case of the very first of these plans, the Plano Cruzado. Plano Cruzado was launched the 28th of February 1986, a few month prior to the elections for State Governor and the Legislative branch, set for November of the same year. The plan resulted in an appreciation of the exchange rate prior to elections, and just one week after the elections were held, the government kicked off a series of daily exchange rate devaluations that resulted in a devalued real exchange rate.

It is interesting to note that the electoral cycle of price stabilization with an exchange rate anchor is not a uniquely Brazilian phenomenon. Aisen (2004)

uses data from emerging economies and from Iceland to show that, on average, the exchange rate anchor is used in price stabilization plans when they are adopted in the period prior to elections, while, in other periods, a monetary anchor is used. Calvo and Vegh (1999) show that price stabilization plans with exchange rate anchors adopted in Latin America and Israel during the 1990's led to, overall, an initial period of rising GNP and private consumption. There is, therefore, a noticeable association between price stabilization plans and elections.

Once the great majority of stabilization plans based on an exchange rate anchor failed, we may ask ourselves why, after all, were they adopted so often. Alfaro (2002) puts forward an explanation for the adoption of these short-term plans based on the real appreciated exchange rate's distributive effects. Benefits to the non-tradable goods sector may result in additional support for carrying out the plan, even if only for the short-term.

Another interesting case to be examined in this light is the Fernando Collor administration. From the beginning of his term, Fernando Collor established a radical stabilization plan that, despite resorting to the exchange rate as a nominal anchor, leading to real appreciation, froze the economy's financial assets. There was, after all, no control over inflation and the exchange rate policy maintained, on average, an appreciated exchange rate during his term in office. We had as a result, a combination of policies that favored none of the groups identified in the models we introduced. The tradable goods sector was unhappy with the exchange rate appreciation, and even in the non-tradable goods sector those less able to protect themselves from inflation suffered losses from unbridled inflation. The president was finally targeted with an impeachment process under allegations of corruption. This is of course a gross simplification, and there were other factors at play and policies that generated discontent among potential supporters of his government. It was certainly, however, an important factor.

Since 1993 Brazil has been ruled by coalition governments. In this specific setting, governments must offer benefits and advantages to members of the coalition. A government that enjoys higher popularity will also more easily convince parliament to support it. And parliamentary support comes at lower cost. It is therefore expected that coalition governments are more concerned with positive ratings, even outside election periods. As a result there is a constant effort to prioritize the interests of the largest groups, including the lower income brackets and the non-tradable goods sector.

Thus we can interpret the policies adopted as reactions to the international crises of the 1990's as a sign of this prioritization. This was the decade of the Mexican 1994 exchange rate crisis, the Asian crisis of '97, the Russian crisis of '98 and the Argentinean crisis of 2001, to cite but a few. This turbulent period in the foreign markets led, to a greater or lesser degree, to a drop in the capital inflows to Brazil.

At variance with what took place in the early 1980's, the response to the exchange rate pressures of the 90's was a high interest policy that attracted foreign capital. This worked to avoid exchange rate devaluations and preserved price stability. This policy favors the poorest citizens in the economy and the non-tradable sector, to the detriment of wealthier citizens of the tradable goods sector.

3 The exchange rate as an indicator of competency

In the literature there is also the argument that the exchange rate may be used by the government as an indicator of its competency. The explanation for this is based on the effect an exchange rate devaluation has over the interest rate, and the determining role that the interest rate has in the seigniorage tax collected by the government. The more competent a government is, the less it needs to collect taxes in order to offer its services. If, ultimately, currency devaluation corresponds to a form of tax collection by the government, then more competent governments will devalue less. Stein and Streb (2004) and Stein, Streb and Ghezzi (2005) explore this line of reasoning.

We will refrain from describing the complete model for exchange rate as a sign of competency. It is somewhat complex and does not pertain directly to our discussion. We shall introduce just the main lines of the argument to understand its reasoning.

The crucial element in the model is how an exchange rate devaluation affects seigniorage tax collection. Hence, we start by the money demand, which is generated by requiring consumers to hold currency in order to consume. This means consumers are under an additional constraint, as follows:

$$M_t \geq C_t, \tag{22}$$

where M_t is the demand for money and C_t is total spending with consumption. However, by holding currency, consumers fail to receive the interests that would

accrue from government bonds. From the point of view of the government, this lost income turns into revenue via seigniorage, S_t :

$$S_t = i_t M_t, \quad (23)$$

since it is saving the interest it would be forced to pay to consumers had they bought bonds instead of holding currency.

The constraint over government resources establishes that government debt variation should be equal to public spending plus the interest paid over current debt, minus the seigniorage revenue:

$$\Delta D_t = i_t D_{t-1} + \frac{G_t}{\theta_t} - S_t, \quad (24)$$

where D_t is government debt in t , G_t is public spending and θ_t a parameter that represents government competency. The larger the value of θ_t , the more the government is able to spend for a given quantity of available resources. The parameter is an attempt to show the different degrees of government efficiency in managing public resources in different administrations. For the problem to be well defined, we assume that $\theta_t \in [1, k]$, for a constant $k > 1$.

We also assume free capital mobility and that bonds issued by different governments are perfect substitutes, in other words, that when bonds have the same yields, market agents will buy any bond regardless of its national origin. Thus asset price arbitrage will result in equal yields when measured in the same currency. In other words, the uncovered interest parity holds. If we further assume that foreign interest rate is equal to 1, we have that:

$$1 + i_t = \frac{E_t}{E_{t-1}}. \quad (25)$$

We can also conjecture that the public is not fully informed of the level of all variables chosen by the government. Gathering information is a costly process and most information available in the media comes at a certain delay. More specifically we consider a situation in which the public cannot evaluate how efficient its own government is, nor its indebtedness level. Variables such as these are available for observation after a certain delay. The exchange rate however, can be observed on a daily basis, since it is a variable with direct incidence on the relative prices of individual incomes and their purchasing power. Levels of public spending are also easily noted by the population, because citizens avail themselves of it.

We have now gathered all the necessary elements to understand how exchange rate policy can act as an indicator of governmental efficiency. Let us take the case in which there are only two periods, with no initial debt, and the government must pay the entire debt incurred by the end of the second period. The governmental budget constraint in period 1 can be written as follows:

$$\Delta D_1 = \frac{G_1}{\theta_1} - i_1 M_1.$$

By substituting the interest rate parity conditions (25) in the equation above, and rearranging the terms, we have:

$$G_1 = \theta_1 (\Delta D_1 - \dot{e}_1 M_1). \quad (26)$$

where $\dot{e} \equiv \frac{E_1 - E_0}{E_0}$. Equation (26) shows us that there are three ways that the government may generate more public spending: being more efficient (larger θ), by increasing its level of debt, or by generating more seigniorage taxes through exchange rate devaluations.

Let us consider the case in which the public sees simultaneously a high level of public spending and a low level exchange rate devaluation. Noting that the public is not able to observe the other variables at play in governmental choice, they are not, in principle, capable of telling if high government spending results from higher governmental indebtedness or due to increased government efficiency. Thus we see the exchange rate policy as an indicator of efficiency: a truly efficient government may chose a sufficiently low level exchange rate devaluation for a given level of public spending, in such a way that cannot be replicated by an incompetent government.

Stein and Streb (2004), and Stein, Streb and Ghezzi (2005) show that, in a similar setting, and under specific conditions, governments will postpone exchange rate devaluations until after elections in order to signal greater competency. This generates an exchange rate cycle around election periods in which the exchange rate, on average, is more appreciated prior to elections and more devalued after.

Note that the same type of electoral cycle is also generated by models based on the distributive effects of the exchange rate, as demonstrated in section 2. It is important to observe that these two differing explanations for the exchange rate electoral cycles are not at odds with each other. In fact, they complement each other. By maintaining an appreciated exchange rate just prior to elections, the government not only indicates his efficiency, but also benefits a large parcel of its electorate.

4 The political economy of the fiscal policy

The analysis conducted so far is based on the exchange rate policy's effect on the economy and derived political issues. This section focuses on the political economy of the fiscal policy. The exchange rate in this model is no longer the focus of economic policy, and becomes solely the residual effect of the chosen fiscal policy.

The national accounts show a relation between fiscal policy and real exchange rate. We know that the national product, Y , can be divided into private consumption, C , investment, I , public expenditures, G , and current account balance, $M - X$:

$$Y = C + I + G + X - M \quad (27)$$

National accounts, shown in equation (27) are an accounting identity. They are not indicative of variables behavior, nor of the causes of variables behavior, neither of the inter relations among the different variables. All that the national accounts can tell us is that equation (27) is always verified. On the other hand, there are a number of economic theories that study the determinants of the variables shown in the equation.

We will proceed with a simple theoretical framework, in line with the methods employed so far, so as to focus on policy choices and the inter relations between the variables that affect exchange rate movements. We are interested in the relation between fiscal policy and the exchange rate. Let the fiscal policy be the variable of choice for the government. The national product, private consumption and investment are taken as given, resulting from choices made independently of the fiscal policy selection process. The current account balance will be the adjustment variable. In other words, the result in current account will be such that the identity of the national account holds, given the government's chosen fiscal policy, current product, private consumption and investment levels.

The current account balance is an increasing function of the real exchange rate. A depreciated exchange rate, i.e., a higher one, leads to an increase in exports and a drop in imports, resulting in a higher current account balance. Thus, higher levels of government expenditure must be counteracted with a lower current account balance, which, in turn, is associated to an appreciated exchange rate.

Let us thus proceed in our analysis of the political economy of the fiscal policy. As is usually the case in political economics, our analysis is based on the conflicting interests of different groups in the economy over policy choice. In the

case of fiscal policy, the literature concentrates on varying preferences relative to fiscal policy that are caused by citizens with varying incomes. The basic notion is that wealthy individuals differ from lower income brackets because they pay more taxes and thus prefer lower government expenditure. This effect was described by Persson and Tabellini (2000) as reproduced in this paper.

We therefore assume that our model economy has a continuum of citizens indexed by $i, i \in [0, 1]$, in which each one of them receives a different endowment of a good, y_i . With the sole exception of the quantity of the endowment, all citizens in this economy are identical, and derive utility from the consumption of a private good, c_i , and a public good, g , provided by the government. The utility function of the consumer i is represented by:

$$w_i = c_i + H(g) \tag{28}$$

where $H(g)$ is a growing concave function: $H_g(g) > 0$ e $H_{gg}(g) < 0$, and g the quantity of public goods per capita.

The government collects taxes from citizens transforming them into public goods at no additional cost. The income tax rate, τ , is the same for all. Governmental budget constraint is written as:

$$\tau y = g \tag{29}$$

where $y \equiv \int_0^1 y_i di$ is the average income in the economy.

Individual consumers, in turn, must also comply with their own budget constraints, which establish that expenditure with consumption should equal their available income:

$$c_i = (1 - \tau) y_i. \tag{30}$$

By substituting the budget constraints of the government and its citizens in the citizen utility function, we have the indirect utility function that describes citizen preferences as pertaining to fiscal policy. The function is described as:

$$W(g; y_i) = (y - g) \frac{y_i}{y} + H(g).$$

The expenditure level most preferred by citizen i , g^i , is the one that maximizes the function (28):

$$g^i = H_g^{-1} \left(\frac{y_i}{y} \right). \tag{31}$$

Note that individuals with higher income prefer lower levels of government spending.

If the level of public expenditure were set by a benevolent government, the government would choose the one that maximizes the social welfare function of the economy, that, in the case of the economy in question, is written as:

$$W = \int_0^1 \left[(y - g) \frac{y_i}{y} + H(g) \right] di = y - g + H(g). \quad (32)$$

The chosen level of expenditure, g^* , would therefore be equal to:

$$g^* = H_g^{-1}(1), \quad (33)$$

in other words, the preferred level of expenditures on the part of the average income voter.

As is often the case with political economy, the chosen policy does not reflect the choice of a benevolent government. On choosing policy the government takes into consideration his political interests, as well as the welfare of its citizens. In this case, the government will act according to its electoral interests.

Let us assume that there are two contenders running for the elections. They announce their electoral platforms, that are expressed in the level of public expenditure after the elections are over. Voters take note of each platform and vote for the candidates of their choice. To simplify the analysis, we will assume none of the candidates' credibility has been questioned, and that their announced policies will really be put into effect.⁸

Voters will vote for the candidate that most closely resembles his preferred platform. It is fairly easy to show that, in equilibrium, both candidates will offer the same platform, and that it will be the preferred policy of the median voter. The median voter in this economy is the one with respect to whom 50% of the population has a higher income and 50%, a lower income. Hence:

$$g^m = H_g^{-1} \left(\frac{y_m}{y} \right), \quad (34)$$

where y_m is the average income of the median voter.

Economies always show some degree of income concentration. There are always a few very wealthy individuals and many individuals with lower incomes.

⁸Very interesting issues arise when candidates are not able to commit to their campaign promises. They are analyzed in various different models of political economy. To add these issues here, however, would lead us astray from the kernel of our analysis. We suggest the interested reader see Persson and Tabellini (2000) for a few models that deal with the issue.

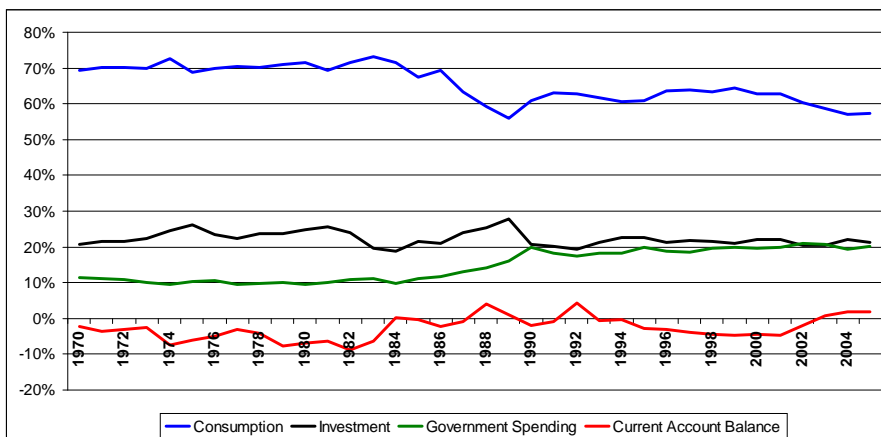


Figure 1: National Accounts, Brazil: 1970-2005

When this occurs, the average income of the economy is higher than the median voter's income: $y > y_m$.

Given the concavity of the function $H(g)$, the result is that the political contender's chosen level of expenditures is higher than the socially optimal one. If we add this result to the national account analysis carried out in the beginning of this section, we may conclude that the higher level of expenditure is also associated to an appreciated exchange rate.

Let us consider the facts. With the end of the military dictatorship in the 1980's and the resulting democratization process, Brazilian politicians become more concerned with elections. According to the model described above, the expected result would be the establishment of policies more in keeping with the median voter, who, in an economy with high income inequality such as Brazil's, is in a much lower income bracket than the economy's average income. Among such policies is a more expansionist fiscal policy. In fact, from the end of the 1980's there was a substantial increase in public expenditure, such as can be seen in Figure 1.

Figure 1 shows the trajectory of product decomposition from 1970 to 2005. We note that until the early 1980's private consumption and public expenditure corresponded to a fairly constant ratio of the product: approximately 70% for private consumption and 10% for public expenditure. The ratio dedicated to investment in GNP started at 20% in 1970 and showed a few periods of expansion, being counteracted by current account deficit.

With the return to Democracy in 1985, there is a marked change in these variables, pushed by the increase in public expenditures. Public expenditures jump to 20% of the product in 1990, and remain unchanged for the next few years. We can detect two causes for this change. On the one hand democratization increased electoral concerns among politicians, leading them to implement policies more in keeping with the interests of the median voter. One result was a more expansionist fiscal policy. On the other hand, the new constitution that entered into force in 1988 established a variety of compulsory public expenditures. This resulted in even heavier public expenditure from that day forward, as shown in figure 1.

As a compensation for the increase in expenditures, private consumption dropped sharply at first, to the level of 56% of the product in 1989, with a small recovery from 1994 onwards. This recovery of private consumption is compensated for an increase in the current account deficit. As to investments, they remain constant at the 1970's levels, or: approximately 20% of the GNP, with no more growth spurts.

In short, we note there has been an increase in public expenditures in 1985. Initially this increase was absorbed by the drop in private consumption, but as of 1994, also by the current account deficits. The increased current account deficit was consolidated by an appreciated real exchange rate. The post 1994 period shows, therefore, the change predicted by the political economy analysis of public expenditures and their effect over the exchange rate: increasing levels of public expenditure brought about by democratization and leading to current account deficits, validated by the valuation of the real exchange rate.

5 Conclusion

The most serious economic problems to afflict the Brazilian economy over the past three decades resulted from high inflation, especially in the 1980's and early 90's, and from balance of payments crisis, whether due to the deterioration in the terms of trade, as in the 1970's, or due to a reversal in capital flows as occurred in the 1980's and 1990's. In this setting, this paper tried to identify and analyze the main elements of political economy in the adoption of exchange rate policy. While recognizing that exchange rate path is determined essentially by economic conditions, we argue that the government has a degree of freedom in establishing the short-term exchange rate policy, and will avail itself of it according to its political motivations and constraints.

There is currently in Brazil a debate on whether to adopt the “Chinese Model” and its exchange rate devaluation policy in order to speed up economic growth. What, can we add to this discussion from the perspective of political economy as applied to exchange rate policy? One point all political economy literature share is the identification an appreciated exchange rate with the preferences of the median voter. Thus the devalued exchange rate of the Chinese model is an unpopular model. On implementing it, the government should prepare itself to lose the support of great part of its electoral basis that will be affected by a reduction in purchasing power.

There remains, too, the issue of how to maintain a depreciated exchange rate. Devaluated exchange rates lead to trade surpluses. According to national accounts identity, such surpluses must be compensated either with an increase in national product, or with a lowering of private consumption, government consumption or of investment. It is hard to imagine that the currency devaluation can lead to an increase in national product that is both substantial and fast enough, without having to resort to a reduction in consumption and investment. Drops in consumption are unpopular while reductions in investment will slow down economic growth. In other words, a devalued exchange rate policy has collateral effects that run against the interests of large segments of the population or are damaging to economic growth itself.

Popularity is not an issue for the Chinese government, since it operates as a dictatorship. In a democracy such as Brazil on the other hand, unpopular measures are punished in the voting booths.

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