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"Political Business Cycles and

Inflation Stabilization"

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# Political Business Cycles and Inflation Stabilization\*

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## Abstract

When the choice of the nominal anchor of inflation stabilization is included in models of political business cycles, there is room for political opportunism of policymakers. The different business cycles associated with exchange rate-based (ERBS) and money-based stabilizations (MBS) imply that the decision regarding the timing and nominal anchor of stabilization may be affected by the timing of elections. Namely, an opportunistic policymaker is more likely to implement an ERBS than a MBS before elections, while the opposite happens after elections. Empirical results obtained when estimating a multinomial logit model for a sample of 35 stabilization programs implemented in chronic inflation countries clearly support this hypothesis.

JEL codes: E31, E63

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## 1. Introduction

Contrary to the conventional wisdom that inflation stabilization has short-run contractionary effects, studies focusing on chronic inflation countries showed that exchange rate-based stabilization (ERBS) often leads to an initial expansion in economic activity, particularly in output and consumption, with the recession occurring later on. The short-run recessionary effects typically associated with disinflation tend to happen only in money-based stabilizations (MBS). Thus, the choice of the nominal anchor can be interpreted as a choice between recession now and recession later.

When the decision regarding the anchor of stabilization is included in models of political business cycles, there is room for political opportunism of policymakers. That is, the timing and the nominal anchor of stabilization may be affected by the timing of elections. Following Stein and Streb (1998) and Aisen (2002), we hypothesize that an opportunistic policymaker is more likely to implement an ERBS than a MBS before elections, while the opposite happens after elections. This hypothesis will be tested estimating a multinomial logit model for a sample of 35 stabilization programs implemented in chronic inflation countries since the late 1950s. The potential effects of initial economic conditions and of some political variables on the choice of the timing and nominal anchor of stabilization will also be considered.

The paper is organized as follows. Section 2 reviews the main findings of studies focusing on the real effects of the choice of the nominal anchor of stabilization. Section 3 presents some political business cycles models and relates them to the choice of the nominal anchor. The data and the econometric model are described in section 4 and the empirical findings are presented in section 5. Finally, section 6 concludes the paper.

### 2. Real effects of the choice of the nominal anchor of inflation stabilization

Although inflation stabilization in low inflation economies is usually associated with significant short-run output costs, that is not necessarily the case for countries suffering from hyperinflation or chronic inflation.<sup>1</sup> Sargent (1982) argued that the hyperinflations of the 1920s in Austria, Germany, Poland and Hungary were stopped with little or no output costs by using the exchange rate as the nominal anchor of stabilization. Végh (1992) analyses eight hyperinflations from 1922 to 1985 presenting further evidence that hyperinflations have been stopped almost immediately and with relatively small output costs following exchange rate-based stabilization.

Kiguel and Leviatan (1992) and Végh (1992) showed that the relation between disinflation and output in chronic inflation countries depends of the nominal anchor of the stabilization program. Exchange rate-based stabilizations (ERBS) were generally associated with an initial expansion of output followed by a recession later on, while money-based stabilizations (MBS) would lead to an immediate recession and a recovery later on. Thus, when choosing the nominal anchor of stabilization a policymaker is also choosing the timing of recession and expansion: a MBS brings recession now, while an ERBS brings recession later. Calvo and Végh (1999) find evidence in favor of this "recession-now-versus-recession-later" hypothesis using a sample of 14 stabilizations (9 ERBS and 5 MBS) implemented in 8 chronic inflation countries.<sup>2</sup>

<sup>&</sup>lt;sup>1</sup> Hyperinflation corresponds to a monthly inflation rate of at least 50%, and tends to have a short duration (sometimes, just a few months). Chronic inflation is a situation of high inflation relative to that of industrial countries that lasts for a long period of time (for several years).

<sup>&</sup>lt;sup>2</sup> Hoffmaister and Végh (1996) test this hypothesis for Uruguay using VAR estimations and also find evidence in favor of the "recession-now-versus-recession-later" hypothesis. See Rebelo and Végh (1995) for a study on the real effects of exchange rate-based stabilizations.

A dissenting view is presented by Easterly (1996) and Hamann (2001), who find stabilization to be expansionary, regardless of the nominal anchor used. The different results obtained may be due to the different methodology used to construct the sample. While the present paper and those referred to in the paragraphs above follow the so-called "episodic" approach, selecting the stabilizations that have received greater attention in the literature, Easterly (1996) and Hamann (2001) follow the "mechanical" approach. That is, they identify stabilizations according to a mechanical rule for the behavior of inflation. The result is a very different sample, including many more countries but that excludes several unsuccessful stabilizations that took place in chronic inflation countries.<sup>3</sup>

Another dissenting view is presented by Gould (1999), who argues that after adjusting for initial conditions the choice of the nominal anchor becomes endogenous and growth improves regardless of the anchor used. Countries with an ample stock of international reserves, higher inflation-fighting credibility, and better prospects for economic growth (growth above trend) can implement exchange rate-based stabilizations, while countries that lack these characteristics are left with money-based stabilizations. Thus, ERBS are implemented in good times and MBS are implemented in bad times. Following the episodic approach of sample construction, Gould (1999: 3) finds that "after controlling for the level of international reserves and inflation, growth after monetary-based stabilizations."

<sup>&</sup>lt;sup>3</sup> These results are contradicted by Fisher, Sahay, and Végh (2002), who use a somewhat mechanical approach to define a sample of 27 stabilizations following 45 episodes of very high inflation that took place in 25 countries. They find that the expansionary effects of stabilization are due essentially to the ERBS present in their sample. That is, the ERBS lead to an initial boom in output and consumption, while the non-ERBS (MBS and those that defy a clear classification) are not expansionary.

### 3. Political Business Cycles and the choice of the nominal anchor

The different business cycles generated by ERBS and MBS, combined with the electoral cycles of democratic regimes may give rise to an opportunistic behavior of politicians regarding the choice of the nominal anchor of stabilization. That is, in a situation of high inflation, when a stabilization program is clearly necessary, the choice of the nominal anchor may depend of the current phase of the electoral cycle. For example, a politician seeking reelection may not be interested in implementing a MBS shortly before an election because the recession it causes could lead to a loss of votes. In contrast, an ERBS could make the policymaker look more competent in the eyes of the electorate and help win the elections. Thus, an opportunistic politician would prefer to implement an ERBS shortly before elections and a MBS after elections.

This opportunistic behavior can be justified by the political business cycle literature.<sup>4</sup> The best-known model is due to Nordhaus (1975), who assumed a stable Phillips curve, adaptative expectations, retrospective behavior of voters, and opportunistic policymakers. In this setting, the incumbent would stimulate the economy toward the end of his/her term in order to appear more competent and win the elections. The resulting higher inflation before elections would be reduced with restrictive policies after the elections. Thus, one would observe high growth and low unemployment before elections and a recession after them.

Rogoff and Sibert (1988) developed a rational expectations model in which the ability of parties to generate favorable economic outcomes differs. Since knowledge of ability is private information, competency cannot be observed directly by the electorate. Thus, politicians try to appear as competent as possible and lead to political business cycles. But, voter's rationality and knowledge of politicians' incentives make these political business

<sup>&</sup>lt;sup>4</sup> For a survey on this literature see Person and Tabellini (2000).

cycles smaller in magnitude, shorter-lived, and less regular than in Nordhaus' (1975) model. In Alesina and Cukierman (1990), voters are not fully informed about the incumbent's preferences and do not observe his/her policy actions directly. However, since policy outcomes are positively correlated with policy actions, they convey information about the incumbent's preferences. Therefore, the assumption of persistence of preferences implies that voters can draw inferences about future policies and outcomes by looking at current economic conditions. Again, there is an incentive to generate political business cycles.

Harrington (1993) combines the two above-mentioned models by assuming that voters are uncertain about the effectiveness of policy actions, the incumbent's future policy intentions, and which policy the incumbent believes it is best. Voters' preferences are endogenous and may change as new information is released. In such a setting, the electorate will be more sensitive to policy actions (as in Rogoff and Sibert, 1988) when it feels more confident about which policy is best, or more able to identify the consequences of policy actions. Voting behavior will be more performance-based (as in Alesina and Cukierman, 1990) when voters are more uncertain about the effectiveness of the policies chosen.

Stein and Streb (1998) developed a competency model for high inflation economies based on performance-based voting behavior. In their model, inflation reduction with low output costs signals competency of the government. Given the business cycles associated with the choice of the nominal anchor of stabilizations, the absence of short-run costs of higher unemployment and lower growth provide strong incentives for policymakers to reduce inflation before elections by implementing exchange rate-based stabilizations. Aisen (2002) finds evidence of this opportunistic behavior regarding the choice of the nominal anchor of stabilization. His results show that ERBS are on average implemented before elections, while MBS are started after them.

### 4. The data and the econometric model

The previous sections imply that when the decision regarding the choice of the nominal anchor of inflation stabilization in chronic inflation countries is incorporated in models of political business cycles, there is a tendency for opportunistic behavior of policymakers, expressed in the implementation of exchange rate-based stabilizations before elections and money-based stabilizations after elections. The existence of this effect of the timing of elections on the choice of the nominal anchor and on the timing of inflation stabilization is the main hypothesis that will be tested in the present paper.

For that purpose we constructed a dataset composed of quarterly data from the first quarter of 1957 to the fourth quarter of 1999, for 10 countries that experienced chronic inflation and implemented stabilization programs during this period. The first major issue to solve when constructing the dataset was to determine when a stabilization program had been implemented. The method consisted in searching the economics literature for information on the starting dates of stabilization programs undertaken in countries suffering from chronic inflation. The 44 stabilizations identified are described in table 1, where the quarter of implementation, the type, and the main reference for each program are also indicated.

## << Insert Table 1 around here >>

Since we are interested in testing whether the electoral cycle affects the choice of the nominal anchor and the timing of stabilization, only the programs whose implementation was preceded and followed by elections are included in the sample. These are the ones whose date/name appears in bold in the second column of table 1. That is, the nine programs implemented during dictatorships or followed by dictatorships (instead of elections) are excluded. Thus, the sample used in the estimations includes 35 stabilizations, 29 ERBS and 6

MBS, implemented in eight countries. We will also perform estimations on a restricted sample of "Major Stabilization Programs," that is, those that received greater attention in the literature. Table 2 describes the 23 major programs identified, with those that occurred between elections, the 15 included in the restricted sample, indicated in bold.

## << Insert Table 2 around here >>

Considering that it makes more sense to test for the probability of implementing a stabilization program when it is clearly necessary, we decided to use the quarters of high inflation as our baseline sample. Thus, the second major issue to solve when constructing the sample was to determine when inflation was "high". Following Veiga (2000), inflation was considered high when it was over twice the average inflation rate of the last 10 years (and above 25%) or greater than or equal to 100%.

Before choosing the appropriate econometric model it was necessary to identify the alternative decisions a policymaker could take in each quarter. We assumed that, in a situation of high inflation, the policymaker could do one of the following: (1) start an exchange rate-based stabilization (ERBS); (2) start a money-based stabilization (MBS); or postpone the necessary stabilization program (NS – no stabilization). Since there are three alternatives, the econometric model chosen was the Multinomial Logit.<sup>5</sup>

In our opinion, this model is preferable to the probit specification of Aisen (2002), who estimates the effect of several variables on the probability of implementing an ERBS instead of a MBS, assuming that the decision to start a stabilization program was taken previously. First, we think that it is not correct to assume that the decision to stabilize

<sup>&</sup>lt;sup>5</sup> This econometric model was also chosen by Gould (1999).

precedes the choice of the nominal anchor. An opportunistic policymaker will always compare the political advantages of implementing an ERBS to those of starting a MBS or not stabilizing, which means that the decision to stabilize is taken simultaneously with the choice of the anchor. Unless the costs of inflation are unbearable, it does not make sense to commit to a stabilization program before knowing whether an ERBS or a MBS are preferable to not stabilizing. Second, as shown by Veiga (2000) the timing of stabilizations is strongly affected by political variables. It is quite possible that it is also affected by the timing of elections, which means that Aisen's (2002) assumption that the inflationary history of the country will determine the exact moment to launch the nominal anchor to stabilize inflation may be an exaggerated simplification of reality. By allowing the policymaker the option of not stabilizing, our model also estimates the effects of the electoral cycle and of other factors on the timing of stabilization.<sup>6</sup>

The multinomial logit model<sup>7</sup> describes the probability that certain event *j* will occur, which is determined by a set of attributes or characteristics included in vector  $X_i$ . The estimated equations supply a set of probabilities for J+1 choices. In the present case there are three possible alternatives: ERBS, MBS or NS. Thus, the probabilities are:

$$Prob(STAB_{i} = j | X_{i}) = \frac{e^{X_{i}^{'}\beta_{j}}}{1 + \sum_{K=1}^{2} e^{X_{i}^{'}\beta_{k}}}, \text{ for } j = 1, 2,$$

$$Prob(STAB_{i} = 0 | X_{i}) = \frac{1}{1 + \sum_{K=1}^{2} e^{X_{i}^{'}\beta_{k}}},$$
(1)

<sup>&</sup>lt;sup>6</sup> The results shown in Table 4 clearly show that, even controlling for inflation and other variables, the probability of implementing a MBS versus not stabilizing (NS) decreases as the next elections come closer. Thus, the timing of stabilizations is affected by the electoral cycle.

<sup>&</sup>lt;sup>7</sup> For a more complete description of this model see Greene (2000) and Long (1997).

where *STAB*, the dependent variable, equals 2 for an ERBS, 1 for a MBS, and zero if no stabilization is implemented (NS). This model can also be expressed in terms of the odds. The odds of outcome j versus outcome k are equal to:

$$\frac{\operatorname{Prob}(STAB_i = j)}{\operatorname{Prob}(STAB_i = k)} = e^{X'_i(\beta_j - \beta_k)}.$$
(2)

In the context of the present study, the difference  $\beta_1 - \beta_2$ , called a contrast, is the effect of the independent variable X on the logit of outcome 1 (MBS) versus outcome 2 (ERBS). If one of the independent variables changes by one unit (for instance  $X_k$ ), we may interpret this change in terms of an *odds ratio*, i.e. the ratio of the odds before and after the change in  $X_k$ . This effect will be equal to  $e^{\beta_j - \beta_k}$ . Thus, in this study, the *odds ratio* can be interpreted as follows: for a unit change in  $X_k$ , the odds are expected to change by a factor of  $e^{\beta_1 - \beta_2}$ , holding all other variables constant.<sup>8</sup>

The multinomial logit model is estimated by maximum likelihood. The log-likelihood can be derived by defining, for each individual,  $d_{ij}=1$  if alternative *j* is chosen by individual *i*, and 0 if not, for the *J*+1 possible choices. The log-likelihood is a generalization of that for the binomial logit model:

$$\log L = \sum_{i=1}^{n} \sum_{j=0}^{J} d_{ij} \log[\operatorname{Prob}(STAB_i = j)].$$
(3)

Maximizing (3) in order to  $\beta_j$  we obtain the maximum likelihood estimates. Since we are considering three possible choices, the number of estimated coefficients is twice that of the binary logit model.

The dependent variable and all independent variables are described in table 3. The explanatory variables used in our baseline model are the following:

<sup>&</sup>lt;sup>8</sup> See Long (1997: 169) for the interpretation of the odds ratios.

- *PCR Political Cycle Ratio*: number of quarters since the last elections divided by the number of quarters to the next elections;<sup>9</sup>
- *Frag Fragmentation of the political system*: dummy variable that takes the value of one if there is a one-party majority parliamentary government or a presidential government, with the same party in control of the parliament. *Frag* takes the value of zero for more fragmented political systems;
- *F.Ind Fragmentation Index of the distribution of seats in the lower house of the* parliament:  $F.Ind = \frac{1}{\sum p_i^2}$ , where  $p_i$  = percentage of seats of party *i*.
- TR/Imp Ratio of Total Reserves to Imports;
- Inf Inflation rate: growth of CPI since the same quarter of the previous year;
- *GDP>T GDP growth above the trend growth rate*: dummy variable that takes the value of one if the growth rate of real GDP since the same quarter of the previous year is greater than the Trend (Hodrick-Prescott) growth rate of GDP, and takes the value of zero otherwise.
- FB/GDP Fiscal Balance (Government Budget Balance) as a percentage of GDP;
- *IMFProg Presence of an IMF program*: dummy variable that equals one if there is an ongoing arrangement with the IMF, and equals zero otherwise.

## << Insert Table 3 around here >>

<sup>&</sup>lt;sup>9</sup> Only the presidential elections are considered in presidential systems and only the legislative elections are considered in parliamentary systems (Israel and Turkey).

Since a MBS leads to a recession in the short run, a politician who wishes to be reelected will not adopt it just before an election. Instead, this would be the ideal occasion to implement an ERBS since its expansive effects, together with the reduction of the inflation rate, would increase the policymaker's popularity and help him/her win the elections. Thus, we expect *PCR* to have a negative coefficient for the contrasts MBS/NS and MBS/ERBS, and a positive coefficient for the contrast ERBS/NS.

According to Veiga (2000), greater political fragmentation delays stabilizations. Thus, we expect *Frag* to have a positive coefficient and *F.Ind* to have a negative coefficient for the contrasts MBS/NS and ERBS/NS, since lower fragmentation would increase the probability of implementing a stabilization program. Although Aisen (2002) argues that a MBS requires greater political cohesion than an ERBS, we think that it is required in both cases. Thus, we do not expect significant effects of political fragmentation on the choice of the nominal anchor.

Gould (1999) argues that the choice of the anchor depends of the initial economic conditions. More precisely, low growth relative to trend, low stock of international reserves and high inflation would favor the implementation of a MBS instead of an ERBS. These hypotheses lead to the expectation of a positive coefficient for *Inf* and negative coefficients for *TR/IMP* and *GDP*>*T* for the contrasts MBS/ERBS and MBS/NS. When considering the contrast ERBS/NS, we expect positive coefficients for the three variables.<sup>10</sup>

The fiscal balance as a percentage of GDP (FB/GDP) and the existence of an ongoing IMF program/arrangement (*IMFProg*) are not directly related to the models referred to in sections 2 and 3. Nevertheless, it is possible that they affect the timing and the choice of the

<sup>&</sup>lt;sup>10</sup> A positive coefficient is expected for *Inf* because higher inflation increases the probability of implementing a stabilization program regardless of the nominal anchor (see Veiga, 2000).

nominal anchor of stabilization. For this reason, they will be included in the estimations as control variables.

## 5. Empirical results

Table 4 presents the baseline results of the multinomial logit estimations. As already said above, we assume that, in a situation of high inflation, the policymaker can do one of the following: start a money-based stabilization (MBS); start an exchange rate-based stabilization (ERBS); or not stabilizing (NS). Given these three alternatives, results are presented for the contrasts MBS versus NS, ERBS versus NS, and MBS versus ERBS. It is the latter that is of greater interest to this article since it tells us which factors affect the choice of one nominal anchor instead of the other. Most economic variables are lagged one period in order to avoid simultaneity problems and to account for the usual delays in the report of economic data. For each estimated coefficient, the factor changes in the odds ratios, the t-statistics, and the marginal effects of changes in the independent variables are also indicated. Finally, the logarithm of the likelihood function, the Schwartz Bayesian Information Criterion (SBIC), the McFadden R<sup>2</sup>, and the number of observations and stabilizations are reported.

### << Insert Table 4 around here >>

The political cycle ratio (*PCR*) is statistically significant for the first and last contrasts, indicating (as expected) that the probability of adopting a MBS decreases (relative to NS and to ERBS) as elections come closer.<sup>11</sup> These results clearly support our main

<sup>&</sup>lt;sup>11</sup> In terms of *odds ratios*, we can see that for the contrast MBS/ERBS in column 1 a unit change in *PCR* leads to an expected change of the odds by a factor of 0.1295, *ceteris paribus*.

hypothesis and are consistent with the opportunistic behavior of policymakers found by Aisen (2002) and with Stein and Streb's (1998) model.

The fragmentation of the political system (*Frag*) does not seem to affect any of the contrasts (column 1) and the fragmentation index of the distribution of seats in Parliament (*F.Ind*) is statistically significant only for the contrast ERBS/NS (column 2). This implies that greater fragmentation does not affect the choice of the nominal anchor but reduces the probability of implementing an ERBS versus not stabilizing. This result is consistent with Veiga (2000) that found that greater political fragmentation reduced the probability of implementing a stabilization program in a situation of high inflation, and helped explain the delays of stabilizations found in many chronic inflation countries.<sup>12</sup>

The ratio of total reserves to imports (*TR/Imp*) is statistically significant in all but one estimation. As expected, a greater stock of reserves reduces the probability of choosing a MBS relative to an ERBS or to not stabilizing. In the results of column 2, it also increases the probability of implementing an ERBS relative to not stabilizing. These results are consistent with Gould's (1999) argument that a higher level of reserves would lead to the adoption of an ERBS, while the lack of them would favor the adoption of a MBS.

The inflation rate (*Inf*) is also statistically significant in all but one estimation (the last). As in Veiga (2000), greater inflation increases the probability of implementing an inflation stabilization program, regardless of the nominal anchor. In column 1, greater inflation also seems to favor the adoption of a MBS instead of an ERBS, as suggested by Gould (1999).

Whether GDP growth is above the trend growth rate (GDP>T) or not, does not seem to affect the adoption of a stabilization program nor the choice of its nominal anchor. This

<sup>&</sup>lt;sup>12</sup> The lack of a similar result for MBS may be due to the very small number of observations (just 6).

result contradicts Gould (1999) that argued that growth above trend would favor the adoption of an ERBS versus a MBS.

The fiscal balance as a percentage of GDP (FB/GDP) does not seem to affect the choice of the nominal anchor. It is statistically significant only for the contrast ERBS/NS, indicating that a greater budget surplus (deficit) decreases (increases) the probability of implementing an ERBS. This may be due to the fact that many episodes of high inflation started with large budget deficits that were monetized. Thus, it is not strange that there is a budget deficit when an ERBS starts.

Finally, the existence of an ongoing IMF program/arrangement (*IMFProg*) seems to favor the adoption of a MBS versus an ERBS and versus not stabilizing (NS). This may be due to the fact that IMF arrangements generally imply restrictions of domestic credit and of money supply growth, which are more consistent with a MBS. Furthermore, an empirical regularity of ERBS is that they lead to the deterioration of the trade balance and current account balance (see Calvo and Végh, 1999: 1546), which generally aggravates the balance of payments disequilibria that IMF programs wish to fight.

Tables 5.A and 5.B, present the results of a series of robustness tests for the contrast MBS/ERBS, using this sample of high inflation periods. The results of these 10 alternative estimations are consistent with those of table 4. In columns 1 and 2 we used real GDP growth (*GDP*) and the deviation from trend of real GDP (*GDPdT*) instead of *GDP*>*T*. These variables are not statistically significant, indicating again that the implementation of a stabilization program and the choice of its nominal anchor are not affected by GDP. In column 3, the dummy variable *Right*, that equals one for a right or center-right government, is included in order to account for partisan effects. Since rightist governments tend to care less about growth and unemployment than left-wing ones (see Hibbs, 1977), the result that they are more prone to implement a MBS makes sense. But, there is no evidence that the

long run costs of MBS are different to those of ERBS, which means that when long run welfare effects are considered, the political orientation of the government should not affect the choice of the nominal anchor of stabilization. In columns 4 and 5, two alternative variables for IMF support are used. Both the total Fund credit and loans outstanding as a percentage of imports (*TFC/Imp*) and the duration of IMF support (*Dur\_aid*) are not statistically significant, meaning that the amount of credit and its duration may not affect the choice of the nominal anchor of stabilization.

## << Insert Table 5.A around here >>

When the deviation from trend of total reserves (*TRdT*) is used instead of *TR/Imp* there is still evidence that more reserves favor the implementation of an ERBS (column 6 – table 5.B). This regression also indicates that GDP growth above trend (*GDP*>*T*) favors the implementation of a MBS (which contradicts Gould, 1999) and that the existence of an IMF program (*IMFProg*) does not matter for the choice of the nominal anchor. Columns 7 to 10 show the results of estimations that use alternative indicators of the timing of elections. Of these, only the number of quarters to the next elections (*QNE*) is statistically significant. As expected, the farther away from the next elections, the more likely is a MBS to be implemented instead of an ERBS.

## << Insert Table 5.B around here >>

All the models referred to above were estimated for a sample containing all observations, that is, a sample that also includes the quarters in which inflation was not high according to our definition. Results, presented in table 6, show that all indicators of the

timing of elections are statistically significant and have the expected signs. That is, all provide further evidence that shortly after elections there is a greater probability of implementing a MBS versus an ERBS, while the opposite happens shortly before elections. There is also weak evidence that a greater degree of fragmentation in Parliament leads to the implementation of a MBS (*F.Ind* is marginally significant in most estimations), but this result is not consistent across the several tables of results included in this article.

## << Insert Table 6 around here >>

Sensitivity analysis to changes in the sample is presented in table 7. In column 1, Israel and Turkey were excluded, so that we could see whether results changed when only Latin American countries were considered. The only change relative to the last estimation of table 4 is that *IMFProg* is no longer statistically significant. Since there is no consensus on the classification of the Bolivian stabilization of 1985:3, we decided to check whether results change when it is classified as a MBS, as Ágenor and Montiel (1999) do. Results, shown in columns 2 and 3, present clear evidence in favor of opportunistic behavior of policymakers, as *PCR* and *PCR2* are statistically significant and have the expected signs.<sup>13</sup> They also indicate that a lower stock of reserves, higher inflation and the existence of an IMF program favor the adoption of a MBS relative to an ERBS. Finally, some authors argue that Bolivia is not a chronic inflation country, since inflation did not persist for many years and reached hyperinflation levels relatively fast. Thus, according to this view, Bolivia should be excluded from the sample. That was done in the estimations of columns 4 and 5, whose results are very similar to those of columns 2 and 3. Thus, the major change in results observed when we

<sup>&</sup>lt;sup>13</sup> As described in table 3, the difference between *PCR* and *PCR2* is that the latter also considers legislative elections in presidential regimes.

classify the Bolivian stabilization of 1985:3 as a MBS or exclude Bolivia from the sample is that there is greater evidence that higher inflation increases the probability of adopting a MBS versus an ERBS.

### << Insert Table 7 around here >>

Finally, all the above-referred estimations were performed for a sample containing only the "major stabilization programs" listed in table 2. These are the programs that received greater attention from the literature. Table 8.A shows the results for the 3 contrasts. The major differences relative to table 4 (when all programs were considered) are that the fiscal balance (*FB/GDP*) and the existence of an IMF program (*IMFProg*) are never statistically significant. The major conclusions regarding what affects the implementation of a stabilization program and the choice of its nominal anchor remain essentially the same. The results of the sensitivity analysis, similar to that of table 7, are shown in table 8.B. Although *PCR* is not statistically significant in columns 2 and 4, *PCR2* is highly statistically significant in columns 3 and 5, providing evidence in favor of opportunistic behavior. It is possible that the smaller t-statistics associated with *PCR* are due to the smaller number of stabilizations. The other difference relative to table 7 is that *IMFProg* is no longer statistically significant and has the opposite sign. Thus, it seems that IMF support did not affect the choice of the nominal anchor of the "major stabilization programs."

#### << Insert Tables 8.A and 8.B around here >>

## 6. Conclusions

There is clear evidence of opportunistic behavior of policymakers regarding the timing of stabilization and, especially, the choice of the nominal anchor. Empirical results show that a money-based stabilization (MBS) is more likely to be implemented shortly after elections, while the probability of adopting an exchange rate-based stabilization (ERBS) is greater shortly before elections. The theoretical justification of these empirical findings is clear when the "recession-now-versus-recession-later" hypothesis is integrated in political business cycles models that assume information asymmetry. An opportunistic policymaker would implement an ERBS before elections because it reduces inflation and creates a boom at the same time, which makes the incumbent look more competent in the eyes of the electorate (see Stein and Streb, 1998). Since a MBS generates an immediate recession, it should be implemented shortly after elections, so that the recovery that follows later on takes place before the end of the incumbent's current term. Furthermore, except for the cases in which the incumbent was reelected, his/her predecessor may be blamed for the costs of stabilization.

The fact that the evidence of opportunistic behavior is found after controlling for initial economic conditions (the lagged economic variables) contradicts Gould's (1999) argument that after controlling for these the choice of the nominal anchor becomes endogenous. Nevertheless, it is true that initial conditions also affect the choice between ERBS and MBS. As Gould (1999) argued, the probability of implementing a MBS versus an ERBS is greater when the stock of international reserves is lower and inflation is higher. However, there is no evidence that a MBS is more likely to be adopted when real GDP growth is bellow trend.

Empirical results provide weak evidence that a MBS is more likely to be adopted during the implementation of an arrangement with the IMF. Although financial aid from the

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IMF would decrease the costs of inflation stabilization regardless of the anchor, an ERBS is generally associated with real exchange rate appreciation and deteriorating external accounts, which aggravate the balance of payments problems the IMF whishes to solve. Furthermore, IMF arrangements are generally associated with restrictions to domestic credit and money supply growth, which are consistent with a money-based stabilization. Thus, it seems plausible that a MBS would be preferable during an IMF arrangement.

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Country	Program dates/names	Туре	Sources
Argentina	1958:4	MBS	Kiguel and Leviatan (1988)
8	1959:3	ERBS	Kiguel and Leviatan (1992)
	1967.1	ERBS	Kiguel and Leviatan (1992)
	1973.3	FRBS	Kiguel and Leviatan (1992)
	1976:2	MBS	Kiguel and Leviatan (1982)
	1970.2 1978:4 (Tablita)	FRBS	Kiguel and Leviatan (1966)
	1970.4 (Taona)	EDBS	Kiguel and Leviatan (1992)
	196.2 (Austral I) 1096.2 (Drimovoro I)	EDBS	Kiguel and Leviatan (1991)
	1960.5 (11111avera 1) 1987.1 (Fobruary)	EDBS	Kiguel and Leviatan (1991)
	1907.1 (February) 1097.4 (Austral II)	ERDS	Kiguel and Leviatari (1991)
	1907.4 (Austral II) 1099.3 (Drimovoro II)	ENDS	Kiguel and Leviatari (1991)
	1900:5 (Frillavera II) 1090:3 (DD)	ENDS	Levinan (1991)
	1969:5 (DD) 1090:4 (Denser)	EKDS	Celve and Vech (1000)
	1989:4 (Bonex)	MD5	Calvo and Vegn (1999)
	1991:2 (Convertibility)	EKBS	Calvo and Vegn (1999)
Bolivia	1982:4	ERBS	Morales (1988)
	1984:2	ERBS	Morales (1988)
	1985:1	ERBS	Morales (1988)
	1985:3	ERBS	Morales (1988), Végh (1992)
Brazil	1964:1	ERBS	Calvo and Vegh (1999)
	1986:1 (Cruzado)	ERBS	Kiguel and Leviatan (1991)
	1987:2 (Bresser)	ERBS	Kiguel and Leviatan (1991)
	1988:2 (Gradualist)	ERBS	Kiguel and Leviatan (1991)
	1989:1 (Summer)	ERBS	Kiguel and Leviatan (1991)
	1990:1 (Collor)	MBS	Calvo and Vegh (1999)
	1994:3 (Real)	ERBS	Ágénor and Montiel (1999)
Chile	1975:2	MBS	Calvo and Vegh (1999)
	1978:1 (Tablita)	ERBS	Calvo and Vegh (1999)
Dominican Republic	1990:3	MBS	Calvo and Vegh (1999)
Israel	1980:4 (Aridor I)	ERBS	Razin (1991)
	1982:3 (Aridor II)	ERBS	Razin (1991)
	1983:4 (Cohen-Orgad)	ERBS	Razin (1991)
	1984:3 (Package Deal I)	ERBS	Razin (1991)
	1984.4 (Package Deal II)	ERBS	Razin (1991)
	1985:1 (Package Deal III)	ERBS	Razin (1991)
	1985:3 (Shekel)	ERBS	Calvo and Vegh (1999)
		LIUDS	
Mexico	1976:4	ERBS	Diaz and Tercero (1988)
	1987:4	ERBS	Calvo and Vegh (1999)
Poru	1085.3	FRBS	Agénor and Montiel (1999)
i ci u	1990:3	MBS	Calvo and Vegh (1999)
			- · /
Uruguay	1960:4	MBS	Hoffmaister and Vegh (1996)
	1968:2	ERBS	Calvo and Vegh (1999)
	1978:4 (Tablita)	ERBS	Calvo and Vegh (1999)
	1990:4	ERBS	Calvo and Vegh (1999)
Turkey	1980:1	MBS	Rodrik (1991)

## **Table 1: Stabilization Programs**

Note:

- ERBS – Exchange Rate-Based Stabilization; MBS – Money-Based Stabilization.
- The programs whose date/name appears in bold were implemented during election cycles. The others were implemented during dictatorships or followed by dictatorships.

Country	Program dates/names	Туре
Argentina	1959:3	ERBS
	1967:1	ERBS
	1973:3	ERBS
	1978:4 (Tablita)	ERBS
	1985:2 (Austral I)	ERBS
	1989:4 (Bonex)	MBS
	1991:2 (Convertibility)	ERBS
Bolivia	1985:3	ERBS
Brazil	1964:1	ERBS
	1986:1 (Cruzado)	ERBS
	1990:1 (Collor)	MBS
	1994:3 (Real)	ERBS
Chile	1975:2	MBS
	1978:1 (Tablita)	ERBS
Dominican Republic	1990:3	MBS
Israel	1985:3 (Shekel)	ERBS
Mexico	1987:4	ERBS
Peru	1990:3	MBS
Uruguay	1960:4	MBS
	1968:2	ERBS
	1978:4 (Tablita)	ERBS
	1990:4	ERBS
Turkey	1980:1	MBS

# **Table 2: Major Stabilization Programs**

Sources: see table 1.

Notes: - ERBS = Exchange Rate-Based Stabilization;

- MBS = Money-Based Stabilization.

- The programs whose date/name appears in bold were implemented during election cycles. The others were implemented during dictatorships or followed by dictatorships.

#### **Dependent variable:**

- STAB = 0 if no stabilization program (NS) is implemented in the current quarter,
  - = 1 if a Money-Based Stabilization (MBS) is implemented, and
  - = 2 if an Exchange Rate-Based Stabilization (ERBS) is implemented.

#### Independent political variables:

- *PCR Political Cycle Ratio*: number of quarters since the last elections divided by the number of quarters to the next elections (presidential, in presidential systems; and legislative, in parliamentary systems).
- *PCR2* Equal to *PCR*, except for the fact that parliamentary elections are also considered for countries that have a presidential system (all except Israel and Turkey).
- QNE Number of quarters to the next elections (presidential, in presidential systems; and legislative, in parliamentary systems).
- *QLE* Number of quarters since the last elections (presidential, in presidential systems; and legislative, in parliamentary systems).
- ELY = 1 if the last elections (presidential, in presidential systems; and legislative, in parliamentary systems) occurred in the last year, and =0 otherwise.
- *Frag* =1 if there is a one-party majority parliamentary government or a presidential government, with the same party in control of the parliament (with an overall majority), and =0 for more fragmented political systems.

F.Ind - Fragmentation Index of the distribution of seats in the lower house of the parliament:

*F.* Ind = 
$$\frac{1}{\sum p_i^2}$$
, where  $p_i$  = percentage of seats of party *i*.

*Right* = 1 for a right or center-right oriented government, and =0 otherwise.

#### Independent Economic variables:

*TR/Imp* – Ratio of Total Reserves to Imports.

*TRdT* – Percentage deviation from Trend (Hodrick-Prescott) of Total Reserves.

*Inf* – Growth of CPI since the same quarter of the previous year.

GDP>T = 1 if the growth of real GDP since the same quarter of the previous year is greater than the Trend (Hodrick-Prescott) growth rate of GDP.

GDP - Growth of Real GDP since the same quarter of the previous year.

GDPdT – Percentage deviation from trend (Hodrick-Prescott) of real GDP.

FB/GDP - Fiscal Balance (Government Budget Balance) as a percentage of GDP.

*IMFProg* = 1 if there is an ongoing IMF program (arrangement), and =0 otherwise.

TFC/IMP - Total Fund (IMF) Credit and loans outstanding as a percentage of Imports.

*Dur\_aid* – Duration of IMF financial support (number of quarters).

#### Sources:

- <u>Dependent variable:</u> see table 1.
- <u>Political variables:</u> Arthur Banks, ed., *Political Handbook of the World*, several issues; Gorvin (1989); Haggard and Kaufman (1992); McDonald and Ruhl (1989); Mainwaring and Scully (1995);*World Europa Yearbook*, Europa, several issues.
- <u>Economic variables:</u> International Financial Statistics IMF. Quarterly data on Real GDP was also obtained from IBGE (Brazil) and INEGI (Mexico). Data on the timing of IMF arrangements was obtained from the *IMF Annual Report* (several issues) and on the IMF web page (http://www.imf.org).

	1				2			
	MBS/NS	ERBS/NS	MBS/ERBS	MBS/NS	ERBS/NS	MBS/ERBS		
PCR	-2.14313 <0.1173> (-2.38)** [-5.49]	-0.099298 <0.9055> (-1.44) [-0.163]	-2.04384 <0.1295> (-2.26)**	-2.05077 <0.1286> (-2.59)*** [-5.09]	-0.122947 <0.8843> (-1.48) [-0.569]	-1.92782 <0.1455> (-2.42)**		
Frag	-0.294658 <0.7448> (-0.28) [-1.02]	0.592845 <1.8091> (1.05) [6.65]	-0.887503 <0.4117> (-0.76)					
F.Ind				0.316768 <1.3727> (0.85) [0.905]	-0.294771 <0.7447> (-1.96)** [-3.33]	0.611539 <1.8433> (1.55)		
TR/Imp(-1)	-1.70137 <0.1824> (-2.03)** [-4.57]	0.405146 <1.4995> (1.52) [5.20]	-2.10651 <0.1217> (-2.42)**	-1.72330 <0.1785> (-2.13)** [-4.53]	0.547809 <1.7295> (1.86)* [6.62]	-2.27111 <0.1032> (-2.68)***		
Inf(-1)	0.001101 <1.0011> (2.55)** [0.0027]	0.000360 <1.0004> (1.80)* [0.0035]	0.000741 <1.0007> (1.77)*	0.000954 <1.0010> (1.81)* [0.0022]	0.000402 <1.0004> (1.97)** [0.0040]	0.000551 <1.0006> (1.10)		
<i>GDP&gt;T(-1)</i>	0.915658 <2.4984> (1.10) [2.53]	-0.386384 <0.6795> (-0.83) [-4.65]	1.30204 <3.6768> (1.43)	0.795154 <2.2148> (0.87) [2.14]	-0.401641 <0.6692> (-0.87) [-4.68]	1.19679 <3.3095> (1.21)		
FB/GDP(-1)	0.073161 <1.0759> (0.48) [0.261]	-0.165117 <0.8478> (-4.15)*** [-1.85]	0.238278 <1.2691> (1.53)	0.083978 <1.0876> (0.55) [0.272]	-0.162593 <0.8499> (-4.21)*** [-1.80]	0.246571 <1.2796> (1.58)		
IMFProg	1.47107 <4.3539> (1.62) [3.99]	-0.436232 <0.6465> (-0.78) [-5.44]	1.90731 <6.7349> (1.85)*	1.66003 <5.2595> (1.68)* [4.36]	-0.516209 <0.5968> (-0.92) [-6.25]	2.17623 <8.8130> (1.99)**		
Log Likelihood Schwarz B.I.C. McFadden R <sup>2</sup> No. Observations No. MBS No. ERBS		-81.5082 123.096 0.2231 181 6 29			-80.5805 122.168 0.2320 181 6 29			

Table 4: Timing and choice of the nominal anchor of stabilization programs

Sources: see tables 1 and 3.

- The factor changes in the odds ratios are between "<>";
- *t*-Statistics are in parentheses;
- Significance level at which the null hypothesis is rejected: \*\*\*, 1%; \*\*, 5%; and \*, 10%;
- The marginal effects, in percentages ((dP/dX)\*100), are in brackets;
- Models estimated with a constant, by maximum likelihood (ML).
- MBS Money-Based Stabilization; ERBS Exchange Rate-Based Stabilization; NS No Stabilization.

MBS/ERBS	1	2	3	4	5
PCR	-1.89462 (-2.26)**	-1.88231 (-2.11)**	-1.75417 (-1.98)**	-2.05346 (-2.49)**	-1.93555 (-2.70)***
F.Ind	0.578103 (1.43)	0.615499 (1.52)	0.711575 (1.98)**	0.266104 (0.54)	0.484950 (1.04)
Right			2.68018 (2.04)**		
TR/Imp(-1)	-2.29384 (-2.80)***	-2.38665 (-2.82)***	-2.75305 (-3.03)***	-1.53212 (-1.81)*	-1.94717 (-1.95)*
Inf(-1)	0.000578 (1.36)	0.000601 (1.42)	0.000498 (1.03)	0.000370 (0.66)	0.000471 (0.83)
<i>GDP&gt;T(-1)</i>			1.71861 (1.59)	1.09804 (1.13)	1.04784 (1.01)
<i>GDP(-1)</i>	-0.010870 (-0.10)				
GDPdT(-1)		-0.024002 (-0.24)			
FB/GDP(-1)	0.225802 (1.49)	0.226553 (1.49)	0.260869 (2.08)**	0.219713 (1.30)	0.229535 (1.43)
IMFProg	2.03578 (1.99)**	2.09847 (2.05)**	3.01293 (2.67)***		
TFC/Imp (-1)				-0.371122 (-0.50)	
Dur_aid					0.200650 (1.20)
Log Likelihood Schwarz B.I.C. McFadden R <sup>2</sup> No. Observations No. MBS	-80.9719 122.560 0.2282 181 6	-81.1585 122.746 0.2265 181 6	-78.2985 125.085 0.2537 181 6	-79.2108 120.799 0.2450 181 6	-81.3756 122.964 0.2244 181 9
No. ERBS	29	29	29	29	26

# Table 5.A: Robustness tests for high inflation periods – I

Sources: see tables 1 and 3.

- *t*-Statistics are in parentheses;
- Significance level at which the null hypothesis is rejected: \*\*\*, 1%; \*\*, 5%; and \*, 10%;
- Models estimated with a constant, by maximum likelihood (ML).
- Only the results of the contrast MBS|ERBS are shown.
- MBS Money-Based Stabilization; ERBS Exchange Rate-Based Stabilization.

MBS/ERBS	6	7	8	9	10
PCR	-2.07722 (-2.16)**				
PCR2		-0.883161 (-1.59)			
QNE			0.115330 (1.71)*		
QLE				-0.179273 (-1.46)	
ELY					1.55280 (1.34)
F.Ind	0.182717 (0.52)	0.563122 (1.58)	0.973095 (2.45)**	0.561882 (1.48)	0.574947 (1.64)
TR/Imp(-1)		-2.26738 (-2.43)**	-2.52650 (-2.75)***	-2.26648 (-2.68)***	-2.41801 (-2.68)***
TRdT(-1)	-0.033335 (-1.76)*				
Inf(-1)	0.000377 (0.96)	0.000625 (1.24)	0.000554 (1.19)	0.000627 (1.16)	0.000642 (1.26)
<i>GDP&gt;T(-1)</i>	1.51149 (1.65)*	1.18756 (1.17)	1.54823 (1.55)	1.26821 (1.26)	1.38259 (1.48)
FB/GDP(-1)	0.218062 (1.20)	0.240569 (1.41)	0.208503 (1.59)	0.255831 (1.36)	0.253915 (1.37)
IMFProg	0.746034 (0.66)	2.17892 (1.99)**	2.69462 (2.33)**	2.06298 (1.91)*	2.27231 (2.05)**
Log Likelihood Schwarz B.I.C. McFadden R <sup>2</sup> No. Observations	-83.1286 124.717 0.2077 181	-82.5444 124.264 0.2180 184	-80.6657 122.254 0.2312 181	-82.1633 123.751 0.2169 181	-82.7766 124.365 0.2110 181
No. MBS No. ERBS	6 29	6 29	6 29	6 29	6 29

## Table 5.B: Robustness tests for high inflation periods – II

Sources: see tables 1 and 3.

- *t*-Statistics are in parentheses;
- Significance level at which the null hypothesis is rejected: \*\*\*, 1%; \*\*, 5%; and \*, 10%;
- Models estimated with a constant, by maximum likelihood (ML).
- Only the results of the contrast MBS|ERBS are shown.
- MBS Money-Based Stabilization; ERBS Exchange Rate-Based Stabilization.

0.128418		
0.128418		
0.128418		
(2.00)		
	-0.277531 (-2.17)**	
		2.03651 (1.77)*
0.727742	0.656816	0.667001
(2.05)**	(1.68)*	(1.75)*
-1.68358	-1.79926	-1.82747
(-1.37)	(-1.38)	(-1.46)
0.000029	0.000013	0.000015
(0.46)	(0.17)	(0.23)
1.11995	0.822166	0.915660
(0.99)	(0.82)	(0.93)
0.102977	0.130743	0.127743
(1.01)	(1.23)	(1.24)
0.239277	0.606677	0.608845
(0.19)	(0.55)	(0.54)
-140.374	-141.681	-142.183
195.588	196.895	197.397
0.1622	0.1543	0.1513
994	994	994
6	6	6
29	29	29
	(2.00)** 0.727742 (2.05)** -1.68358 (-1.37) 0.000029 (0.46) 1.11995 (0.99) 0.102977 (1.01) 0.239277 (0.19) -140.374 195.588 0.1622 994 6 29	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

## Table 6: Robustness tests for all observations

Sources: see tables 1 and 3.

- *t*-Statistics are in parentheses;
- Significance level at which the null hypothesis is rejected: \*\*\*, 1%; \*\*, 5%; and \*, 10%;
- Models estimated with a constant, by maximum likelihood (ML).
- Only the results of the contrast MBS|ERBS are shown.
- MBS Money-Based Stabilization; ERBS Exchange Rate-Based Stabilization.

MBS/ERBS	1	2	3	4	5
PCR	-1.91841 (-2.42)**	-1.84919 (-3.49)***		-1.84349 (-3.45)***	
PCR2			-1.36668 (-2.51)**		-1.36487 (-2.51)**
F.Ind	0.580864	-0.051986	-0.009845	-0.027515	0.013580
	(1.56)	(-0.10)	(-0.02)	(-0.05)	(0.03)
TR/Imp(-1)	-2.12157	-3.71704	-3.59841	-3.71215	-3.59731
	(-2.75)***	(-2.16)**	(-2.43)**	(-2.15)**	(-2.42)**
Inf(-1)	0.000460	0.002303	0.002199	0.002256	0.002161
	(0.75)	(2.55)**	(2.85)***	(2.49)**	(2.80)***
<i>GDP&gt;T(-1)</i>	1.17477	1.57250	1.61701	1.47578	1.51534
	(1.09)	(1.31)	(1.37)	(1.23)	(1.28)
FB/GDP(-1)	0.197836	0.115154	0.117235	0.125743	0.126194
	(1.17)	(1.02)	(0.97)	(1.09)	(1.02)
IMFProg	1.85917	1.78010	1.91012	1.75269	1.88284
	(1.57)	(1.76)*	(1.95)*	(1.72)*	(1.91)*
Log Likelihood	-70.8709	-77.2347	-79.0078	-73.1952	-74.9964
Schwarz B.I.C.	111.062	118.823	120.727	114.514	116.451
McFadden R <sup>2</sup>	0.1869	0.2741	0.2619	0.2451	0.2311
No. Observations No. MBS No. ERBS	6 22	181 7 28	184 7 28	6 25	6 25

# Table 7: Sensitivity analysis using all programs

Sources: see tables 1 and 3.

- *t*-Statistics are in parentheses;
- Significance level at which the null hypothesis is rejected: \*\*\*, 1%; \*\*, 5%; and \*, 10%;
- Models estimated with a constant, by maximum likelihood (ML).
- Only the results of the contrast MBS|ERBS are shown.
- In column 1 Turkey and Israel are excluded from the sample;
- In columns 2 and 3 the 1985:3 Bolivian program is classified as a MBS;
- In columns 4 and 5 Bolivia is excluded from the sample.
- MBS Money-Based Stabilization; ERBS Exchange Rate-Based Stabilization.

	1				2		
	MBS/NS	ERBS/NS	MBS/ERBS	MBS/NS	ERBS/NS	MBS/ERBS	
PCR	-2.94762	-0.137135	-2.81048	-2.96661	-0.180169	-2.78644	
	(-2.04)**	(-0.79)	(-1.96)*	(-1.75)*	(-1.09)	(-1.65)*	
Frag=2	-0701639 (-0.63)	0.977924 (0.95)	-1.67956 (-1.11)				
F.Ind				0.466859 (1.32)	-0.231178 (-1.17)	0.698037 (1.78)*	
TR/Imp(-1)	-1.03953	0.290419	-1.32995	-1.17781	0.327933	-1.50574	
	(-2.80)***	(0.89)	(-2.86)***	(-3.13)***	(0.98)	(-3.17)***	
Inf(-1)	0.001217	0.000705	0.000512	0.000996	0.000746	0.000251	
	(2.59***)	(2.93)***	(1.00)	(1.60)	(3.37)***	(0.38)	
GDP>T(-1)	0.715908	-0.173259	0.889167	0.495187	-0.098268	0.593455	
	(0.79)	(-0.26)	(0.84)	(0.46)	(-0.15)	(0.50)	
FB/GDP(-1)	0.206484	-0.013533	0.220017	0.208088	0.000607	0.207481	
	(0.85)	(-0.27)	(0.91)	(0.82)	(0.01)	(0.81)	
IMFProg	0.945635	0.999757	-0.054122	1.22729	1.03609	0.191205	
	(0.97)	(1.34)	(-0.04)	(1.15)	(1.38)	(0.15)	
Log Likelihood Schwarz B.I.C. McFadden R <sup>2</sup>		-48.9690 91.8593 0.2325			-48.8278 91.7181 0.2347		
Nr. Observations Nr. MBS Nr. ERBS		213 5 10			213 5 10		

Table 8.A: Timing and choice of the nominal anchor (using only the main programs)

*Sources*: see tables 1 and 3.

- *t*-Statistics are in parentheses;
- Significance level at which the null hypothesis is rejected: \*\*\*, 1%; \*\*, 5%; and \*, 10%;
- Models estimated with a constant, by maximum likelihood (ML).
- MBS Money-Based Stabilization; ERBS Exchange Rate-Based Stabilization; NS No Stabilization.

MBS/ERBS	1	2	3	4	5
PCR	-2.79911 (-1.66)*	-2.56230 (-1.48)		-2.55261 (-1.47)	
PCR2			-1.42262 (-2.69)***		-1.41066 (-2.62)***
F.Ind	0.755112	0.235585	0.204193	0.220039	0.189879
	(2.05)**	(0.52)	(0.66)	(0.49)	(0.68)
TR/Imp(-1)	-1.57947	-2.11135	-2.16755	-2.06374	-2.12472
	(-3.35)***	(-2.48)**	(-2.39)**	(-2.43)**	(-2.36)**
Inf(-1)	0.000181	0.001590	0.001652	0.001519	0.001587
	(0.24)	(2.47)**	(2.88)***	(2.31)**	(2.71)***
<i>GDP&gt;T(-1)</i>	0.868035	1.05006	1.08095	0.978661	1.01726
	(0.69)	(0.72)	(0.78)	(0.66)	(0.72)
FB/GDP(-1)	0.201746	0.026076	0.023381	0.047131	0.041812
	(0.72)	(0.20)	(0.15)	(0.35)	(0.26)
IMFProg	-0.085452	-0.618471	-0.529813	-0.602956	-0.509202
	(-0.06)	(-0.55)	(-0.50)	(-0.54)	(-0.49)
Log Likelihood	-43.5453	-45.3285	-46.9911	-44.9261	-46.6272
Schwarz B.I.C.	84.6786	88.2189	89.9933	87.3525	89.1722
McFadden R <sup>2</sup>	0.2436	0.2956	0.2722	0.2503	0.2239
No. Observations	171	213	216	201	204
No. MBS	5	6	6	5	5
No. ERBS	9	9	9	9	9

## Table 8.B: Sensitivity analysis (using only the main programs)

Sources: see tables 1 and 3.

- *t*-Statistics are in parentheses;
- Significance level at which the null hypothesis is rejected: \*\*\*, 1%; \*\*, 5%; and \*, 10%;
- Models estimated with a constant, by maximum likelihood (ML).
- Only the results of the contrast MBS|ERBS are shown.
- In column 1 Turkey and Israel are excluded from the sample;
- In columns 2 and 3 the 1985:3 Bolivian program is classified as a MBS;
- In columns 4 and 5 Bolivia is excluded from the sample.
- MBS Money-Based Stabilization; ERBS Exchange Rate-Based Stabilization.