Money-Based vs. Exchange-Rate-Based Stabilization: Is there Space for Political Opportunism?*

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Abstract

In response to the high and chronic inflation that has plagued the developing world since the 1980's, countries adopted different stabilization policies. However, to what extent these stabilization programs were designed for political rather than economic motivations is not clear. Nor is it known whether and to what degree policy-makers may take advantage of the consumption cycles derived from the different stabilization strategies in order to further their political career. Since in chronic inflation countries, exchange-rate-based stabilizations create an initial consumption boom followed by a contraction whereas money-based stabilizations generate a consumption bust followed by a recovery, policy-makers may take into account the timing of elections when determining the nominal anchor for stabilization. This paper finds strong evidence that the choice of nominal anchor to stabilize inflation depends on the election cycle. In particular, exchange-rate-based stabilizations are on average launched before elections while money-based stabilizations are set after them, implying the existence of political opportunism in the choice of stabilization anchor. The empirical estimates are obtained through the use of fairly simple econometric models based on a sample of 34 fully-fledged stabilization episodes in 11 countries with high and chronic inflation. The results are robust to different model specifications. This paper contributes to understanding of interaction between political and economic phenomena providing a useful methodology to quantify this relationship.

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1   Introduction

It is clear that politics influence economic policy. Determining the extent to which this happens is quite a challenge, particularly for researchers studying developing countries. It is a challenge worth meeting, however, because failing to design the appropriate policy may have a major negative impact on the welfare of these societies.

An example of a policy with a high political dimension and strong welfare impact is the choice of nominal anchor to stabilize inflation. In response to high and chronic inflation, many countries have adopted stabilization policies. These policies differed in their design, but to what extent these differences arose from political rather than economic motivations is not clear. Nor is it known whether and to what extent policy-makers may take advantage of the consumption cycles derived from the different stabilization strategies in order to further their political career.[1]

There are basically two possible anchors available for policy-makers to stabilize inflation: the exchange rate and a monetary aggregate. These alternatives lead to two different consumption paths even if to the same end result in terms of welfare. Exchange-rate-based stabilization programs generate an initial consumption boom and a later recession in the economy whereas money-based stabilizations generate an early consumption bust followed by a recovery.[2] A benevolent dictator might be indifferent between both strategies but elected officials must be sensitive to reaction of voters. If voters are not perfectly forward looking, then the timing of elections might matter and knowledge of these consumption patterns allow politicians to use both nominal anchors opportunistically. In particular, an opportunistic

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[1] I use the terms policy-makers and politicians interchangeably throughout the paper for simplicity. Even though policy-makers may not be politicians, it is assumed that they have the same aspirations regarding victory in the next elections against the opposition.

[2] Even though there is some debate in the literature on the empirical regularities of stabilization strategies in high and chronic inflation countries, there is enough convincing evidence that supports the existence of consumption cycles after stabilization. The results of this paper will shed some light on this controversy providing a rational in favor of consumption boom-bust cycles. This debate and the related literature will be described in more detail below.

politician might use exchange-rate-based stabilizations prior to elections whereas monetary anchors might be employed after them.[3]

This paper tests the existence of political opportunism in the choice of nominal anchor to stabilize inflation, thereby contributing to the existing political economy literature and shedding some light on the decision-making process behind a country's choice of a particular stabilization strategy. The results derived from fairly simple econometric models using data on 34 fully-fledged stabilization episodes clearly indicate that the timing of elections affect the choice of anchor for stabilization. In particular, policy-makers assess how distant next elections are before making their choice of nominal anchor in the inflation stabilization program they have decided to embark on.

Estimates strongly suggest that the probability that policy-makers adopt an exchange-rate-based stabilization is higher when they are closer to the date set for future elections. The probability of adopting a money-based stabilization, on the other hand, is higher when future elections are far away and previous elections are closer. Moreover, the results show that the stock of international reserves available for policy-makers, how open the economy is and how fragmented is the political power not only affect the choice of anchor to stabilize inflation, but also the degree to which policy-makers may be more or less opportunistic in their choice of anchor. For example, three different policy-makers that decide to launch a stabilization program at different moments of their election cycle will have, respectively, 45% probability of choosing the exchange rate as the anchor three years before elections, 78% two years before elections and 99% one year prior to elections, for the case where reserves cover 10% of M3. Likewise, other things equal, a difference of about three years in the time remaining to next elections imply that policy-makers will adopt an exchange-rate-based stabilization with probabilities of 76% (five years before elections) and 100% (two years prior to elections).

The political economy literature has documented the impact of elections on different economic variables ranging from public budget deficits to inflation and real exchange rate.

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[3] Political opportunism is broadly defined throughout the paper as the policy-maker's choice of a particular policy taking into account the timing of elections. This policy, in turn, favors her candidacy enhancing her probability of winning the elections.

In particular, theoretical and empirical papers have established that the existence of political opportunism in developing countries creates a common pattern where these different variables cycle around elections. This paper contributes to the existing literature documenting the impact of elections and political opportunism on a very important policy variable that for decades has occupied the attention of economists interested in developing countries - namely, the nominal anchor to stabilize inflation.

This paper contributes to understanding of interaction between political and economic phenomena. Similar methodology could be used to study the determination of many other economic policy variables documenting the effects of elections and the existence or not of political opportunism behind their determination. An interesting question would be to assess if the effect of electoral politics on economic policy is different in developed and developing countries. If so, it might be suggested that strenghtening the institutions that oversight politicians in developing countries might reduce the degree of existing political opportunism which, in turn, may improve the quality of economic policy benefiting the societies in these countries.

The paper is organized as follows: Section 2 details the differences between money-based and exchange-rate based stabilization programs, Section 3 describes the opportunistic use of macroeconomic variables with particular emphasis on the existing literature, Section 4 addresses the opportunistic behavior behind the choice of stabilization strategies, Section 5 describes the data sources and the sample, section 6 defines the model and methodology used in the estimation procedure, Section 7 considers extensions to the basic model and Section 8 concludes.

2 Money-based versus Exchange-Rate-based Stabilization

Chronic inflation has been a major problem in the late 20th century for many countries in the developing world and especially in Latin America. The diverse stabilization attempts pursued in Latin America, Israel, Turkey and Iceland have allowed some economists to

identify unique stylized facts for each type of stabilization strategy.[4] The debates over what strategy to adopt in order to stabilize the economy have been intense, and have been centered around whether exchange-rate-based stabilization (ERBS henceforth) is superior to money-based stabilization (MBS henceforth).[5] Formally, the difference between these programs lies in the selection of the nominal anchor to bring inflation down to normal rates. The ERBS chooses the exchange rate as its nominal anchor while the MBS traditionally adopts a monetary aggregate, such as M1 or monetary base. The consequences of the choice of the nominal anchor differ considerably and have important implications.

Traditionally, disinflation has been treated as contractionary in the literature. For example, Okun (1978) relies on the trade-off between inflation and unemployment from the Phillips-curve literature to conclude that any attempt to disinflate would result in costly unemployment for the economy. The main contribution of this literature is the development and application of the sacrifice ratio, which enables economists to calculate how much employment, and therefore output, the economy would have to sacrifice for every percentage point reduction in the inflation rate. Thus, the primary problem faced by policy-makers attempting to stabilize the economy has traditionally been the contractionary effects disinflation has on output. However, disinflation does not need to be contractionary, as the hyperinflation episodes in Germany, Hungary, Austria and Poland in the 1920's and 1930's have shown. Some experiences in Latin American countries and Israel in the last few decades also contradict the results predicted by the Phillips-curve based literature. Many stabilization plans, such as Southern Cone "tablitas" of the late 1970's, the Austral in Argentina

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[4] Stabilization programs in economies in transition from central planning will not be analyzed in this paper. Even though political opportunism in the choice of anchor to stabilize inflation might have been present in countries such as Russia, Poland, Estonia, Latvia, Lithuania and others, inflation was a sub-product of their transition to become market-oriented economies without higher price flexibility. Policies in these countries were not meant simply to reduce inflation. They were particularly designed to organize economy activity and establish private ownership. This fact implies that it is almost impossible to assess under these circumstances whether or not there was political opportunism in the choice of anchor to stabilize inflation.

[5] It should be pointed out that there is nothing as a pure and perfect money-based stabilization program. Most programs, called here MBS, did not rely only on a monetary anchor but adopted a wide mixture of policies. Nevertheless, they tend to strongly differ from the exchange-rate-based stabilization programs due to the lack of an explicit "de facto" pegged exchange rate. In most of the cases of MBS considered, a floating exchange rate regime was adopted. Even though the paper will continue to use the term MBS, it might seem appropriate to refer to them as non-ERBS.

(1985), the Cruzado in Brazil (1986) and the New Shekel Plan in Israel (1985) have had a positive impact on output and employment, at least in the short run. Since these plans have been ERBS programs, ERBS has been perceived to have a smaller sacrifice ratio than MBS.[6]

The different experiences from the stabilization programs mentioned above have generated a very controversial literature regarding the effects of disinflation programs on consumption and output. Easterly (1996) in a study of a sample of stabilization programs has concluded that they are always expansionary. Kiguel and Liviatan (1992) and Vegh (1992) study the business cycles associated with ERBS in chronic inflation countries concluding that they greatly differ from those associated with MBS.[7] In particular, their study of a sample of stabilization episodes shows that the business cycle associated with ERBS begins with a boom and ends with a recession. Calvo and Vegh (1999) analyze stabilization programs adopted in Latin America and Israel. The theoretical work and empirical results of their paper are important because of the stylized facts they help to establish. Table 1 shows the most relevant empirical regularities of exchange-rate and money-based stabilization programs considered in their paper.

Table 1: Empirical Regularities of Stabilization Programs in Chronic Inflation Countries

Exchange-rate-based stabilization	Money-based stabilization
Slow convergence of the inflation rate to the rate of devaluation	Slow convergence of the inflation rate to the rate of growth of the money supply
Initial increase in real GDP and private consumption followed by a later contraction	Initial contraction in economic activity
Real appreciation of the domestic currency	Real appreciation of the domestic currency
Deterioration of the trade balance and current account deficit	No definite response of the trade balance and the current account
Ambiguous impact response of domestic real interest rates	Initial increase in domestic real interest rates

Source: Calvo and Vegh (1999)

[6] Since it is usually the case that ERBS raises output while reducing inflation, ERBS should have a negative rather than a positive sacrifice ratio.

[7] The consumption cycles associated to inflation stabilizations are valid for chronic inflation countries. Countries with high inflation such as Nicaragua, or even hyperinflations like Bolivia, are not present in Kiguel and Liviatan (1992) or Calvo and Vegh (1999) studies and it can be argued that they do not necessarily present the same consumption cycles as in chronic inflation countries. Nonetheless, since these cases are fully-fledged inflation stabilization programs, they will be considered in this paper.

The most striking difference between the two stabilization strategies is the real effects on economic activity. In particular, as alluded above, ERBS exhibit a consumption boom early on in the program followed by a later contraction. In contrast, MBS exhibit an initial consumption bust followed by a later recovery. The literature exploring these boom-bust cycles have concentrated on theoretical models replicating the empirical regularities in consumption following stabilization programs. The empirical literature sought to test what would be known as the "recession-now-versus-recession-later" hypothesis making reference to the possibility of delaying the disinflation costs (recession) using the exchange rate as the nominal anchor. It is important to note that ERBS attempts often lead to balance-of-payments crisis, loss of international reserves and major devaluations. Therefore, ex-ante, it is not a simple task to determine what stabilization strategy should be pursued, since initial consumption booms are definitely an advantage of ERBS over MBS. This is especially true if the economy is in a recession prior to the launching of the program.

Calvo and Vegh (1999) also provide theoretical models to explain consumption boom-bust cycles.[8] Perhaps one of the most important assumptions from their main model is that, at least a priori, one stabilization strategy should not be preferred over the other. The only difference between them depends on when the stabilization costs will be paid - earlier in the case of a MBS and later in the case of an ERBS. In other words, in an infinite horizon economy, the present value of consumption after the adoption of either stabilization strategy, can be assumed to be equal.[9]

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[8] This paper can rely in all of the theoretical explanations in the survey presented in Calvo and Vegh (1999) but one: "lack of credibility". According to this explanation, the exchange rate is not fully credible as a nominal anchor implying that consumers anticipate a future devaluation increasing consumption of tradables that result in a consumption boom. This motivation undermines the political opportunism in the choice of nominal anchor to stabilize inflation. Therefore, inflation inertia and durable goods consumption due to the stabilization can be used as theoretical explanations for the existence of consumption booms (and later busts) in an ERBS. The use of sticky prices can explain the patterns in a MBS. The important conclusion is that it is possible to create consumption boom-bust cycles in a perfectly credible model with forward-looking agents consistent with the basic idea presented in this paper.

[9] This is true only if it is assumed that there are no wealth effects involved in the process. If, for example, a consumption boom after an ERBS favors the political approval of fiscal and structural reforms that mean higher growth in the near future - then, an ERBS is strongly prefered over MBS to stabilize the economy. This happens because, under the later, the reforms would have taken one or two years more to be implemented (in the recovery) negatively affecting the total output produced by the infinite-lived economy.

In spite of the distinctive empirical regularities followeding ERBS and MBS described by Calvo and Vegh (1999), some studies in the recent literature dispute their validity. Echenique and Forteza (1997) re-examine the existence of consumption and output cycles after ERBS and conclude that they have happened because the ERBS are generally launched when the world economy is booming and the country has experienced positive terms of trade shocks. Therefore, they conclude that the consumption booms after ERBS were more the direct result of positive macroeconomic shocks than of a particular choice of nominal anchor. Gould (2001) argues that the initial consumption boom and bust in ERBS and MBS are endogenously determined by the initial conditions such as initial GDP and the level of international reserves of the different economies and bear no relation with the choice of anchor to stabilize inflation.

Since politicians may only choose opportunistically the nominal anchor to stabilize inflation if their choice has a relevant impact on consumption and output before elections, this paper is a significant contribution to the literature described above since it provides a rational for the existence of consumption cycles after stabilization.

3   Political Opportunism and the Behavior of Macroeconomic Variables

Given the consumption boom-bust cycles described previously, an interesting question is whether policy makers take advantage of temporary benefits resulting from policies in order to be reelected. In particular, are elections an important factor taken into account by policy-makers when deciding the features of some key economic policies? The political economy literature had been concerned with the relationship between the timing of elections, political opportunism and a wide range of important macroeconomic variables such as fiscal policy, inflation and the real exchange rate.

Persson and Svensson (1989), Tabellini and Alesina (1990) and Lambertini (2000) argue that fiscal policy and government budget deficits are affected by electoral politics and often chosen strategically. Stein and Streb (1998) study the inflationary cycles around elections describing cycles of low and high inflation before and after elections. Stein and Streb (1999)

and Bonomo and Terra (1999, 2000) argue that the real exchange rate depends on electoral politics. In particular, they show that the real exchange rate appreciates before elections and depreciates after them.

It is natural to ask how opportunistic politicians can choose their policies to their own benefit and still be reelected. The traditional literature has attributed two main alternatives regarding voters' behavior that are theoretically consistent with political opportunism. According to the first tradition (Nordhaus, 1975), voters may be myopic or short-sighted. The implications of assuming backward-looking adaptive expectations are straightforward: voters base evaluations on the recent past and thus reward governements producing consumption booms before elections.[10] Alternatively, a later tradition appeared with newer models based on the "politician's competence" (Rogoff 1990) where voters have rational expectations but lack information regarding the level of competence of the different politicians.[11] The implications of assuming rational expectations are that politicians make every effort to signal their type to voters by successfully generating a consumption boom before elections with either a MBS or an ERBS depending how distant are future elections. Edwards (1994) provides evidence that adaptive expectations models (retrospective voting) outperform rational expectations models of political business cycles in Latin America. Even so, since consumption booms prior to elections can be engendered by both traditions, it is safe to remain agnostic about what should be the appropriate variant. In fact, this study provides results that should be consistent with both theories of voter's behavior.

4   Political Opportunism and Inflation Stabilization

The survey of the previous section clearly reveals the existence of a wide variety of papers discussing the opportunistic use of real exchange rates and inflation. They are theoretical

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[10]Fair (1978) runs regresions for the presidential elections in the United States using elections and GDP growth as explanatory variables. Democratic and Republican governments face the same type of voters that put a very high weight on current inflation and GDP growth on the year of the election - as opposed to inflation and growth in the whole presidential term - when deciding for which candidate to vote. According to Fair (1978), retrospective voting seems to be strongly present in the United States.

[11]For a comparison of both theoretical variants, see Alesina, Roubini and Cohen (1997).

and empirical studies establishing that, for many developing countries, the real exchange rate appreciates (low inflation) prior to elections and depreciates (high inflation) after elections. However, the political economy literature fails to address very important policy questions regarding inflation stabilization: is the strategic choice between monetary or exchange-rate anchors influenced by elections when policy-makers want to stabilize the rate of inflation? Are policy-makers compelled to choose ERBS before elections and MBS after elections acknowledging the different consumption cycles in the aftermath of each stabilization strategy? I propose to answer these questions with empirical evidence. Table 2 shows how voting intentions for the 1994 Brazilian presidential campaign changed in favor of the candidate who launched the Real exchange-rate-based stabilization program in July of the same year.

Table 2: Real Plan - Voting Intentions

	Cardoso	Lula
June	17%	39%
July	27%	30%
August	45%	23%
September	43%	22%
October (results)	54%	27%

Source: Stein and Streb (1997)

The Mexican ERBS is another case where the elections occurred after the plan was launched in December 1987. In July 1988, Carlos Salinas was elected and the PRI strategic choice to stabilize the economy was praised by voters enthusiastic with the ongoing consumption boom. Programs such as Austral 1985, Cruzado 1986 and Convertibility 1991 seem to be more related to congressional elections usually held months after the stabilization was launched. On the other hand, MBS seemed to have occurred after elections took place. The Bonex plan in Argentina was launched by the new elected government headed by Carlos Menem. The Collor plan in Brazil was launched in March 1990 right after Fernando Collor de Melo was elected president. Other money-based programs such as Peru 1990 and Dominican Republic 1990 were also launched after elections. The consumption busts that follow from MBS represent a great political cost to be avoided before important elections;

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rather, the incumbent would prefer the cost to be paid as soon as the new government is in charge so that the economic recovery can take place later in the same presidential term. Furthermore, MBS launched soon after elections may serve the purpose of blaming the past administration for the harsh recession that inevitably follows.

The choice of stabilization strategy might also be related to the level of support enjoyed by the politicians. MBS programs were usually launched right after the new elected governments took power.[12] As a result, their stock of political capital was very high, allowing them to adopt a short-run strict strategy to stabilize inflation, even at a cost of a deep recession. Conversely, ERBS could be thought as an instrument in order to increase political capital prior to elections.

Figures 1 and 2 below show the relationship between GDP growth and the timing of the stabilization attempts and elections for Argentina and Brazil. The figures indicate that the Austral Plan (Argentina, June 1985) and the Cruzado Plan (Brazil, February 1986) are examples of ERBS programs launched before elections. As shown in the figures, they succeeded to promote growth at least up to the elections occurred in October 1985 in Argentina and in November 1986 in Brazil. The pictures also show two typical MBS programs, Bonex (Argentina, December 1989) and Collor (Brazil, March 1990), which were launched soon after elections generating a strong recession reflected by negative growth rates. The figures suggest that the the anchors in the stabilization programs mentioned above might have been opportunistically selected.

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[12]The exceptions are the Turkish program and the BONEX in Argentina. It took Menem six months to adopt the program after trying different policies to stabilize the rate of inflation. All other MBS programs were adopted right after the elected president took power.

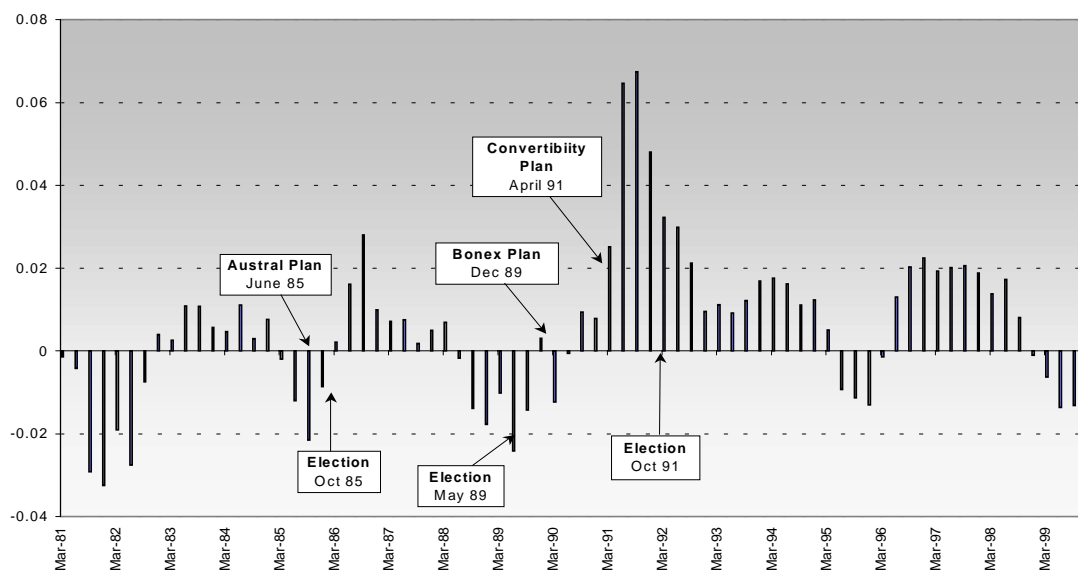Figure 1: Quarterly GDP Growth Rates (Argentina 1980-2000)

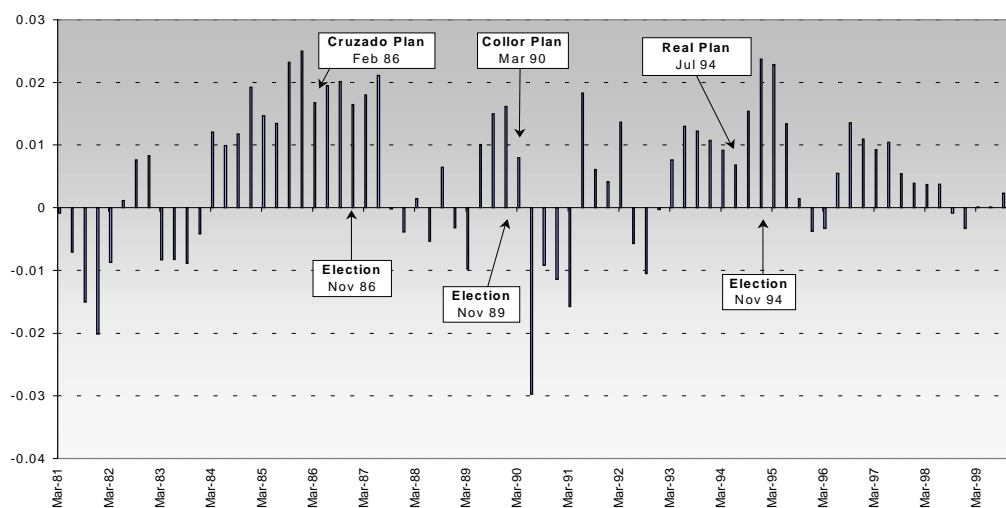Figure 2: Quarterly GDP Growth Rates (Brazil 1980-2000)

Table 3 below is another indication of the strong relationship between the timing of the stabilization programs and elections. The table indicates the exact moment of an election (t^*) and, around it, the starting time of some stabilization attempts extracted from the complete sample of stabilization programs. Most of the programs are concentrated in the first diagonal of the table. This features indicate that MBS programs are launched generally after elections whereas ERBS are mostly launched before elections. Nonetheless, many ERBS programs were launched after elections challenging the existence of political opportunism in the choice of anchor for stabilization. The empirical models in this paper will reveal that the ERBS launched after elections are consistent with the idea that political opportunism might also be present in these situations.

Table 3: Stabilization Plans and Timing of Elections

	9 Months Before	t*	9 Months After
E R B S	Aridor I (Israel) Cohen-Orgad (Israel) Plan February 1985 (Bolivia) Austral I (Argentina) Cruzado (Brazil) February Plan (Argentina) Plan 1987 (Mexico) Primavera II (Argentina) Convertibility (Argentina) Real (Brazil)		Package Deal I (Israel) Package Deal II (Israel) Plan 1983 (Iceland) Plan 1985 (Peru) Plan BB (Argentina) Plan January 2000 (Turkey) Plan August 1985 (Bolivia)
M B S			Bonex (Argentina) Collor (Brazil) Plan 1990 (Dominican Rep.) Plan 1990 (Peru)

Table 4 below shows all the stabilization programs from 1980 onwards undertaken in countries that suffered from high and/or chronic inflation, the type of stabilization (MBS or ERBS) they adopted and the closest election (presidential or congressional) date before and after the stabilization.[13] [14]

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[13]There were many stabilization programs prior to 1980. Most of them, such as the Tablitas in Argentina, Uruguay and Chile occurred during dictatorial regimes where there were not elections and, therefore, they are not part of the sample. Elections are either presidential or congressional with the exception of Iceland, Israel and Turkey which are the only countries with a parliamentary regime. Most of the elections considered in the sample are exogenous, which means that they were neither advanced nor postponed from its original schedule. Some exceptions are worth mentioning: the November 1984 Israeli elections (advanced 1 year), the Argentine May 1989 elections (advanced to May from November), the military government in a short period between the two elections around the Turkish stabilization program (military coup in September 1980 when elections should have happened later and were postponed to much later in 1983), and one stabilization program in Bolivia during Siles-Suazo launched before the early call for first democratic elections after years of dictatorships. A critical review of these cases indicates that the decision to call for early elections or to postpone them preceded and was by and large independent on the reasons that led the countries to decide whether or not to launch a stabilization program and to use or not a specific nominal anchor. Nonetheless, estimates were also obtained excluding the stabilization programs related to election cycles "not perfectly" exogenous. The results did not change significantly and it can be argued that the models estimated in this paper are robust to the exclusion of stabilization programs related to these doubtful exogenous elections.

[14]The reason behind choosing only the programs occurring after 1980 is related to the fact that democracy returns to most of the countries in the sample during the 80's. Besides, the macroeconomic environment they lived in changed substantially starting in 1980. In general, good criteria to avoid unnecessary sample selection biases should be completely independent on the research objective. The criterion based on a time period was chosen exactly because it fits this important principle despite the loss of information due to the fact that some stabilization programs were indeed undertaken in democratic countries before 1980. Mexico ERBS in 1976 is perhaps the best example.

Table 3: The Sample of Stabilization Programs*

Stabilization Program	Beginning Date	Type	Elections Before	Elections After
Turkey 1980	Jan-80	MBS	Jun-77	Nov-83
Israel – Aridor I	Dec-80	ERBS	May-77	Jun-81
Israel – Aridor II	Sep-82	ERBS	Jun-81	Jul-84
Bolivia 1982	Nov-82	ERBS	Jul-80	Jul-85
Iceland 1983	May-83	ERBS	Apr-83	Apr-87
Israel – Cohen-Orgad	Dec-83	ERBS	Jun-81	Jul-84
Bolivia 1984	Apr-84	ERBS	Jul-80	Jul-85
Israel – Package Deal I	Jul-84	ERBS	Jul-84	Nov-88
Israel – Package Deal II	Nov-84	ERBS	Jul-84	Nov-88
Bolivia 1985 - I	Feb-85	ERBS	Jul-80	Jul-85
Israel – Package Deal III	Feb-85	ERBS	Jul-84	Nov-88
Argentina – Austral I	Jun-85	ERBS	Oct-83	Oct-85
Israel - New Shekel	Jul-85	ERBS	Jul-84	Nov-88
Bolivia 1985 - II	Aug-85	ERBS	Jul-85	May-89
Peru 1985	Aug-85	ERBS	Apr-85	Apr-90
Brazil – Cruzado Plan	Feb-86	ERBS	Nov-82	Nov-86
Argentina – Primavera Plan I	Aug-86	ERBS	Oct-85	Oct-87
Argentina – February Plan	Feb-87	ERBS	Oct-85	Oct-87
Brazil – Bresser Plan	Jun-87	ERBS	Nov-86	Nov-89
Argentina – Austral II	Oct-87	ERBS	Oct-85	Oct-87
Mexico 1987	Dec-87	ERBS	Jul-85	Jul-88
Brazil – Gradualist Plan	Apr-88	ERBS	Nov-86	Nov-89
Argentina – Primavera II Plan	Aug-88	ERBS	Oct-87	May-89
Brazil – Summer Plan 1988	Jan-89	ERBS	Nov-86	Nov-89
Argentina - BB Plan	Jul-89	ERBS	May-89	Oct-91
Argentina - BONEX	Dec-89	MBS	May-89	Oct-91
Brazil – Collor Plan	Mar-90	MBS	Nov-89	Oct-94
Dominican Republic 1990	Aug-90	MBS	May-90	May-94
Peru 1990	Aug-90	MBS	Apr-90	Apr-95
Uruguay 1990	Dec-90	ERBS	Nov-89	Nov-94
Nicaragua 1991	Mar-91	ERBS	Feb-90	Oct-96
Argentina – Convertibility Plan	Apr-91	ERBS	May-89	Oct-91
Brazil - Real Plan	Jul-94	ERBS	Nov-89	Oct-94
Turkey 2000	Jan-00	ERBS	Apr-99	Nov-02

*References for the stabilization programs can be found in Kiguel and Liviatan(1991), Heyman(1991) and Calvo and Vegh(1999) for Argentina, Morales(1988) and Agenor and Montiel (1999) for Bolivia, Kiguel and Liviatan(1991) and Calvo and Vegh(1999) for Brazil, Medeiros(1994) for Dominican Republic, Andersen and Guomundsson(1998) for Iceland, Razin(1991) and Calvo and Vegh(1999) for Israel, Calvo and Vegh(1999) for Mexico, Reyes(1999) for Nicaragua, Agenor and Montiel(1999) and Calvo and Vegh(1999) for Peru, Calvo and Vegh (1999) for Uruguay and Rodrik(1991) and Aruoba(2001) for Turkey. Data for elections can be found in the Lijphart elections archives.

According to Table 4, many stabilization programs were adopted close to either a presidential or congressional election. Many others such as Israel 1985 or Uruguay 1990 seem to have been adopted far from elections. At least five stabilization programs relied on monetary aggregates after the introduction of elections in countries such as Argentina, Brazil, Peru, Dominican Republic, Uruguay and Turkey.[15] Even though the use of monetary anchors became more frequent after the return of democracy in 1980, Table 4 shows a clear preference for the adoption of the exchange rate as the anchor to stabilize inflation. This observed preference might be related to the fact that the exchange rate may be a more efficient instrument than a monetary aggregate to quickly reduce high and chronic inflation, especially if widespread indexation of contracts and prices to the exchange rate exists. The next sections present a deeper analysis to test the hypothesis that the timing of elections affects the choice of anchor to stabilize inflation.

5   Data Sources and the Sample

In order to construct a sample one must first define a stabilization attempt. What is considered a stabilization program is an important and controversial question. The literature considers basically two methods to define a stabilization attempt: the mechanical approach and the "episodic" approach. The former uses a mechanical rule to define a stabilization whereas the later considers the use of well known case studies mentioned in the economics' literature to determine what can be considered an inflation stabilization plan.

Easterly (1996) is an important paper in the mechanical tradition that states that stabilizations are all episodes in the cross-country data of movement from two years or more of

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[15]There is a debate on the literature regarding the classification of the Bolivian stabilization program as MBS or ERBS. Some defend the ERBS classification claiming that the "de facto" anchor in the stabilization program was the exchange rate, even though "de juri" it was not as it was not announced in the beginning of the program. Agenor and Montiel (2000) classify the Bolivian plan as a MBS explaining that no peg was adopted when the program was announced. I define the Bolivian program as an ERBS using the "de facto" definition for the classification of anchor. Several case studies show that the exchange rate in Bolivia was widely used as an anchor throughout the program with the central bank even defining, through daily auctions, the final amounts and sale prices for foreign exchange in the market. Nevertheless, estimations were produced with the same sample but with Bolivia as a MBS. The results did not change significantly and, threfore, the estimates in this paper are robust to this Bolivian classification switch.

above 40% annual inflation to two years or more of below 40% annual inflation. Hamann (1999) also advocates the use of mechanical rules defining more flexible criteria in order to determine what is an inflation stabilization attempt. The shortcomings of this tradition are that episodes found do not necessarily represent fully-fledged stabilization attempts. Besides, mechanical rules tend to be biased towards successful stabilizations leaving the failed attempts out of the list of stabilization episodes.

Calvo and Vegh (1999), Veiga (1999) and Veiga (2000) adopt the "episodic" approach to determine their samples of stabilization programs. The main shortcoming of the "episodic" method is that it may fail to consider stabilizations that have occurred in the world but were not heavily addressed by the literature. This is especially true if some of the stabilization attempts took place in remote countries.

In the analysis of political opportunism, it is important to consider only fully-fledged stabilization programs. There are many episodes of inflation reducing policies (traditional monetary and fiscal policies) that cannot be characterized as fully-fledged stabilization programs.[16] Besides, the more these programs were publicly announced by policy makers, the more consistent they are with respect to the "episodic" approach and, therefore, the more suitable they are for the sample. Adopting rules that could leave unsuccessful stabilizations out of the sample and including programs which were not really inflation stabilization plans undermine the use of the mechanical approach.[17] Even though the "episodic" approach has its limitations, it is adopted because it is more appropriate for the research question of this paper.[18]

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[16]Fully-fledged stabilization programs are announced "packages" containing a diverse array of policies. Some programs adopt traditional orthodox (fiscal and monetary policies) and others adopt non-traditional heterodox policies (price and wage controls, income policies and "social pacts" among different pressure groups). Most of them include monetary reforms and measures to reduce price and wage indexation. These programs, therefore, completely differ from the policies implemented by the Central Bank and the Treasury of the different countries on a daily basis. This is true even when these policies are implemented in order to reduce the inflation rate by a few percentage points.

[17]Nevertheless, the inclusion of some stabilizations such as Iceland (1983) and Nicaragua (1991) were extracted from Hamann (1999). The author found their existence using a mechanical rule but their ultimate inclusion was only possible when case studies of the stabilizations were found. This procedure is consistent with the "episodic" approach, although it may be considered a mixture of both methodologies.

[18]A fair question to ask is whether the higher number of ERBS compared to MBS could show that it is more convenient to announce ERBS rather than MBS. In particular, according to this view, policy-makers would

The stabilization programs used in the empirical analysis are those of Table 4. Therefore, there are 34 episodes of inflation stabilization. Data for elections are available for the whole period from the Lijphart Elections Archive from the University of California, San Diego (1980). Data for all the economic variables come from the IFS (International Financial Statistics from the IMF) and the Central Banks of the countries in the sample. Data for political fragmentation are taken from the Database of Political Institutions compiled by Beck et al. (1998).

6 Econometric Model

Figures 3 and 4 below show the distributions of the most important variables used in the regression analysis according to the nominal anchor. The distribution of months to next election clearly indicates a high frequency (around 50%) in the range of 0-17 months for ERBS as well as a high frequency (80%) in the range of 35 and above months to next election for MBS. On the other hand, the distribution of months from past election shows high frequency (80%) in the range 0-12 months for MBS as well as a high concentration (around 58%) of ERBS in the range of 13 months and above from past election. The figures suggest the existence of a close relationship between the election cycle and the choice of nominal anchor. The regression analysis that follows will help determine the existence of such relationship.

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try to avoid the announcement of MBS prior to elections even if they existed. In this case, a selection bias could exist in favor of ERBS over MBS. A priori, however, it is not obvious that policy-makers may prefer to announce one strategy over the other to stabilize inflation. Strategies chosen and announced should depend largely on the election cycle. Furthermore, it is difficult to assume that MBS actually happened but were not announced by policy-makers. The countries in the sample are very sensitive to inflation stabilization policies and it is hard to imagine politicians mitigating their adoption just by failing to announce their existence.

Figure 3: Distribution of ERBS - MBS by Months to the Next Election
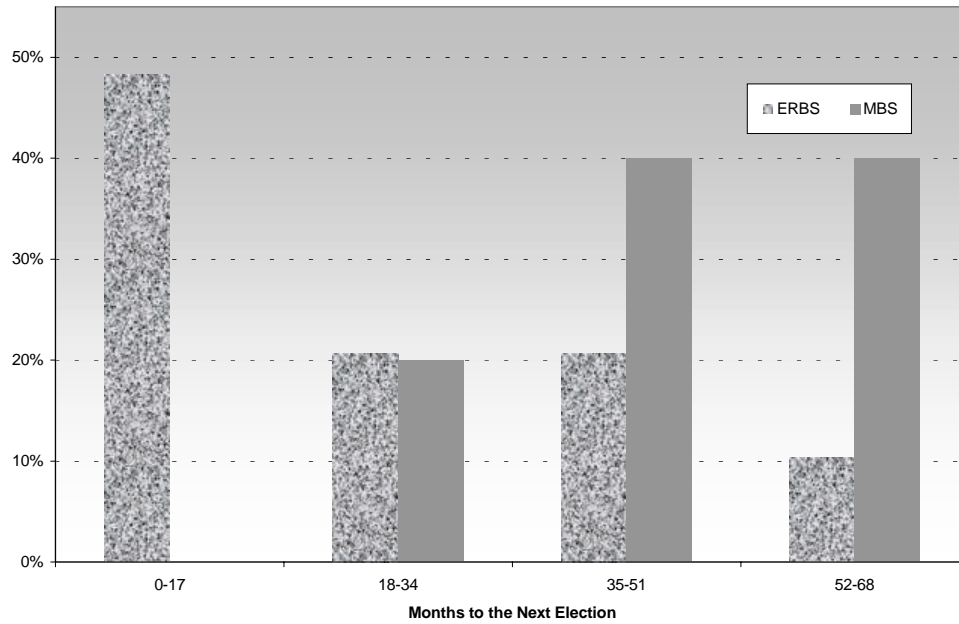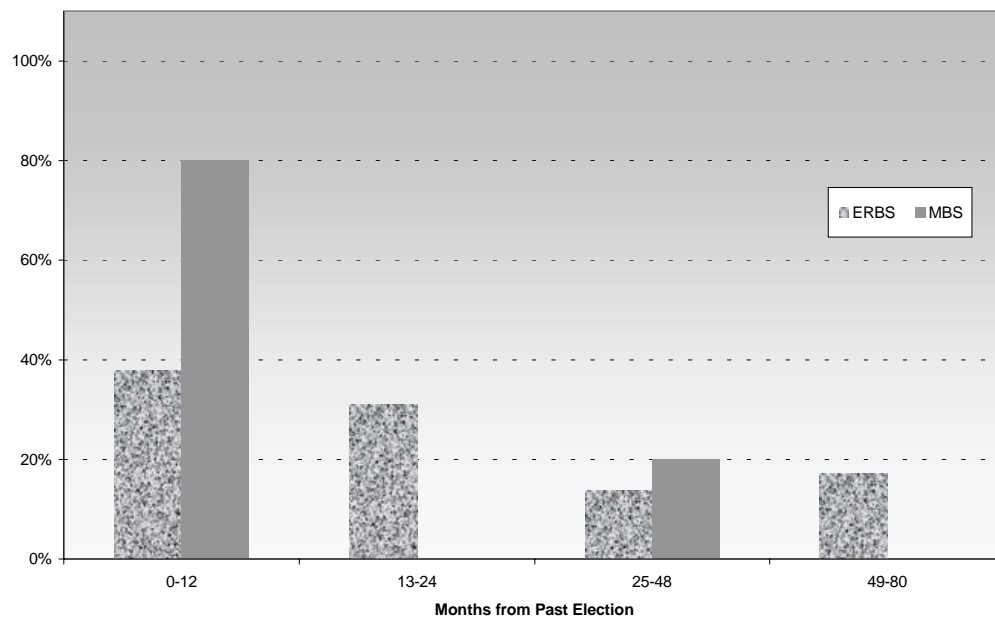

Figure 4: Distribution of ERBS- MBS by Months from Past Elections

The econometric analysis will model the choice of nominal anchor to stabilize inflation using a cross-section of policy-makers responsible for the 34 stabilization programs documented in Table 4. The empirical models estimate the influence of elections on the choice of stabilization anchor used by policy-makers. This relationship will capture the existence of political opportunism in the choice of the nominal anchor to stabilize inflation.[19] The econometric models use distance in months from the adoption of the stabilization program to the next and from past elections as the main explanatory variables for the choice of anchor to stabilize inflation.

A series of probit models are estimated where Y_i is the discrete dependent variable that takes the values 0, if the program is a MBS, and 1 if the program is an ERBS. The first benchmark model to be estimated is:

$$P(Y_i = 1) = \Phi(X_i'\beta) = \Phi(\beta_0 + \beta_1 \ln(X_{1i}) + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i})$$

where $\Phi(X_i'\beta)$ is the standard normal cumulative distribution function.

The X matrix is composed by the following regressors:

X_1 : months to next election

X_2 : international reserves

X_3 : openess

X_4 : political fragmentation index

X_5 : quarterly GDP growth rate

It is not particularly important the logarithmic form set for the variable months to next election in the regression. The assumption introduces another concavity, aside from the probit specification, in the way the distance to the next elections affect the choice of anchor to stabilize inflation. In particular, the rate at which the probability of a policy-maker adopting an ERBS increases as elections get closer.[20] International reserves are calculated

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[19]The models in this paper take as given the policy-makers' decision to stabilize inflation. This decision is first and foremost influenced by the inflationary process experienced by the different countries, and it is therefore, independent on the choice of anchor used all through the stabilization attempts. Bruno et al. (1991) is a good reference for case studies investigating the inflationary process affecting the decision of whether or not to stabilize inflation in a variety of countries.

[20]

as the ratio Reserves/M3. This is a useful way that takes into account the relative sizes of the countries when considering the distinct amount of international reserves they possess. The ideal measure would include IMF potential financial assistance that would eventually increase the stock of international reserves of the different countries. In practice, this is impossible to do since the IMF does not reveal the amount of either conditional or unconditional loans it is willing to grant to countries in financial distress. Openess is defined as the share of total exports plus imports over GDP a month before the stabilization program. The index of political fragmentation is a dummy variable that takes the value of 1 for fragmented political environment and 0 for a more stable and cohesive one. Political fragmentation in a presidential regime means that the incumbent's opposition party has the majority in congress and, in a parliamentary regime, it means that the incumbent's party (government) does not have majority in the parliament.[21] The growth rates considered have two quarters lag from the starting month of the stabilization program. This assumes that policy-makers knew only two-quarter lagged (and not current) growth rates when they decided the anchor to be used to stabilize inflation.

The main objective of the estimation is to determine the sign of β_1 as well as its statistic significance. The smaller the distance in months to the next election, the higher should be the probability of adoption of an ERBS since it is more likely that the consumption boom will occur close to the next elections. Therefore, theory predicts that β_1 should have a negative sign.

It is also very interesting to examine the possibility of other variables affecting the choice of stabilization anchor. The intuition for the level of international reserves is straightforward. A higher level of international reserves should result in a higher probability of adoption of an ERBS since the government has more ability to sustain a fixed level of the exchange rate. Therefore, theory predicts that β_2 should have a positive sign.

A higher level of openess should positively affect the probability of an ERBS. This pre-

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Using the linear specification for the distance produced very similar results. For convenience, throughout the paper, only the results of the estimated models using the logarithmic form will be shown.

[21]This index is derived from a more general index reported by Beck et al. (1998) in the database for political institutions.

diction is consistent with the idea that the more a country is exposed to international trade flows, the stronger are the effects of possible terms of trade shocks that are likely to occur. In particular, negative terms of trade shocks generate trade deficits that pressure the exchange rate to depreciate. The way these shocks will be transmitted depends critically on the exchange-rate regime in a particular country. If there is a fixed exchange-rate regime international reserves can be used to mantain the peg while in a floating regime the currency depreciates. If there is a high passtrough from the exchange rate to domestic prices, this depreciation might result in higher inflation rates. Therefore, a risk averse policy-maker that has inflation stabilization as a priority is more likely to choose the exchange rate as the nominal anchor the more open the economy is for trade flows. The intuition above suggests that β_3 should have a positive sign.

High political fragmentation increases the probability of adoption of an ERBS since it is very unlikely that a government finds enough political support for policies that entail great short-run output costs to the public such as a MBS. The ability policy-makers have to implement their preferred policies depends on their stock of political capital necessary for policy-making.[22] Therefore, it is very important to consider facts and events that took place in past periods as an indication of how much political support candidates have before embarking on any specific economic program. In particular, recently elected politicians possess a very large stock of political capital that can be used to set unpopular economic policies like a MBS. According to this view, it would make sense for politicians to adopt unpopular policies when their stock of political capital is at its highest level. The aftermath of an election is an obvious circumstance where the stock of political capital has not yet suffered any depreciation. Therefore, the intuition above implies that higher political fragmentation should increase the probability of an ERBS ($\beta_4 > 0$).

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[22]Generally, but not always, the more relatively unpopular are the policies, the higher is the need for political support. This support may come from politicians inside the government bureaucracy or outside from the Congress or other political institutions. Political support may also come directly from people in public demonstrations as, for example, populist governments in Brazil and Argentina have experienced in the past. Ideally, one would like to be able to accurately measure political capital but, naturally, this is a complex task. In this paper, the index of political fragmentation is used as a good approximation capturing the amount of political capital available to the politician before choosing the nominal anchor to stabilize inflation.

Finally, GDP growth may influence the choice of stabilization anchor since if a country is in a recession it is more likely to implement an ERBS given that adopting a MBS will further depress the economy, increasing the overall costs of the program. Therefore, it should be expected the sign of β_5 to be negative.

The coefficients of the regression will be unbiased only if the different explanatory variables are orthogonal to the stochastic error term of the regression. This condition implies, among other things, that the right-hand side variables of the model are exogenously determined. It is straightforward to justify that growth and openess before stabilization and political fragmentation are independent on the choice of anchor to stabilize the economy. It is not as easy to see that the distance to next elections is independent on the choice of anchor to stabilize inflation. The distance variable is composed by two factors: the date of the elections and the date that the decision to stabilize takes place. The first part is completely exogenously determined by the countries' legal system. It can be argued that the second component is dependent on the nominal anchor chosen. In particular, it could be the case that policy-makers are committed to a particular anchor and they simply wait for the best moment in time to decide when to stabilize inflation launching the anchor they were long time before committed to. If this is the case, the choice of anchor would be affecting the decision when to stabilize inflation and, therefore, the distance to next elections variable in the regression would no longer be exogenously determined. However, all throughout the paper, it has been assumed that the decision to stabilize inflation precedes the choice of the nominal anchor to be chosen. This is a sensible assumption for two important reasons. First, the decision when to stabilize inflation strongly depends on how high is the inflation rate in the economy as well as the rate of change of inflation in every point in time. The inflationary history of the country, among other things, will determine the exact moment to launch the nominal anchor to stabilize inflation. The second argument, somehow connected to the first, relates to the fact that it is hardly the case that a politician is committed to a particular policy instrument such as a nominal anchor. Quite the opposite is true. Policy-makers are committed to policy objectives such as lower inflation and higher output. In particular, they

are willing to reach these two policy goals at some point before elections using whatever instruments they can, so they are able to enhance their chances of reelection. On this basis, it can be argued that the decision when to stabilize inflation (and the variable distance to next elections) are determined exogenously to the model. The above intuition is also valid for the level of international reserves prior to stabilization. Even though it could be the case that this level would have been influenced by a prior decision to use, for example, the exchange rate as the nominal anchor in a future stabilization program, it is again assumed, that the decision to stabilize inflation precedes any other policy decision and, therefore, the choice of anchor to stabilize is selected afterwards with whatever stock of international reserves available at the moment. The assumptions regarding the policy-maker's behavior and the decision-making process outlined above guarantee the exogeneity of all the explanatory variables of the model, assuring that the coefficients estimated are unbiased.

Since heteroskedasticity is a very common problem in cross-section analysis an estimator of variance more robust than the traditional computation will be used.[23] Therefore, all standard errors calculated throughout the econometric analysis are robust (corrected for heteroskedasticity) using the Huber-White-Sandwich method.

Below, Table 5 presents the results of a set of regressions using different combinations of the variables months to next election, reserves, openess, political fragmentation and growth as regressors.

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[23]The possible presence of heteroskedasticity in the model might be, for instance, a result of the fact that countries with high levels of international reserves can have both choices of nominal anchor to stabilize inflation whereas countries with low levels of reserves cannot choose the exchange rate as a viable anchor having to rely on a monetary aggregate.

Table 5 - Regression Variants using Absolute Distance to Next Elections

	(1)	(2)	(3)	(4)	(5)	(6)
	ERBS	ERBS	ERBS	ERBS	ERBS	ERBS
log (Months to Next Elections)	-2.260 ***	-1.932 ***	-2.117 **	-1.363 *	-2.053 ***	-1.029 **
	(0.72)	(0.60)	(1.06)	(0.71)	(0.77)	(0.48)
Reserves	16.312 **	16.661 **	11.764 *	14.919 **		
	(7.61)	(7.99)	(6.71)	(5.95)		
Openness	3.374 **	3.452 **	3.474 ***		3.496 ***	
	(1.58)	(1.43)	(1.13)		(1.35)	
Fragmentation	2.43 ***	1.635		1.9 *	-0.772	
	(0.93)	(1.09)		(1.15)	(0.80)	
Growth	20.778					
	(33.08)					
Constant	2.815	2.285	5.08	1.630	7.377 **	4.527 ***
	(2.27)	(1.79)	(3.92)	(1.70)	(3.13)	(1.73)
Prob > Chi2	0.0044	0.0009	0.0000	0.0664	0.0024	0.0311
Pseudo R2	0.6266	0.6151	0.5770	0.4931	0.4297	0.1947
Observations	33	33	33	33	33	33

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The sign of the coefficients for months to next election as well as the signs of the remaining regressors are coherent with the basic intuition exposed previously.[24] According to the table, model (1) is the best in terms of specification. Even though in this specification growth is not statistically significant, distance in months to next elections and political fragmentation are statistically significant at 1% confidence level while international reserves and openess are also significant at 5% confidence level. This estimation confirms the validity of the hypothesis that policy-makers opportunistically choose the nominal anchor to stabilize inflation.

Additional models were estimated to examine if the hypothesis of the existence of political opportunism behind the choice of nominal anchor is confirmed. Below, Table 6 shows estimates of a regression in which the variable months to next elections is substituted by the variable months from past elections. Clearly, the intuition indicates that the sign of the coefficient of the variable months from past elections should be positive. The farther away the politician is from past elections, the higher should be the probability of adoption of an

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[24]The exception is the sign of the coefficient of growth which was positive in some specifications but the coefficient was never statistically significant different from zero.

ERBS. Even though the sign of other coefficients did not change substantially compared to the regression using months to next elections their statistic significance is not as high.

Table 6 - Regression Variants using Absolute Distance from Past Elections

	(1) ERBS	(2) ERBS	(3) ERBS	(4) ERBS	(5) ERBS	(6) ERBS
log (Months from Past Elections)	0.942 *	0.934 *	0.876 *	0.852 *	0.572 *	0.412
	(0.51)	(0.56)	(0.53)	(0.45)	(0.29)	(0.28)
Reserves	18.586 **	16.753 **	15.753 **	17.742 **		
	(8.79)	(7.62)	(7.85)	(7.50)		
Openess	2.219*	1.969	2.061		2.129	
	(1.29)	(1.51)	(1.44)		(1.40)	
Fragmentation	-0.062	0.364		0.624	-0.396	
	(0.95)	(0.90)		(0.90)	(0.66)	
Growth	-18.758					
	(36.95)					
Constant	-4.381 *	-4.446 *	-3.944 *	-4.022 *	-0.686	0.091
	(2.41)	(2.56)	(2.34)	(2.19)	(1.07)	(0.69)
Prob > Chi2	0.2841	0.2601	0.2004	0.1102	0.1276	0.1426
Pseudo R2	0.4390	0.4228	0.4168	0.3710	0.1921	0.0840
Observations	33	33	33	33	33	33

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The models examined above have assumed that only the absolute distance in months to or from past elections should affect the policy-maker decision regarding the nominal anchor to stabilize inflation. In fact, it can be argued that six months before an election is exactly six months before an election for politicians who have been two or four years in office. Notwithstanding, it can also be argued that if the size of the election cycle that policy-makers face is unequal, a proportional measure of distance might more appropriate. The estimates on Table 7 are the result of regressions that used normalized distance to next elections. The normalization is given simply by the ratio of the distance to next election to the size of the election cycle (the sum of the distances to and from elections) that each policy-maker faces.[25]

[25]Election cycle does not necessarily means government mandate. It just means the period in between any two elections (presidential or congressional). A newly elected Argentine president with a mandate of four years, faces congressional elections in exactly two years and the next presidential elections in four years. Even though his mandate is for four years he faces an election cycle of only two years.

Table 7 - Regression Variants using Normalized Distance to Next Elections

	(1) ERBS	(2) ERBS	(3) ERBS	(4) ERBS	(5) ERBS	(6) ERBS
log (Months to Next Elections / Cycle)	-4.391 ***	-4.319 ***	-3.799 **	-4.219 **	-2.577 **	-1.391 **
	(1.66)	(1.50)	(1.86)	(1.67)	(1.23)	(0.68)
Reserves	27.039 ***	26.852 ***	16.598 **	27.041 ***		
	(9.59)	(10.08)	(8.07)	(10.49)		
Openess	2.987 *	3.036 *	2.831 **		2.89 **	
	(1.70)	(1.78)	(1.41)		(1.46)	
Fragmentation	3.099 **	2.9 **		3.285 **	-0.281	
	(1.40)	(1.31)		(1.36)	(0.73)	
Growth	4.794					
	(34.64)					
Constant	-8.095 ***	-7.896 ***	-3.753 **	-7.269 ***	-0.771	0.445
	(2.99)	(2.80)	(1.69)	(2.81)	(0.94)	(0.37)
Prob > Chi2	0.1090	0.0593	0.0605	0.0594	0.0856	0.0418
Pseudo R2	0.6708	0.6700	0.5675	0.5928	0.3524	0.1703
Observations	33	33	33	33	33	33

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The coefficients' signs and statistic significance of all the variables do not change sub-stantially from the specification using absolute measures of distance.

Below, Table 8 reproduces the results of the same exercise using instead normalized distance from past elections. Again, coefficient signs and statistic significance do not change considerably indicating the political opportunism hypothesis is robust to this change in the model specification.

Table 8 - Regression Variants using Normalized Distance from Past Elections

	(1) ERBS	(2) ERBS	(3) ERBS	(4) ERBS	(5) ERBS	(6) ERBS
log (Months from Past Elections / Cycle)	1.241 **	1.247 **	1.140 **	1.057 **	0.816 ***	0.500 **
	(0.58)	(0.54)	(0.49)	(0.53)	(0.28)	(0.24)
Reserves	18.442 **	18.397 **	16.691 **	19.581 **		
	(8.43)	(7.99)	(7.23)	(9.29)		
Openess	3.060 *	3.047	3.142 *		3.079	
	(1.66)	(1.88)	(1.85)		(1.99)	
Fragmentation	0.687	0.723		1.050	-0.397	
	(1.04)	(0.95)		(1.03)	(0.66)	
Growth	-1.212					
	(39.36)					
Constant	-1.228	-1.238	-0.657	-1.045	1.600 **	1.812 ***
	(1.03)	(1.01)	(0.83)	(1.10)	(0.66)	(0.46)
Prob > Chi2	0.2297	0.1540	0.0842	0.4506	0.0299	0.0392
Pseudo R2	0.5445	0.5445	0.5278	0.1703	0.2922	0.1311
Observations	33	33	33	33	33	33

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Proceeding with the idea of testing how robust to other specifications are the results previously obtained, a model incorporating both measures of distance to and from elections is considered. The model to be estimated is:

$$P(Y_i = 1) = \Phi(X_i'\beta) = \Phi(\beta_0 + \beta_1 \ln(X_{1i}) + \beta_2 \ln(X_{2i}) + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i})$$

where, as before, $\Phi(X_i'\beta)$ is the standard normal cumulative distribution.

In this model X_1 is the variable months to next elections and X_2 is the variable months from past elections. All other regressors are the same previously used in the benchmark model as well as in other specifications.

This model is interesting since it is possible to examine the impact on the probability of choosing an ERBS of a marginal increase of a month in the election cycle holding either the distance to next or from past elections constant. The basic intuition from the previous models should also follow for this specification. An increase of a month in the election cycle, holding months from past elections constant, adds a month to the distance to next elections reducing the probability of adoption of an ERBS. It is important to mention that this model

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does not suffer from full multicolinearity since the size of the election cycle is not equal to all policy-makers.[26] Below, Table 9 shows the estimates of this unrestricted general probit model including both measures of distance to and from elections.

Table 9 - Regression Variants using Distance to Next Elections and Distance from Past Elections

	(1)	(2)	(3)	(4)	(5)	(6)
	ERBS	ERBS	ERBS	ERBS	ERBS	ERBS
log (Months to Next Elections)	-2.091 ***	-1.664 **	-1.96	-1.139	-2.015 **	-1.072 *
	(0.68)	(0.70)	(1.30)	(0.79)	(0.88)	(0.62)
log (Months from Past Elections)	0.538	0.525	0.445	0.618	0.144	0.04
	(0.58)	(0.53)	(0.53)	(0.46)	(0.30)	(0.36)
Reserves	19.069 *	19.701 **	14.249 *	20.964 **		
	(9.78)	(9.91)	(8.31)	(8.78)		
Openness	3.246 **	3.408 **	3.563 ***		3.478 **	
	(1.54)	(1.51)	(1.29)		(1.44)	
Fragmentation	2.817 ***	1.832		2.142 *	-0.785	
	(1.02)	(1.19)		(1.27)	(0.82)	
Growth	23.879					
	(32.60)					
Constant	0.588	-0.175	3.367	-1.448	6.992 *	4.555 *
	(4.14)	(3.74)	(5.57)	(3.00)	(3.77)	(2.75)
Prob > Chi2	0.0041	0.0023	0.0020	0.1555	0.0072	0.0755
Pseudo R2	0.6528	0.6394	0.5943	0.5318	0.4300	0.2149
Observations	32	32	32	32	32	32

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

The sign of the coefficients for months to next election and months from past election as well as the sign of the remaining regressors is coherent with the basic intuition exposed previously. Nevertheless, the statistic significance of both measures of distance is reduced substantially throughout the different specifications.This is the result of the strong colinearity existent between both measures of distance (see note 26). International reserves, openess and political fragmentation are again highly statistically significant in variant (1) of this particular model, reinforcing the idea that both economic and political variables, aside from distance to or from elections, affect the decision over the nominal anchor to stabilize inflation. Therefore,

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[26]If the election cycle was exactly the same for all policy-makers and the distance measures were defined in linear form (not logs), months to next elections would be a linear combination of months from past elections. This fact, in turn, would generate full multicolinearity making impossible the estimation of this particular model. Nonetheless, it is reasonable to assume that both measures of distance are strongly colinear and it is likely that the statistic significance of the estimated coefficients will be reduced.

in spite of the specification chosen from all the models considered in the econometric analysis, the results lead to the same conclusion, namely that the election cycle is relevant for the determination of the nominal anchor to stabilize inflation.

6.1   Marginal Effects

Since the coefficients estimated by the probit regressions are different from the marginal effects of changes to the right-hand side variables on the probability of an ERBS, the resulting numbers on the previous tables are not very informative. Rather than report the marginal effects associated to each coefficient evaluating the value of the other explanatory variables at their means, a series of exercises are conducted in order to examine the real impact of the different regressors on the probability using the benchmark model previously estimated.

Figure 5 pictures how the probability of an ERBS increases as the distance to the next elections shrinks. The picture starts from the highest value of distance to next elections in the sample (Nicaragua) holding the other variables in the regression to their sample means. According to Figure 5, the probability of adopting an ERBS ranges from 76% to 100% depending how close next elections are.

Figure 5: Predicted Probabilities with Varying Distance (Months to Next Elections)*

Months to Next Elections	Probability of ERBS
67	0.76
60	0.83
54	0.88
48	0.93
42	0.96
36	0.98
30	0.99
24	1.00
18	1.00
12	1.00
6	1.00

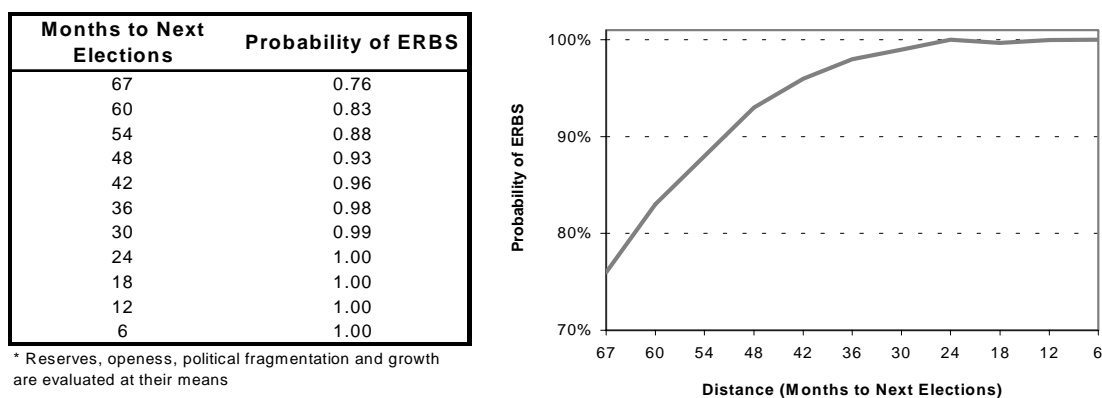* Reserves, openess, political fragmentation and growth are evaluated at their means

Figure 6 pictures the impact of the variation of reserves on the probability of adopting an ERBS for different values of the distance to next elections. At least three important insights are derived from this picture. First, it is interesting to note that no matter how large is the

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relative stock of international reserves, politicians one year before elections adopt an ERBS with at least 90% probability. Second, for very low stocks of international reserves, a change in the distance to next elections has a tremendous impact on the probability of adoption of an ERBS. The probability jumps from as low as 45% to as much as 90% in the period of one year. The third and last point refers to the fact that if international reserves are largely available (at least 40% of M3) the probability of an ERBS is close to one. This is due to the fact that politicians with relatively high level of international reserves, can embark on an ERBS much earlier since the exchange rate can be kept fixed for a much longer period of time. If in Krugman (1979) international reserves played a role postponing a devaluation in the midst of a currency crises, this setting also implies a temporal dimension where international reserves have a role to play. In particular, opportunistic policy-makers with more available reserves may adopt an ERBS much earlier or simply choose an ERBS faraway from elections when it would make more sense to choose a MBS taking into account only the boom-bust cycles resulting from the ERBS. Nicaragua is an example of a country with very high relative level of reserves (over 60%) that adopted an ERBS more than 5 years before elections.

Figure 6: Predicted Probabilities with Varying Reserves

Reserves / M3	Probability of ERBS		
	12 Months	24 Months	36 Months
0.0429*	0.92	0.44	0.14
0.10	0.99	0.78	0.45
0.20	1.00	0.99	0.94
0.30	1.00	1.00	1.00
0.40	1.00	1.00	1.00
0.50	1.00	1.00	1.00
0.6837**	1.00	1.00	1.00

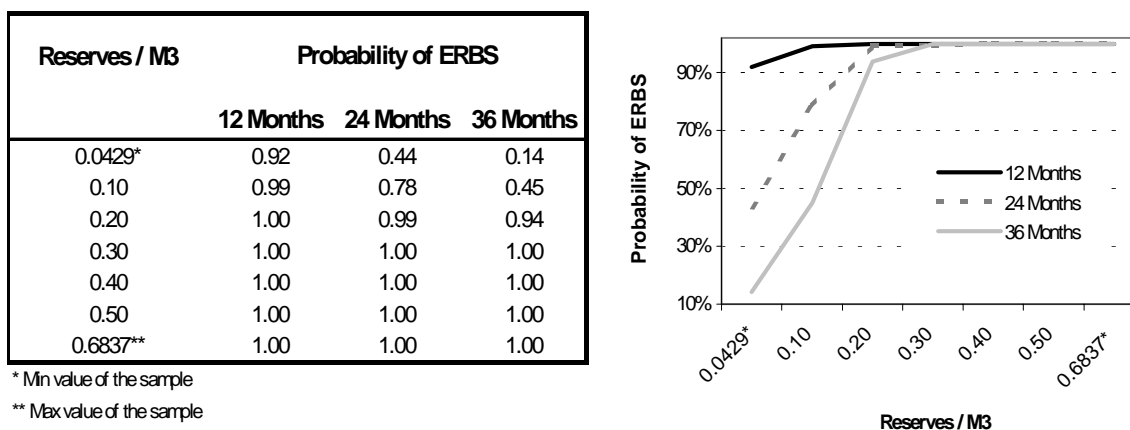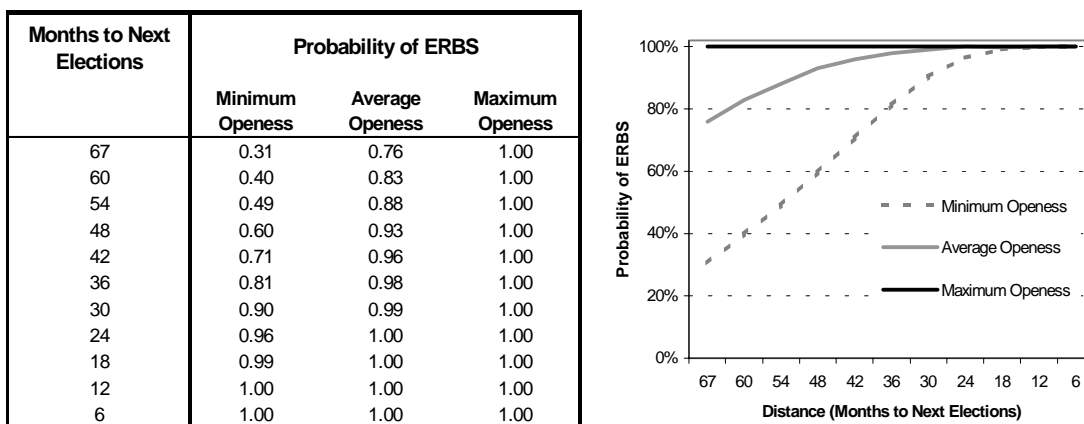* Min value of the sample

** Max value of the sample

Figure 7 pictures how the distance to next elections affects the probability of adopting an ERBS for different levels of openess. The figure shows that when the levels of openess are very low (less than 5%) as in Turkey 1980, the probability of an ERBS is as low as 30%

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when elections are far away and all other variables are evaluated at their sample means. Additionally, for high levels of openess the probability of an ERBS is 1 regardless of how far next elections are. These results indicate the level of openess might limit the degree of political opportunism behind the choice of anchor to stabilize inflation. For example, no country in the sample is as open as Israel with the share of exports plus imports over GDP sometimes greater than 1. Israel has adopted six ERBS but no MBS programs. The results derived from Figure 7 suggest that Israeli politicians were inhibited to choose a MBS even far away from elections because of the risks of failure to stabilize inflation with a monetary anchor in a very open economy.

Figure 7: Predicted Probabilities with Varying Distance and Openess*

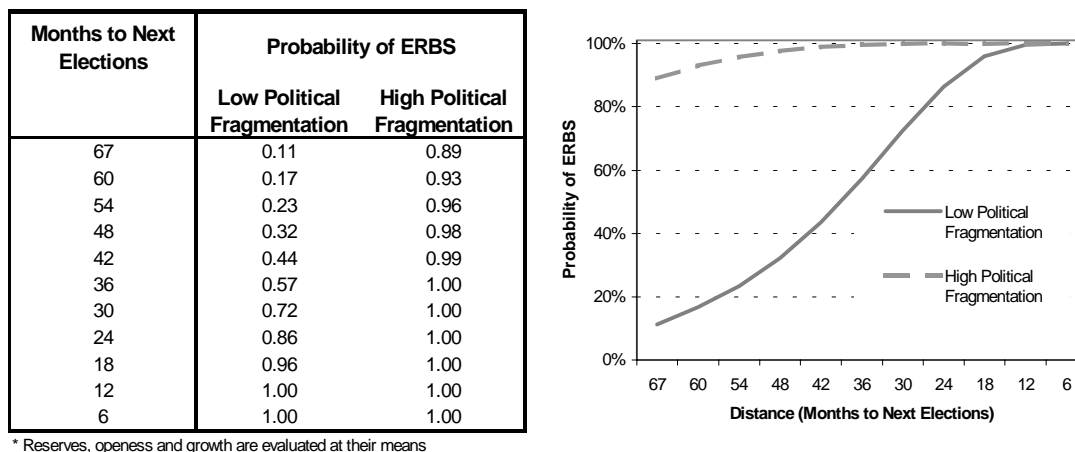| Months to Next Elections	Probability of ERBS		
	Minimum Openess	Average Openess	Maximum Openess
67	0.31	0.76	1.00
60	0.40	0.83	1.00
54	0.49	0.88	1.00
48	0.60	0.93	1.00
42	0.71	0.96	1.00
36	0.81	0.98	1.00
30	0.90	0.99	1.00
24	0.96	1.00	1.00
18	0.99	1.00	1.00
12	1.00	1.00	1.00
6	1.00	1.00	1.00

* Reserves, fragmentation and growth are evaluated at their means

Figure 8 pictures how the probability of an ERBS is affected by changes in the distance to the next elections for each type of political environment (fragmented and not fragmented). For large values of the distance to the next elections the probability is strikingly different for fragmented and cohesive political environment. The difference in probability may reach as much as 75 percentage points. This picture might explain why countries such as Argentina adopted an ERBS program such as the BB plan (August 1989) faraway from future elections even though past elections have occurred just months before the stabilization. In fact, other exceptional similar cases might exist and where politicians do not enjoy high political support even after recent elections. This may happen, for instance, if a politician is elected

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more because of the lack of good alternatives than due to her own reputation. The lack of political support may have strongly conditioned the choice of the nominal anchor in these circumstances.[27]

Figure 8: Predicted Probabilities with Varying Distance and Political Fragmentation*

Months to Next Elections	Probability of ERBS	
	Low Political Fragmentation	High Political Fragmentation
67	0.11	0.89
60	0.17	0.93
54	0.23	0.96
48	0.32	0.98
42	0.44	0.99
36	0.57	1.00
30	0.72	1.00
24	0.86	1.00
18	0.96	1.00
12	1.00	1.00
6	1.00	1.00

* Reserves, openess and growth are evaluated at their means

Figures 6, 7 and 8 suggest that the impact of distance to next elections on the probability of adoption of an ERBS may differ if the country has a high or low level of international reserves, and/or is highly opened or closed to international trade flows and/or is politically fragmented or cohesive. To test this hypothesis a regression with interacted explanatory variables was estimated. The results are shown in Table 10 below.

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[27]The 1989 presidential elections in Argentina provides an illustrative example of how the lack of political capital might condition the choice of nominal anchor to stabilize inflation. Even if the new president Carlos Menem was elected with great popular support, important interest groups from the business sector, government bureaucracy and the intelectual elite were still reluctant to back him. This political scenario could have undermined Menem's ability to launch a MBS. Instead, he resorted to an ERBS which required less support and might have been instrumental to build up more political capital. Similar anecdotical evidence could be found in other ERBS launched soon after elections in Peru, Israel and Iceland.

Table 10 - Regression Model using Interactions with Distance

	ERBS
log (Months to Next Elections)	-3.689 ***
	(0.88)
log (Months to Next Elections) * Reserves	5.217 **
	(2.62)
log (Months to Next Elections) * Openness	0.925 *
	(0.51)
log (Months to Next Elections) * Pol. Fragmentation	0.787 ***
	(0.23)
Growth	18.621
	(33.13)
Constant	7.28 ***
	(2.48)
Prob > Chi2	0.0013
Pseudo R2	0.6403
Observations	33

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

All the coefficients in the regression are statistically significant with the exception of growth. The sign of the different coefficients confirm the intuition derived from the pictures above. In particular, for a given distance to next elections a greater level of international reserves, openess and political fragmentation increases the probability of adoption of an ERBS.

The examples mentioned in this section help to rationalize an observed fact which appears to be inconsistent with political opportunism, namely the existence of ERBS launched soon after elections. The boom-bust cycles' hypothesis would have predicted that the optimal timing for the ERBS should have been further away from past and closer to next elections. Nonetheless, the model suggests that the determination of the nominal anchor in these cases was conditioned by one or more of the model's different explanatory variables. In fact, a baseline probability test confirms that the model predicts correctly over 90% of the actual ERBS and MBS in the different countries of the sample.[28]

The results above are relevant from a positive perspective since they indicate that the

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[28]The baseline probability assumed for the test was 50%. This number was chosen since it reflects the theoretical assumption that there should be no reason to prefer one nominal anchor over the other if it is assumed that both result in equal present value welfare as in Calvo and Vegh (1999).

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degree of political opportunism behind the choice of anchor to stabilize inflation depends on the level of reserves, openness and the political environment. Moreover, the results are also extremely important from a normative perspective since stronger political and economic institutions could potentially reduce the degree of opportunism and especially benefit developing countries generally subject to weak institutional arrangements and high degrees of political opportunism.

7 Extensions

This section considers possible extensions to the benchmark model estimated previously. In particular, two interesting issues will be examined: the impact of past failed or successful stabilization attempts on the choice of anchor for a new stabilization and the impact one country has on other countries' decision regarding the nominal anchor to stabilize inflation.

The extent to which a stabilization program fails or succeeds is easy to determine in some situations, such as the failure of the Plan Primavera in 1988 in Argentina, but difficult in others, such as the Convertibility Plan in 1991 in Argentina. Nevertheless, it can be argued that successive failures of a particular strategy may have influenced the decision to adopt a different one. The examples in mind are the successive failed ERBS launched in Argentina, Brazil and Peru that might have led these countries to adopt a MBS at some point. In fact, all these countries have adopted a MBS after having failed at least once to stabilize their economies using the exchange rate as the nominal anchor.[29] In order to capture the effect of failed ERBS on the choice of anchor for stabilization, estimates were produced from a model that incorporate dummies for the countries who had at least two ERBS attempts that failed.[30] Table 11 below summarizes the results of the estimation of the described regression.

[29]While Peru had only one ERBS fail before the MBS in 1990, the other three countries have at least three failed ERBS before deciding to adopt a MBS.

[30]This model specification is a very simplistic way to address an interesting but complicated issue. Only a time series model of Argentina and Brazil could address how previous failed attempts using a particular nominal anchor for stabilization might have induced politicians to use the alternative anchor in a subsequent attempt.

Table 11 - Regression Model with Country Dummies

	ERBS
log (Months to Next Elections)	-4.272 ***
	(1.21)
Reserves	24.842 **
	(10.39)
Openess	0.195
	(1.42)
Growth	8.727
	(36.80)
Fragmentation	3.806 ***
	(1.27)
Dummy for Argentina	-3.652
	(2.35)
Dummy for Brazil	-2.131 **
	(0.99)
Constant	10.21 **
	(4.34)
Prob > Chi2	0.0000
Pseudo R2	0.7048
Observations	33

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The coefficients of both country dummies have a negative sign even though only for Brazil it is statistic significant. They indicate, therefore, that these countries have some specific carachteristics that make them less likely to adopt the exchange rate as a nominal anchor. The interpretation is that policy-makers in these countries have failed to stabilize the economy several times using the exchange rate as the nominal anchor and, therefore, they were more willing to try MBS instead. These results are consistent with Kiguel and Liviatan (1991) reinforcing the argument that policy-makers facing low levels of credibility try to adopt a MBS to signal their toughness with a strict program and avoid ERBS. This is especially true as failed attempts to stabilize inflation using the exchange rate as an anchor have damaged the credibility of the instrument and of the policy-maker who employs it.

The second interesting extension to the benchmark model relates to the fact that the decision regarding the nominal anchor to stabilize inflation in one country might affect the same decision in other coutries. Examples might be the introduction of the New Shekel ERBS plan in Israel affecting the decision to use the exachange rate as the nominal anchor

in the Austral and Cruzado programs in Argentina and Brazil, respectively. The simplest way to to deal with this issue would be to consider dummies for common years or periods of similar stabilization programs. However, since most of the stabilization programs in the sample occurred in between 1985 and 1994, it is necessary to include a dummy for each of the ten years since there were programs in most of them excluding 1992 and 1993. Therefore, the use of this model cannot say much regarding the particular effect of the positive covariances between policy-makers and countries. Nonetheless, even if there is such a positive covariance, it can be stated that it only reinforces the idea of political opportunism behind the choice of anchor to stabilize inflation. In fact, it might be the case that the positive covariance, if existent, reflects exactly the common manifestation of political opportunism in these general developing countries with weak institutional arrangements.

Finally, an interesting issue is to examine how successful in terms of election results is the politician's decision regarding the nominal anchor to stabilize inflation. Again, it is not trivial to know if, considering the reelection of the party and/or the incumbent, this is the result of a particular policy. Certainly, there is a wide menu of policies affecting different areas of human life that influence the success of a candidate in the polls. It is easier to suggest based on evidence that the incumbents who were perceived as failing to stabilize inflation before elections were punished by voters. Nonetheless, some failed programs such as the Cruzado Plan in Brazil in 1986 did succeed in electing the the incumbent's party for a majority in Congress and the largest number of Brazilian states governors. This result is directly connected to the fact that the program was perceived as being sustainable by the population even though it could only endure up to the elections as it was later revealed by its collapse. The Covertibility plan in Argentina has also apparently helped the incumbent Menem get reelected. Broadly, given that economic policies in general and inflation stabilization programs in particular are very relevant issues for these societies, opportunistic policy-making still exists and it seems to be reasonably successful in benefiting incumbents. If not, it is hard to justify, for example, the inumerous recurring attempts to stabilize inflation after so many failures.

8   Concluding Remarks

The most important result of this paper is the observed pattern regarding the choice of anchor to stabilize inflation in high and chronic inflation countries. In particular, since ERBS generate an initial consumption boom they are on average adopted before elections and since MBS generate an initial recession they are on average launched after past and faraway from future elections.

This paper also provides a rational for why policy-makers may choose a short-run hard MBS. It seems advantageous to do it right after elections for two reasons. First, because economic recovery will take place during the term of office of the politician and second, because the politician may blame the previous government for the costs implied by the adoption of the MBS. Additionally, it can be an alternative strategy for some countries that, due to the innumerous failed attempts, might have exhausted the ability to use the exchange rate as the nominal anchor.

Most importantly, this paper provides insight in the motivations behind the policy-makers' choice of anchor to stabilize inflation. A relatively large stock of international reserves, a high level of openess and high political fragmentation not only increase the probability of adoption of an ERBS but also affect the degree of political opportunism existent behind the choice of nominal anchor for stabilization.

At the same time, this work is a relevant contribution to the literature providing a rational for the "recession-now-versus-recession-later hypothesis" and the existence of consumption cycles since not all stabilization programs are expansionary. If all types of stabilization programs were expansionary, it is hard to explain why one type is generally selected before elections while the other is selected after them.

Additionaly, this work provides further support for the "episodic" approach in the selection of stabilization episodes by creating a more comprehensive list of stabilization attempts.

This paper has suggested some possible theoretical channels that can be used to explain the facts that were obtained. Voters' behavior and the ability of policy-makers to opportunistically choose economic policies are essential ingredients in the construction of an interesting

theoretical model. The main objective of this study was to seriously document the economic and political variables affecting the decision over the anchor to stabilize inflation without taking any position in favor of a particular theoretical model of political opportunism or voting behavior.

It is not surprising that politicians choose economic strategies that align with their own goals of re-election. However, there is very little empirical work documenting this fact. This paper provides compelling evidence that politicians behave in opportunistic ways with respect to one particular type of economic policy. Depending on how widespread this behavior is within a country, this may suggest that stronger institutional arrangements that oversight politicians could reduce the degree of political opportunism benefitting societies in many developing countries.

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