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with Exchange Rate-based Stabilizations:
Evidence from Uruguay's
1978 and 1991 Programs**

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FISCAL POLICY AND THE BUSINESS CYCLE ASSOCIATED WITH EXCHANGE RATE-BASED

STABILIZATIONS: EVIDENCE FROM URUGUAY'S 1978 AND 1991 PROGRAMS

by

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Abstract

The initial stages of exchange rate-based (e-r-b) stabilizations have been generally characterized by a consumption boom, a deterioration of the trade balance and the current account, and an appreciation of the real exchange rate. It is only at the later stages that the economy falls into recession. To the extent that tax revenues are linked to consumption (through the VAT, sales taxes or import tariffs), the consumption boom should therefore generate an endogenous increase in tax revenues. Furthermore, since many countries that have attempted these programs were heavily indebted in foreign currency, the appreciation of the real exchange rate should generate an endogenous reduction in real interest payments. In summary, the endogenous improvement in the fiscal balance that may occur due to forces unleashed in the initial stages of an e-r-b stabilization program turn it into an inappropriate measure of fiscal performance. This paper documents the links between the business cycle associated with exchange-rate based stabilizations and the behavior of tax revenues, government expenditures and the fiscal deficit. A general methodology to characterize fiscal policy in e-r-b stabilizations is developed and Uruguay's two most recent e-r-b stabilization programs are used to illustrate these links, but the issues that surface from the analysis are of general concern.

¹ This paper is based on Chapter I of the author's Ph.D dissertation at The University of Chicago. I would like to especially thank Guillermo Calvo, Guillermo Mondino, Carmen Reinhart and Carlos Végh for very useful discussions on various aspects of this paper.

1. INTRODUCTION

The initial stages of exchange rate-based stabilizations in chronic inflation countries have been generally characterized by a consumption boom, a deterioration of the trade balance and the current account and an appreciation of the real exchange rate. It is only at the later stages that consumption contracts and the economy falls into recession.

Most of the literature documenting these empirical regularities (see Kiguel and Liviatan 1992, Végh 1992, Calvo and Végh 1994) has largely overlooked the links between the business cycle associated with exchange rate-based stabilizations and fiscal behavior, even though there is considerable agreement that sustained fiscal adjustment is a condition sine qua non for the success of a stabilization program.

For example, Kiguel and Liviatan (1992) argue that in most stabilizations, the initial reduction in the fiscal deficit was later reversed and that "the systematic nature of fiscal reversals lends support to the view that agents might have treated stabilizations as temporary measures, which is important for understanding the nature of the cycle". Calvo and Vegh (1994) state that "more often than not, the failure of stabilization plans reflects the absence of a lasting fiscal adjustment. At the other end of the spectrum, Vegh (1992) argues that the slow convergence of inflation to the new rate of devaluation and the corresponding real appreciation of the domestic currency proved fatal even for fiscally sound programs such as those of Chile and Uruguay in the late 1970s. This suggests fiscal adjustment might be a necessary but not a sufficient condition to stabilize successfully.

Given the business cycle characteristics of exchange rate-based

stabilizations, determining what constitutes a lasting fiscal adjustment or a fiscally sound program is not a straightforward task. The consumption boom and the appreciation of the real exchange rate that have been generally observed at the initial stages of e-r-b stabilizations, raise the possibility of an endogenous response in fiscal behavior.

In the first place, to the extent that tax revenues are linked to consumption (through the VAT, sales taxes, or import tariffs) the consumption boom at the onset of an e-r-b stabilization program should endogenously increase tax revenues. Second, since many countries that have carried out these programs were highly indebted in foreign currency, the appreciation of the real exchange rate in the initial stages of e-r-b programs generates an endogenous reduction in real interest payments. In summary, the endogenous improvement in the fiscal balance (due to the cyclical increase in revenues and the cyclical reduction in interest payments) that may occur due to the forces unleashed in the initial stages of an e-r-b stabilization program turn it into an inappropriate measure for characterizing fiscal policy. In particular, the fiscal balance may turn out to be uninformative in terms of establishing the sustainability or unsustainability of the stabilization program.

While intuitively it is easy to see why tax revenues could rise with economic activity, it is much less obvious why government non-interest expenditures may rise throughout the entire stabilization program as inflation falls.

The purpose of this paper is to document the links between the business cycle associated with exchange-rate based stabilization on the one hand, and the behavior of tax revenues, government expenditures, and the fiscal deficit on the other. A methodology to characterize fiscal policy in e-r-b

stabilizations is developed and Uruguay's two most recent e-r-b stabilization programs are used to illustrate of these links (comparative advantage in the use of the detailed information required for this exercise is the reason for the choice) but the issues that surface from the analysis are of general concern.²

The rest of the chapter is organized as follows. Section 2 presents an outline describing the ingredients of Uruguay's 1978 and 1991 stabilization programs as well as the external environment in which they were carried out. Section 3 reviews the stylized behavior of the main macroeconomic variables observed during Uruguay's stabilization programs. The regularities presented in this section will be mainly those already stressed by the literature; i.e., the dynamic behavior of the real sector, the current account, and relative prices. However, close attention will be paid to the components of the current account, the evolution of real wages and the behavior of the financial sector. This section will also serve as background material for Section 4 which will document the links between the business cycle associated with exchange rate-based stabilization and the behavior of tax revenues, government expenditures, and the fiscal deficit during Uruguay's stabilization programs. A methodology to characterize fiscal policy in exchange rate-based stabilizations is developed. Section 5 contains some final remarks.

² For a theoretical model that discusses the links between e-r-b stabilizations, the consumption cycle and the fiscal balance, see TALVI (1995)

2. OUTLINE OF THE OCTOBER 1978 AND DECEMBER 1990 PROGRAMS

2.1 The October 1978 Program ³

Between 1955 and 1973 Uruguay's macroeconomic performance was characterized by very low rates of growth (less than 1% per year), high and volatile rates of inflation and recurrent balance of payments crises. Structural problems were also pervasive. Industrial policy geared towards promoting import substitution relied on quotas, high tariffs and other trade barriers while exports were based on a few traditional commodities. Also, the economy was financially repressed through foreign exchange controls, controls on the movement of international capital, regulated interest rates and government directed allocation of credit to the private sector. Extensive price controls affected agricultural products and consumer goods prices, severely distorting the price structure.

In the mid 1970s, fifteen months after a military regime took over the government and one year after the first oil shock, government policy veered toward a radically different path. Between 1974 and late 1978 all restrictions on capital flows were eliminated, the dual foreign exchange market was unified, interest rates were freed, guidelines for credit allocation by sector and Central Bank rediscounts to commercial banks were discontinued and barriers to entry into banking were lifted. Price controls were progressively removed. According to Hanson and De Melo (1985) the proportion of agricultural products under price controls fell from 75% to 14% during this period, whereas the proportion of the CPI that was under price controls fell from 96% to 16%. Trade policy shifted

³ This section has benefited from discussions with Jose Gil Diaz and Carlos Steneri who shared with the author their memories of a period he was too young (in economic terms) to remember.

towards strong incentives to exports. Export taxes for traditional commodity exports were progressively lowered and industrial exports were subsidized to compensate exporters for the bias of high protection against export activities. Import quotas were abolished in 1975.

Macroeconomic performance during 1975-78 reflected the impact of the policy adjustments. Growth accelerated to an average rate of 4% per year, fixed investment rose from an average of 9% of GDP during the early 1970s to an average of 14% of GDP, and the balance of payments recorded overall surpluses during the period. Furthermore, the public sector deficit was reduced from 5.3% and 4.5% of GDP in 1974 and 1975, respectively, to less than 1% of GDP in 1977 and 1978.

However, the control of inflation proved to be more elusive. Although it declined from an average rate of more than 90% during 1972-74 to an average of 52% during 1975-78, it still remained high and volatile. According to Blejer and Gil-Diaz (1986) it was the inability to control inflation that persuaded the authorities to change their stabilization strategy in October 1978. That month the stabilization program that came to be known as "the tablita" was launched, with the objective of reducing inflation to world levels. The main ingredients of the program were the following:

Monetary Policy. The exchange rate was used as the nominal anchor of the system. The crawling peg policy pursued since 1972 was replaced by the announcement of a schedule of monthly devaluations against the U.S. dollar several months in advance. ⁴ The rate of devaluation was to be

⁴ More precisely, the value of the daily exchange rate was announced six to nine months ahead and published in a table in local newspapers. This is the origin the name "tablita" (which means small table).

progressively lowered in the direction of a fixed exchange rate. However, (in contrast to the December 1990 program) the first year of the program the rate of devaluation decelerated only slightly from a 4-quarter change of 32% through October 1978 to 26% through October 1979. Subsequently, it was gradually reduced to a 4-quarter change of 17% in the last year of the program.

No specific target for monetary aggregates was established. According to Hanson and de Melo (1985) this was due to the belief by the monetary authorities that "because the removal of controls on capital flows had integrated the domestic and world capital markets, domestic interest rates were independent of local monetary policy and closely followed world interest rates adjusted for devaluation. As a result, any attempt to decrease (or increase) local money emission would simply produce an offsetting increase (or decrease) in capital flows and international reserves at the given world interest rate. That would maintain aggregate demand and monetary growth unchanged, while leaving inflation unaffected."

No specific attempt was made by the Central Bank to control credit to domestic residents by the private banking system. On the contrary, credit was facilitated through a series of measures. By the end of 1978 legal reserve requirements were unified at 20% and they were altogether eliminated in May 1979, while the ratio of liabilities to capital was established at 20 in 1979 and increased to 25 in 1981. Although private commercial banks intermediated nearly 50% of the net capital inflows to the private sector recorded during the first three years of the program, it is widely believed that supervision was relatively lax during this period.

There was also a lack of control on credit granted by official banks. The

powerful Banco de la Republica (a state-owned commercial-development bank), out of whose emission department the Central Bank was created in 1968, was virtually uncontrollable at the time. The Banco Hipotecario (a state-owned mortgage bank), engaged in big scale financing of housing projects at subsidized rates partially funded through external borrowing, which not only created demand pressures but resulted in fiscal losses that became evident a few years later. The real credit index (measured in units of traded goods) of the Banco de la Republica and the Banco Hipotecario, rose from 100 the year before the program was launched to 215 and 442, respectively, in 1981.

Fiscal Policy. The fiscal deficit had already been reduced to less than 1% of GDP in 1977 and 1978 and no new fiscal measures were implemented when the program was launched. In late 1979, a major reform of the tax system was implemented but the main objective was to improve the allocation of resources rather than enhance revenues.

Incomes Policies. Semi-annual public sector wage increases were, for all intents and purposes, indexed to past inflation. Social security benefits were adjusted once a year, and indexed to the rate of inflation of the previous year.⁵ As inflation declined substantially in the final two years of the program, this adjustment rule turned out to be a very important source of endogenous growth in real government expenditures.

Private sector wages were adjusted semi-annually by decree. However the officially decreed adjustments were seen as a guideline for minimum increases (at a time when the activities of labor unions were prohibited by the military government), and effective increases were usually above

⁵ More precisely, social security benefits were indexed to the General Wage Index.

the guideline.

Structural Policies. The main structural reform during this period was in the trade liberalization area. In late 1978, a timetable was introduced for the unification of existing import taxes into a global tariff and the reduction of this tariff from 150% to a maximum of 35% over the period 1979-85. Although trade liberalization was viewed essentially as a measure to improve resource allocation by promoting export activities, trade policy was also used for stabilization purposes. During the stabilization program, the government enacted selective cuts for specific items whose prices were deemed to have grown excessively. The timetable was interrupted in 1983.

The External Environment. Although initially favorable, the external environment deteriorated significantly during the course of the program. The terms of trade vis à vis Argentina - as measured by Argentina's price level in real dollars - improved substantially the year before the program was launched, and continued to improve very rapidly until February 1981 (Argentina's real dollar price index rose from 76 in 1977 to 201 in 1980). After a series of devaluations, Argentina's real dollar price index collapsed to 105 in 1981 and to 40 in 1982.

U.S dollar real interest rates, which stood at 6% the year before the program was launched rose very significantly during the course of the program. By 1981, the third year of the program, real interest rates had reach 14.5% and remained at that level throughout most of 1982.

2.2 The December 1990 Program ⁶

After the debacle of "the tablita" (which ended with a step devaluation of 140%) and the depression that followed ⁷ output started to recover in 1985 towards its trend levels only to stagnate again in 1988 and to remain stagnant until 1990. Inflation was relatively stable although at very high levels hovering between 60% and 90% between 1985 and 1989. The fiscal deficit, although well below the heights of the year the October 1978 program collapsed, remained also high, averaging 5.5% of GDP a year during 1985-89. At the same time the process of structural reform slowed down considerably during this period. However, trade liberalization continued and the maximum tariff was lowered to 45%.

As a consequence of the cumulative fiscal deficits, external debt of the public sector -which jumped to very high levels in 1982 and 1983- continued to grow at unsustainable rates.⁸ By 1988 it was already becoming apparent that it would be increasingly difficult for the government not only to continue to increase its external indebtedness but to renew its existing debt.⁹ With inflation already reaching 90% by the end of 1989, the external constraint put the country in a very delicate situation. If

⁶ This section has substantially benefited from the author's first hand policy discussions with government authorities and IMF Staff.

⁷ Output fell by 15.4% between 1982 and 1984.

⁸ Between 1984 and 1988 the external debt of the public sector in real dollars (deflated by the U.S. wholesale price index) grew at an average rate of 10% a year.

⁹ Commercial bank credit had dried-up since the Mexican crisis in 1982. International organizations started to beef-up their conditionality on new balance of payment loans. The local U.S. dollar denominated bond and bill market -a very important source of autonomous financing for the Uruguayan government- was also showing signs of exhaustion, and the government had to increase rates and reduce maturities only to renew the existing stock. I am grateful to Ricardo Lopez Murphy for bringing up to my attention this important point.

fiscal deficits of around 6% of GDP had to be financed through money creation that would have implied inflation rates well into the three digit area.

The situation was made even more complicated by a constitutional reform voted in the November 1989 presidential election. The reform indexed quarterly adjustments of social security benefits (which at the time represented about one half of the government budget) to past inflation. The pre-reform system consisted of yearly adjustments based on past inflation. The increase in the periodicity of the adjustments implied a real increase in social security expenditures -at constant rates of inflation- between 1.5% to 2% of GDP. Furthermore, the reform created a constitutionally-sanctioned inverse relationship between real social security expenditures and inflation. From that point on, any attempt to reduce the inflation rate would have to face this additional hurdle.

In the context just described, a substantial fiscal adjustment seemed unavoidable if inflation was to kept safely below the three digit mark. The new administration, headed by the Blanco Party, took office on March 1, 1990 and rapidly sent to Parliament an extremely tough fiscal package (the adjustment was worth approximately 4% of GDP) which consisted mainly of tax increases. The package was approved in one month with the support of the Colorado Party which had just left office. The bipartisan support for the fiscal package and the velocity of its approval by Parliament suggests that the political community was well aware of the dangers of inaction.

Simultaneously, Uruguay accelerated the pace of the Brady Plan negotiations started by the previous administration, to obtain a debt reduction agreement and long-term refinancing for the remainder of the debt. The Brady agreement was concluded in February 1991.

Notwithstanding the approval of the fiscal package, the Central Bank continued to devalue at a very rapid rate during 1990 (the annualized rate of devaluation in the last three months of that year was 120%). It is difficult to ascertain the logic of that policy. There are two possible explanations:

(i) the Central Bank was very short of liquidity ¹⁰ and therefore resorted to a higher inflation tax than was warranted by the fiscal situation to reconstitute its liquidity,

(ii) Argentina and Brazil, in February and March 1990, respectively, initiated stabilization programs of their own. Dollar prices in both countries shot up dramatically which implied a non-less dramatic improvement in Uruguay's terms of trade vis à vis both countries. The improvement in the regional terms of trade created pressures for the real exchange rate to appreciate vis a vis the U.S. dollar, to which the domestic currency is pegged. The Central Bank may have initially attempted to resist the real appreciation by accelerating the rate of devaluation.

¹⁰ Gold reserves are high but de facto very illiquid. The new administration engaged in small scale gold swaps to obtain liquidity only at the expense of a very harsh political confrontation.

By the end of 1990 the inflation rate reached 130%. On December 26, 1990 the Minister of Finance announced the launching of the stabilization program with the objective of reducing the inflation rate down to 30% in a period of three years.¹¹ The ingredients of the program were the following:

Monetary Policy. The exchange rate was used as the nominal anchor of the system but allowed to fluctuate, against the U.S. dollar, within a 2.5% band. The Central Bank would announce every day the rate at which it was prepared to buy or sell foreign currency (the lower and upper limits of the band, respectively) but made no formal commitments on a specific monthly rate of devaluation (as opposed to what happened during the "tablita"). However, it was well understood by economic observers that the primary objective of the authorities was to substantially reduce the rate of inflation and that the nominal devaluation rate would cease to accommodate past inflation. The rate of devaluation was halved to an annual rate of 60% in January 1991 and gradually evolved to its final target of 27% a year as of May 1993. The deceleration in the rate of devaluation was accompanied by a gradual broadening of the exchange rate band to a 7% width.¹²

No specific target for monetary aggregates was established. The program was designed in such a way that any unanticipated increase in the monetary

¹¹ A more exact chronology is as follows: the stated objective was to reduce inflation to 30% in one year. However, that objective was rapidly abandoned and by March 1991 the government switched to a gradual strategy -although retaining the final objective- to reduce inflation according to the following path: 70% in 1991, 50% in 1992 and 30% in 1993.

¹² The reason behind the monetary authorities' decision to establish a band was to avoid the perception that the Central Bank was maintaining the exchange rate artificially low. This decision is yet another reflection of the lasting psychological impact of the failure of the "tablita" program.

base should translate into an equivalent amount of reserve accumulation. This policy implied that the Central Bank would not attempt to sterilize - through peso denominated open market operations- unexpected increases in the monetary base. The view of the monetary authorities was that unexpected increases in the monetary base mainly responded to unexpected increases in the transactions demand for money, and therefore, no policy action was necessary. Furthermore, the high asset dollarization of Uruguay's economy (and the fact that domestic money is essentially used for transaction purposes) implied that sterilization operations could only be carried out at the cost of a substantial rise in domestic currency interest rates, which in turn would have important fiscal costs but no meaningful effect on aggregate demand.¹³

No specific attempts were made by the Central Bank to control credit to domestic residents by the private banking system although supervision was substantially tightened. However, credit granted by official banks (which represent about half of the banking system) was restricted, through the establishment of quantitative targets, to evolve in accordance with the nominal objectives of the program.¹⁴ The real credit index (measured in units of traded goods) of the Banco de la Republica and the Banco Hipotecario rose from 100 the year before the program to 131 and 192, respectively, in 1993.

¹³ For supporting empirical evidence on the reduced effectiveness of monetary policy in a highly dollarized economy see Hoffmaister and Vegh (1994)

¹⁴ Subsidized credit on new loans by official banks was completely eliminated.

Fiscal Policy. As we have already described above, measures to reduce the fiscal deficit by approximately 4% of GDP were taken a few months before the program was launched. However, it was well understood at the time that reducing inflation would eventually bring about an increase in real social security expenditures of about the same magnitude. As a consequence, there were to be repeated attempts by the government -which failed in all instances- to get Parliament to approve a comprehensive social security reform. This reform was perceived as necessary by the government to ensure the long-run fiscal sustainability of the program (the issue of sustainability will be discussed in detail in Section 4.4).

Incomes Policies. Public sector quarterly wage adjustments were restricted to evolve in accordance with the nominal objectives of the program. This meant that the target inflation rate -instead of past inflation- would be used to determine quarterly wage adjustments for the public sector employees. The government was broadly in compliance with the announced policy for the first two years of the program. However, since inflation only slowly converged to its yearly targets, real wages declined substantially during the execution of the program. Social unrest at the end of the second year of the program prompted the government to make concessions which made up about half of the loss in real wages of the previous two years.

Quarterly adjustments of social security benefits were indexed, by constitutional mandate, to past inflation. As inflation declined during the course of the program, this institutional arrangement turned out to be an important source of endogenous growth in real government expenditures.

As for the private sector the government adopted the policy of gradually disengaging as a participant in the collective wage bargaining process, initially providing guidelines for wage increases and eventually letting the unions and the employers negotiate on their own. Although quarterly, backward-looking, CPI-based adjustments continued to be the norm, as the program evolved they started to be gradually replaced by a wider variety of arrangements which were based on variables such as the nominal exchange rate and labor productivity.

Structural Policies. At its inception, the program contained no major structural change -such as public sector employment reduction or social security reform- with the ability to produce lasting expenditure reductions. The main structural changes were made in the trade liberalization area. The maximum tariff was reduced to 20%, non-tariff barriers were substantially curtailed and a free-trade agreement was signed with Argentina, Brasil and Paraguay. Although timidly, a privatization process that affected port services, the insurance industry, the airline company and state owned banks was also initiated.¹⁵

The External Environment. The stabilization program was carried out in a particularly favorable external environment. The terms of trade vis a vis Argentina -as measured by Argentina's price level in real dollars- improved dramatically the year before the program was launched and continued to improve throughout the program (Argentina's real dollar price index rose from 72 in 1989 to 199 in 1993).¹⁶

¹⁵ It is important to keep in mind that public sector ownership of productive concerns is not as widespread in Uruguay as in other Latin American countries which have undertaken massive privatization programs.

¹⁶ Most of the improvement actually occurred before Argentina's Convertibility Plan was initiated in April 1991.

In addition, U.S. dollar real interest rates fell from an average of 8.4% in 1990 to 3.2% in 1993. The latter is a significant development due to the high dollarization of deposits and credit and to the high stock of floating-rate, dollar denominated public sector debt.

3. THE STYLIZED FACTS

This section presents a stylized description of the behavior displayed by the main macroeconomic variables during the October 1978 -November 1982 failed e-r-b stabilization program and the December 1990 program which is still in place. Needless to say, that any reference to the empirical regularities observed at the later stages or at the termination of a program will only refer to the October 78 stabilization. Tables 1.1 and 1.2 report the figures corresponding to the macroeconomic variables described in this section.

3.1 The Nominal Variables

1. Nominal interest rates tend to fall together with the deceleration in the rate of devaluation and rise when the rate of devaluation is accelerated at the end of the program. However, the gap between the dollar returns on domestic currency deposits vis à vis dollar deposit rates grows at the inception of the program, remains high for the duration of the program and falls sharply when the program is discontinued.¹⁷

¹⁷ Let i be the domestic rate of interest, i^d the domestic U.S. dollar interest rate and ϵ the devaluation rate. The gap between U.S. dollar returns on domestic currency deposits and domestic U.S dollar interest rates is given by $(i-\epsilon)-i^d$.

TABLE 1.1 THE OCTOBER 1978 PROGRAM

	One year before	First year	Second year	Third year	Fourth year	At termination date (£)
1. <u>NOMINAL VARIABLES</u> (a)						
Devaluation	32.0%	26.0%	14.0%	19.0%	17.5%	138.0%
Inflation	42.0%	70.0%	62.5%	32.0%	17.0%	30.0%
Interest Rates	47.0%	40.0%	49.0%	45.0%	53.0%	80.0%
Premium over arbitrage	7.0%	8.0%	15.0%	11.4%	9.0%	-39.0%
2. <u>REAL SECTOR</u> (b)						
Output	2.8%	7.4%	11.8%	11.9%	0.0%	n.a
Consumption	0.0%	3.5%	10.4%	11.0%	-1.5%	n.a
Private Investment	0.8%	44.6%	75.4%	74.4%	9.0%	n.a
3. <u>EXTERNAL SECTOR</u> (c)						
Current Account	-97	-215	-412	-260	-250	n.a
Trade Balance	-18	-229	-352	-209	-8.3	n.a
Industrial exports index	100	115	114	114	94	n.a
Imports of consumption goods index	100	166	331	438	172	n.a
Imports of capital goods index	100	134	186	150	94	n.a
Imports of Intermediate goods index (excl oil)	100	151	154	116	78	n.a

(a) The devaluation and inflation rates are 4-quarter changes. Interest rates are end of period 3-mth deposit rates in domestic currency. Premium over arbitrage is defined as the difference between the U.S. dollar returns on domestic currency deposits and the U.S. dollar deposit rates.

(b) Percentage deviation with respect to linear trend.

(c) The current account and the trade balance are expressed in millions of real dollars, deflated by the U.S. wholesale price index. Export and import indexes are based on figures expressed in millions of real dollars.

n.a. not applicable

TABLE 1.1 THE OCTOBER 1978 PROGRAM (continued)

	One year before	First year	Second year	Third year	Fourth year	At termination date (f)
4. RELATIVE PRICES (d)						
Real Exchange Rate index	100	0.85	0.68	0.67	0.66	126
Real Wage Index (in units of traded goods)	100	120	161	204	191	90
Real Wage Index (in units of home goods)	100	87	83	94	89	76
Real interest rates on domestic currency deposits	2.0%	-21.0%	2.4%	13.0%	25.0%	13.0%
Real interest rates on foreign currency	-4.0%	-27.0%	-9.0%	3.0%	16.0%	290.0%
5. FINANCIAL SECTOR (e)						
Real Credit index (in units of traded goods)	100	183	254	282	187	n.a
Real Credit index (in units of home goods)	100	147	169	178	293	n.a
Capital Inflows - Private sector	193	192	397	117	-702	n.a
Capital Inflows - intermediated through domestic banks	-28	87	174	56	7	n.a
% of total capital inflows intermediated through domestic banks	n.a	45.0%	44.0%	48.0%	n.a	n.a

(d) The real exchange rate is the relative price of traded vis a vis home goods. Nominal wages are converted into U.S. dollars and deflated by the U.S. wholesale price index to calculate real wages in units of traded goods. Real wages, in units of home goods, are obtained by dividing nominal wages by the CPI. The real interest rate on domestic currency deposits is the 3-mth deposit rate deflated by the CPI. The real interest rate on foreign currency deposits is the domestic currency returns on 3-mth U.S. dollar deposits, deflated by the CPI.

(e) The real credit index in units of traded goods is the stock of total credit converted into U.S. dollars and deflated by the U.S. wholesale price index. The real credit index in units of home good is the stock of total credit expressed in domestic currency and deflated by the CPI. Capital Inflows are expressed in millions of real dollars, deflated by the U.S. wholesale price index.

(f) Termination date compares the first quarter after the program is discontinued to the quarter preceding the interruption of the program.

n.a. not applicable

TABLE 1.2 THE DECEMBER 1990 PROGRAM

	One Year before	First year	Second year	Third year
1. <u>NOMINAL VARIABLES</u> (a)				
Devaluation	95.0%	62.0%	43.0%	27.0%
Inflation	129.0%	84.0%	60.0%	52.0%
Interest Rates	97.0%	70.0%	40.0%	39.0%
Premium over arbitrage	-1.5%	8.0%	10.0%	7.0%
2. <u>REAL SECTOR</u> (b)				
Output	-1.8%	0.0%	5.3%	5.0%
Consumption	-5.3%	-1.5%	10.4%	13.0%
Private Investment	-20.0%	-7.0%	26.0%	35.0%
3. <u>EXTERNAL SECTOR</u> (c)				
Current Account	78	19.5	-53	-172
Trade Balance	195	28	-107	-305
Industrial exports index	100	106	110	111
Imports of consumption goods index	100	132	225	316
Imports of capital goods index	100	146	188	210
Imports of Intermediate goods index (excl oil)	100	114	134	143

(a) The devaluation and inflation rates are 4-quarter changes. Interest rates are end of period 3-mth deposit rates in domestic currency. Premium over arbitrage is defined as the difference between the U.S. dollar returns on domestic currency deposits and the U.S. dollar deposit rates.

(b) Percentage deviation with respect to linear trend.

(c) The current account and the trade balance are expressed in millions of real dollars, deflated by the U.S. wholesale price index. Export and import indexes are based on figures expressed in millions of real dollars.

n.a. not applicable

TABLE 1.2 THE DECEMBER 1990 PROGRAM (continued)

	One Year before	First year	Second Year	Third Year
4. <u>RELATIVE PRICES</u> (d)				
Real Exchange Rate index	100	80	72	61
Real Wage Index (in units of traded goods)	100	137	155	195
Real Wage Index (in units of home goods)	100	110	112	116
Real interest rates on domestic currency deposits	-10.0%	-1.4%	1.7%	-6.0%
Real interest rates on foreign currency	-7.0%	-8.3%	-7.5%	-12.0%
5. <u>FINANCIAL SECTOR</u> (e)				
Real Credit index (in units of traded goods)	100	112	155	182
Real Credit index (in units of home goods)	100	87	100	98
Capital Inflows - Private sector	-52	129	55	168
Capital Inflows - intermediated through domestic banks	-64	-65	-49	5
% of total capital inflows intermediated through domestic banks	n.a	n.a	n.a	0.2%

(d) The real exchange rate is the relative price of traded vis a vis home goods. Nominal wages are converted into U.S. dollars and deflated by the U.S. wholesale price index to calculate real wages in units of traded goods. Real wages, in units of home goods, are obtained by dividing nominal wages by the CPI. The real interest rate on domestic currency deposits is the 3-mth deposit rate deflated by the CPI. The real interest rate on foreign currency deposits is the domestic currency returns on 3-mth U.S. dollar deposits, deflated by the CPI.

(e) The real credit index in units of traded goods is the stock of total credit converted into U.S. dollars and deflated by the U.S. wholesale price index. The real credit index in units of home good is the stock of total credit expressed in domestic currency and deflated by the CPI.

n.a. not applicable

2. Inflation falls by less than the rate of devaluation (it even rises at the beginning of the October 78 program) and remains above it through the life of the program. It converges towards the devaluation rate at the later stages of the program.

3. When the program is terminated there is a step devaluation of the nominal exchange rate together with an acceleration in the rate of change.

3.2 The Real Sector

1. Consumption (see also imports of consumption goods) rises in the initial stages of the stabilization program and falls sharply when the program is terminated (in the October 78 program consumption started to fall before the end of the program).

2. Private investment rises in the initial stages of the program and declines sharply when the program is terminated (see also imports of capital goods). In the October 78 program investment started to contract before the end of the program.

3. Output expands in the initial stages of the program and contracts when the program is terminated (again, in the October 78 program output started to contract before the program was actually terminated).

3.3 The External Sector

1. The trade balance deteriorates in the initial stages of the program and improves sharply, jumping to a surplus, when the program is discontinued (in the October 78 program the trade balance started to improve before the end of the program). The current account balance shows a similar pattern although its movements are less pronounced.

2. Industrial exports do not decline during the life of the program but the growth rate decelerates. (Total exports can rise or fall depending on the behavior of commodity exports which are very volatile). Imports of consumption, capital and intermediate goods increase sharply during the initial stages of the program and decline sharply when the program is discontinued (in the October 78 program, they started to decline before the end of the program). Therefore, the behavior of the trade balance is essentially driven by the behavior of imports .

3.4 Relative Prices

1. The real exchange rate (defined vis à vis the anchor) appreciates throughout the life of the program. When the program is terminated the real exchange rate jumps upward to a new equilibrium level and continues to depreciate thereafter together with the acceleration in the nominal devaluation. It settles at an average level which is higher than the pre-stabilization level.

2. Real wages, measured in units of traded goods, rise sharply throughout the program and decrease, also sharply, when the program is discontinued. Real wages, measured in units of non-traded goods, may either rise or fall.

3. Real interest rates on domestic and foreign currency deposits fall very sharply, turning negative at the beginning of the October 78 program. They start to rise and turn strongly positive immediately before the program was discontinued. In the December 90 program real interest rates on foreign currency deposits (which are the relevant ones in a banking sector which is currently 80% dollarized) are already negative before the beginning of the plan and remain negative throughout.¹⁸

3.5 The Financial Sector

1. Bank credit to domestic residents, measured in units of traded goods, increases very substantially in the initial stages of the program and sharply contracts when the program is terminated following a similar pattern to the one displayed by consumption and investment (the spending categories that bank credit is presumed to finance). Bank deposits of domestic residents mimic the behavior of bank credit.

2. During the October 1978 stabilization program approximately 46% of the surplus in the capital account of the private sector is generated by inflows of capital intermediated through domestic banks. In other words, domestic banks tap foreign sources to expand credit to domestic residents. In contrast, through the December 1990 program, local banks are exporters of capital abroad, financing the flow of new credit with deposits of domestic residents.

3. During the recessionary phase of the October 1978 program (the last year of the program) a financial crisis developed. Several banks were

¹⁸ Let π be the inflation rate. Real interest rates on domestic currency deposits and foreign currency deposits are defined as $r = i - \pi$ and $r^* = (i^* - \epsilon) - \pi$, respectively.

bailed out by the government at a substantial fiscal cost (for a detailed account of the banking crisis in Uruguay at the beginning of the 80's see Pérez-Campanero and Leone, 1991 and Roldos, 1991).

4. FISCAL POLICY AND THE PUBLIC SECTOR

4.1 The Characterization of Fiscal Policy

The task of how to precisely characterize fiscal policy during an e-r-b stabilization program is not straightforward. The boom in private consumption and the appreciation of the real exchange rate observed in the initial phases of a stabilization program are two sources of endogenous fiscal behavior.

First, to the extent tax revenues are linked to consumption (through the VAT, sales taxes and import tariffs) the consumption boom generates an endogenous rise in tax revenues in the initial phase of the stabilization program. Since consumption in general rises at a faster pace than output, tax revenues will also tend to increase when expressed in terms of GDP.¹⁹

Second, the appreciation of the real exchange rate has an independent effect on the fiscal balance by reducing foreign currency real interest payments (as well as net external debt) for countries which are net external debtors. This has been the case of several highly indebted Latin American countries.

¹⁹ Furthermore, the increase in consumption spending will increase the transactions demand for money, which will translate in higher reserve accumulation and other things equal (i.e. no attempt by the Central Bank to sterilize its foreign exchange intervention) higher net interest receipts on international reserves.

External factors may also play a role in determining how precisely fiscal policy is characterized, if they occur contemporaneously to the stabilization program. For example, U.S. dollars interest rates may change temporarily thereby increasing or reducing, also temporarily, interest payments on net external debt. Most importantly, a temporary reduction in U.S. dollar interest rates may induce a boom-recession cycle in consumption similar to the one observed in exchange-rate-based stabilizations. Since the main conclusions of this paper depend on the existence of a boom-recession cycle in consumption, they are also applicable when the consumption cycle is mainly generated by external factors rather than domestic exchange rate policy.

In summary , the endogenous forces that are unleashed in the initial stages of stabilization programs, namely, the increase in consumption and the appreciation of the real exchange rate, tend to improve temporarily the fiscal balance vis à vis the initial situation. As a consequence, the fiscal balance is an inappropriate measure to characterize fiscal policy during stabilization programs. In particular, it might be misleading in terms of evaluating the sustainability or unsustainability of the stabilization program. (For example, if expenditures rise together with the endogenous growth in revenues and/or the fall in interest payments, the measured fiscal balance might not show any signs of deterioration until the final stages of the program, when the consumption boom peters out).

4.2 The Equations of the Public Sector and the Cyclically Adjusted Deficit

To isolate the cyclical components of fiscal policy (i.e. endogenous to the stabilization program) it is necessary to analyze the behavior of revenues and expenditures separately. Moreover, we need to explore the relationship between consumption and revenues and to distinguish non-interest government expenditures from interest payments. Subsequently, revenues and expenditures are adjusted appropriately to come up with a measure of the cyclically-adjusted fiscal balance. The cyclically-adjusted fiscal balance will be used to characterize fiscal policy in e-r-b stabilizations. It is in this context that concepts such as fiscal soundness and sustainability become clear.

Let us first introduce some notation and definitions. The current overall fiscal balance (D) in terms of GDP is given by the following expression:

$$D = R/y - [g/y + \tau/y + (r^*b^f/y)e + rb^d/y] \quad (1)$$

where R , g , τ , and y are real revenues, government expenditures (excluding social security), social security expenditures and real output respectively; r^* is the world real interest rate, e is the real exchange rate, r is the domestic real interest rate, b^f is the real stock of foreign currency debt and b^d is the real stock of domestic currency debt.

The primary fiscal balance in terms of GDP (PD), which excludes interest payments is given by:

$$PD = R/y - (g/y + \tau/y) \quad (2)$$

The cyclically-adjusted fiscal balance (CAD) will be defined as:

$$CAD = R^p/y^p - [G/y^p + (r \cdot b^e/y^p) e^p + r b^d/y^p] \quad (3)$$

where R^p and y^p are the trend levels of real revenues and real GDP respectively; and e^p is the pre-stabilization level of the real exchange rate.²⁰

The cyclically-adjusted primary fiscal balance (CAPD) is defined as:

$$CAPD = R^p/y^p - (g/y^p + \tau/y^p) \quad (4)$$

The actual numbers corresponding to equations (1) through (4) as well as their components are shown in Table 1.3 (the October 1978 program) and Table 1.4 (the December 1990 program).

²⁰ The trend levels of output (y^p) were calculated by fitting a deterministic linear trend for the sample period (1974-1993). Alternative methods of trend-cycle decomposition yield similar results to the ones presented in the paper. To isolate the effects on real interest payments on foreign currency debt, the real exchange rate prevailing the year before the stabilization program was used to compute them. However, we should be cautious not to interpret e^p as the trend or equilibrium level of the real exchange rate. The methodology used to calculate the trend level of real revenues R_p is described in the Appendix.

TABLE 1.3 THE PUBLIC SECTOR DURING THE OCTOBER 78 PROGRAM (*)
(in percent of GDP)

	Current Values								
	1974	1975	1976	1977	1978	1979	1980	1981	1982
1. Revenues	18.6	16.2	19.7	20.5	20.1	19.3	20.3	23.2	20.8
2. Expenditures	22.1	20.0	20.8	20.5	20.3	18.0	19.4	23.61	28.6
Social Security	7.5	7.0	7.6	7.3	7.1	6.2	7.5	1.0	13.7
Other	14.6	13.0	13.2	13.2	13.2	11.8	11.8	12.6	14.9
3. Primary Balance (1-2)	-3.5	-3.7	-1.1	-0.0	-0.3	1.3	0.9	-0.5	-7.7
4. Interest Payments	0.6	0.9	1.2	1.0	0.8	0.6	0.4	0.3	0.9
5. Other Revenues	-1.2	0.5	0.1	0.3	0.4	0.2	1.1	0.3	-0.5
6. Overall Balance (3-4+5)	-5.3	-4.2	-2.2	-0.7	-0.7	0.9	1.6	-0.5	-9.1

(*) Revenues and expenditures refer to the Central Government and the Social Security System. Interest payments include payments on net Central Bank debt. Other net revenues include the surplus of public enterprises and other government agencies.

TABLE 1.3 THE PUBLIC SECTOR DURING THE OCTOBER 78 PROGRAM (continued) (*)
(in percent of GDP)

Cyclically Adjusted Values

	1974	1975	1976	1977	1978	1979	1980	1981	1982
1. Revenues	19.3	19.6	19.7	19.9	20.1	20.2	20.4	20.5	20.7
2. Expenditures	22.1	20.0	20.8	20.5	20.4	19.3	21.7	26.4	28.6
Social Security	7.5	7.0	7.6	7.3	7.1	6.7	8.4	12.3	13.7
Other	14.6	13.0	13.2	13.2	13.3	12.6	13.3	14.1	14.9
3. Primary Balance (1-2)	-2.8	-0.4	-1.1	-0.6	-0.3	0.9	-1.3	-5.9	-7.9
4. Interest Payments	0.6	0.9	1.2	1.0	0.8	0.7	0.6	0.4	1.4
5. Other Revenues	-1.2	0.5	0.1	0.3	0.4	0.2	1.1	0.3	-0.5
6. Overall Balance (3-4+5)	-4.7	-0.8	-2.2	-1.3	-0.7	0.4	-0.8	-6.0	-9.8

(*) Revenues and expenditures refer to the Central Government and the Social Security System. Interest payments include payments on net Central Bank debt. Other net revenues include the surplus of public enterprises and other government agencies.

TABLE 1.4 THE PUBLIC SECTOR DURING THE DECEMBER 1990 PROGRAM (*)
(in percent of GDP)

	Current Values									
	1985	1986	1987	1988	1989	1990	1991	1992	1993	
1. Revenues	21.1	22.7	22.0	22.4	21.5	25.0	26.5	27.6	28.1	
2. Expenditures	21.8	21.9	21.9	23.0	22.91	23.3	24.3	25.7	27.8	
Social Security	10.3	10.4	10.4	10.8	0.7	11.4	12.7	13.9	15.1	
Other	11.4	11.5	11.4	12.2	12.2	11.8	11.6	11.8	12.7	
3. Primary Balance (1-2)	-0.7	0.8	0.1	-0.5	-1.4	1.7	2.2	1.8	0.3	
4. Interest Payments	5.2	5.6	4.0	4.2	4.9	5.1	3.7	2.8	2.1	
5. Other Revenues	-0.6	-0.2	-0.2	0.0	-0.4	0.3	0.6	0.9	0.2	
6. Overall Balance (3-4+5)	-6.6	-5.0	-4.2	-4.7	-6.7	-3.1	-0.9	0.0	-1.6	

(*) Revenues and expenditures refer to the Central Government and the Social Security System. Interest payments include payments on net Central Bank debt. Other net revenues include the surplus of public enterprises and other government agencies.

TABLE 1.4 THE PUBLIC SECTOR DURING THE DECEMBER 1990 PROGRAM (continued) (*)
(in percent of GDP)

Cyclically Adjusted Values									
	1985	1986	1987	1988	1989	1990	1991	1992	1993
1. Revenues	21.3	21.5	21.7	21.8	22.0	26.0	26.2	26.4	26.7
2. Expenditures	19.5	20.9	22.2	22.8	22.7	23.2	24.3	27.1	29.2
Social Security	9.2	9.9	10.5	10.7	10.6	11.4	12.6	15.4	16.6
Other	10.3	11.0	11.7	12.1	12.1	11.8	11.7	11.7	12.6
3. Primary Balance (1-2)	1.8	0.6	-0.6	-1.0	-0.7	2.8	1.9	-0.7	-2.5
4. Interest Payments	5.2	5.6	4.0	4.2	4.9	5.1	4.6	3.9	3.4
5. Other Revenues	-0.6	-0.2	-0.2	0.0	-0.4	0.3	0.6	0.9	0.2
6. Overall Balance (3-4-5)	-4.0	-5.2	-4.8	-5.2	-6.0	-2.0	-2.1	-3.7	-5.7

(*) Revenues and expenditures refer to the Central Government and the Social Security System. Interest payments include payments on net Central Bank debt. Other net revenues include the surplus of public enterprises and other government agencies.

4.3 Stabilization and Fiscal Policy: the Stylized Facts

The empirical regularities described in this section refer to the October 1978 -November 1982 failed e-r-b stabilization program and to the December 1990 program that is still in place. Therefore, any reference to the empirical regularities observed at the later stages or at the termination of a program will refer only to the October 78 stabilization. Tables 1.3 and 1.4 report the fiscal figures used in the description of the stylized facts.

The main stylized facts that emerge from Uruguay's e-r-b programs are:

1. Tax revenues increase in real terms and relative to GDP in the initial stages of the program together with the increase in consumption, and contract together with consumption in the later stages.²¹
2. Demand for real money balances increases in the initial stages of the program together with the increase in consumption and contracts together with consumption in the later stages.²²
3. Non-interest government expenditures increase in real terms and relative to GDP during the stabilization program. The main reason for this behavior is the backward indexation of public sector wages and/or social security benefits, which generate an endogenous growth in real

²¹ The estimate of the regression coefficient of the log of real tax revenues on the log of real consumption is 1.15, which suggests that tax revenues are elastic to changes in consumption. See the Appendix for details of the regression.

²² Reinhart and Vegh (1994) report a point estimate of 1.3 for the consumption elasticity of money demand in Uruguay.

expenditures as inflation declined. When the program is discontinued there is a sharp contraction in real non-interest expenditures.

4. Real interest payments on foreign currency debt decline in real terms and relative to GDP during the initial phases of the program. Assuming constant international interest rates, this is due to real exchange rate appreciation and the reduction in net external debt due to reserve accumulation induced by a temporary monetization of the economy.²³ Real interest payments increase sharply after the program is terminated.

5. The primary fiscal balance (PD) improves in the initial stages of the program. It deteriorates smoothly at a later stage as expenditures rise in response to the decline in inflation, deteriorating dramatically only in the final stages of the program when the economy falls into recession. The overall fiscal balance (D) follows a similar pattern. The deterioration of the fiscal situation in the final stages of the program is accompanied by a run on Central Bank reserves and a sharp increase in the external debt of the public sector.

6. The cyclically adjusted primary fiscal balance (CAPD) initially improves then deteriorates sharply as expenditures rise in response to the decline in inflation. The CAPD deteriorates significantly even before the economy enters into recession and well in advance of the abandonment of the program. The cyclically adjusted overall fiscal balance (CAD) follows a similar pattern.

²³ In the context of a predetermined rate of devaluation, reserve accumulation arises as the authorities intervene in the foreign exchange market, in order to avoid a nominal appreciation of the exchange rate.

4.4 Stabilization and Fiscal Policy: an Evaluation of Uruguay's Programs

The previous analysis suggests that fiscal considerations play a critical role in understanding the dynamics of stabilization policy in Uruguay. Notwithstanding the substantial differences in the design and implementation of monetary policy, the two programs share important elements in the fiscal policy area:

(i) the backward indexation of public sector nominal wages and/or social security benefits (which account for approximately 65% of total government expenditures) were an important source of endogenous growth in real government expenditures as inflation declined during the course of the programs; ²⁴

(ii) the deterioration of the fiscal situation was obscured by the cyclical upturn in private absorption (and the corresponding cyclical increase in tax revenues) and the appreciation of the real exchange rate which reduced the real value of interest payments on foreign debt;

In the 1978 program, the endogenous increase in expenditures turned the fiscal situation -as measured by the cyclically-adjusted budget deficit- into an unsound one, as early as 1981. With the benefit of hindsight, this meant that at unchanged rates of inflation, government spending, or tax rates, current macroeconomic policies could not be sustained, setting

²⁴ To the extent that the marginal propensity to consume of the recipients of government wages and/or transfers is higher than the average propensity, the substantial increase in government expenditures probably contributed directly -over and above backward indexation or lack of credibility which are the usual channels stressed by the theoretical literature- to the appreciation of the real exchange rate that has been observed in both programs.

the stage for a policy change when the cyclical boom in spending petered out.

As a matter of fact, when the economy finally entered into recession, the fiscal situation deteriorated very significantly, leading to a continual loss of Central Bank foreign exchange reserves, an enormous increase in government debt and ultimately to the collapse of the stabilization program when the exchange rate was devalued by 140%. Since a substantial fraction of government expenditures are concentrated in wages and social security benefits, it is our view that the step devaluation was used as a mechanism to correct the fiscal situation i.e to reduce wages and social security expenditures in real terms, rather than as a mechanism to confiscate financial wealth. In addition, the rate of devaluation was accelerated from 17% the year before the end of the program to 61% the year after. Taxes were also increased.

If we apply the logic of our analysis to the 1990 program, we may conclude that the endogenous increase in real government expenditures turned the fiscal situation -as measured by the cyclically-adjusted budget deficit- into an inconsistent one. This could mean that the government will have to introduce a policy change i.e reduce expenditures or increase taxes, to maintain the economy on a fiscally sustainable path -at unchanged rates of inflation- if and when the spending boom reverses itself. This may rationalize the repeated efforts by the government to pass through Parliament (it sent three different projects) a comprehensive reform of the social security system that would imply a substantial reduction in total spending of the system of about 3% of GDP in a period of ten years.

However, this is not the only possible view of the world. The spending boom of the current program could, alternatively, be interpreted as an

adjustment to a new equilibrium level in response to permanent changes in private sector wealth. These could be driven by external factors such as a reduction in world real interest rates or an improvement of the terms of trade; or by structural changes such as trade liberalization, which eliminate production inefficiencies and raise the potential level of output (to the extent that these changes have a permanent component). In fact, external shocks and structural changes of the type just described have been contemporaneous to the December 1990 stabilization program.

Under this view of the world, once spending and output settle at their new -and higher- equilibrium levels no reversion will necessarily take place. The cyclical adjustment of the fiscal deficit, as described in the previous sections, is therefore not applicable since the current measure of the fiscal deficit would be an appropriate indicator of fiscal performance. Under this interpretation, no policy change would be either necessary or expected to occur on intertemporal consistency grounds alone.

5. FINAL REMARKS

This paper has documented the links between the business cycle associated with exchange rate-based stabilizations and the behavior of tax revenues, government expenditures, and the fiscal deficit.

Four general points emerge from the analysis:

(i) To the extent that tax revenues are linked to consumption (through VAT, sales taxes or import tariffs) the consumption boom-recession cycle that has been generally observed in e-r-b stabilizations will also be observed in tax revenues. The extent to which revenues are linked to

consumption will vary across countries depending on their tax structure.

(ii) The boom-recession cycle in tax revenues implies that, at constant government expenditures, the fiscal deficit improves in the initial stages of the program, only to deteriorate when the economy falls into recession. As a consequence, the fiscal deficit may be very misleading as a way to assess the sustainability or consistency of the stabilization program. Some measure of the cyclically adjusted budget deficit is necessary to capture potential inconsistencies between fiscal policy and exchange rate policy.

(iii) Real government expenditures could be negatively correlated with inflation to the extent that wages and/or transfer payments adjustments are backward looking. The existence of this negative correlation implies that real government expenditures will increase throughout the stabilization program as inflation declines.

(iv) To the extent that the later stages of exchange rate based stabilizations are characterized by a recession and a slowdown in inflation, (i) and (iii) imply a very rapid deterioration of the fiscal position, which in the initial stages might have looked very solid. This occurs because revenues decline in line with economic activity, and real government expenditures continue to increase as inflation declines.

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