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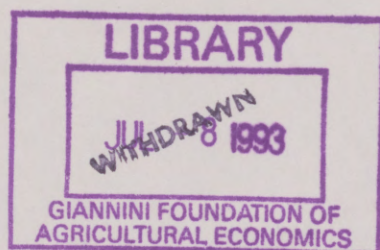
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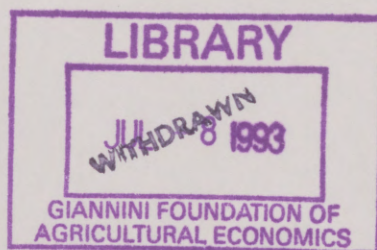


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*The Political Economy of Inflation and Stabilization  
in Developing Countries*

Sebastian Edwards



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*The Political Economy of Inflation and Stabilization  
in Developing Countries*

Sebastian Edwards

*Anderson Graduate School of Management  
University of California, Los Angeles and NBER*

*and*

*Senior Research Fellow  
Institute for Policy Reform*

Revised: March 1993

This paper deals with political aspects of inflation and stabilization in developing countries. It is argued that by ignoring political considerations, traditional models failed to fully understand the dynamics of inflation. Several newer models are discussed, including models based on strategic government behavior and war of attrition models. Empirical results obtained with developing countries data are discussed in detail. Data on Chile are used to test several versions of political business cycle models. It is found that this perspective helps explain the evolution of inflation through time in that country. Finally, data on a large cross section of countries are used to investigate the political-economy circumstances surrounding major devaluation crises.

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## EXECUTIVE SUMMARY

This paper deals with political aspects of inflation and stabilization in developing countries. It is argued that by ignoring political considerations, traditional models failed to fully understand the dynamics of inflation. Several newer models are discussed, including models based on strategic government behavior and war of attrition models. Empirical results obtained with developing countries data are discussed in detail. Data on Chile are used to test several versions of political business cycle models. It is found that this perspective helps explain the evolution of inflation through time in that country. Finally, data on a large cross section of countries are used to investigate the political-economy circumstances surrounding major devaluation crises. It is found that a) there is a strong relation between macroeconomic (and especially fiscal) policies and successful stepwise devaluations; b) under democratic regimes devaluations tend to take place during the early years of each administration; c) there is not evidence that dictatorships front-load their devaluations; d) countries with a weaker, more unstable and polarized political environment will generally have greater difficulties implementing the fiscal adjustment required for a successful devaluation; in most cases, by using political variables, we could classify devaluation episodes correctly. In sum, politically unstable and weaker governments are found to have had more difficulty implementing successful adjustment.

## I. Introduction

The traditional literature on inflation in developing countries has focused on three main determinants of inflationary pressures: (a) money creation; (b) fiscal imbalances; and (c) cost-push elements. While the first two factors have been emphasized by those authors of a monetarist persuasion, cost factors have played a crucial role in the structuralist theories developed during the 1950s and 1960s.<sup>1</sup>

However, more recent analyses on inflation and stabilization have shifted their attention away from traditional direct economic causes of inflation -- such as money creation -- towards political and institutional determinants of inflationary forces. This new literature, which has come to be known as the political economy approach to macroeconomic policy, has built on some important insights of game theory and the theory of public choice, trying to explain why some governments decide to run large fiscal deficits, and to rely heavily on the inflation tax. Typically, in answering these questions this recent strand of the literature has emphasized the role of political instability, credibility, reputation and political cycles.<sup>2</sup>

In spite of providing some important new insights into the determinants of inflation, this new literature is subject to two limitations: first, until recently most of the contributions have been theoretical, without providing empirical tests on their most important implications; and second, the emphasis has been almost exclusively on the industrialized countries, ignoring the developing nations. The purpose of this paper is to selectively discuss some of the most important insights of this new literature on policymaking from the developing countries perspective. The paper emphasizes the policy implications of this approach to inflationary analysis, and discusses some of the limited empirical results on the subject.<sup>3</sup> The paper is organized as follows: Section II deals with the role of political instability in determining seignorage and the reliance on inflationary financing across countries. Section III focuses on the role of credibility in inflationary experiences and in stabilization programs. Here I provide a discussion on the role of "external agents", including multilateral institutions such as the International Monetary Fund, in the implementation of anti-inflationary adjustment programs. In



Section IV, I discuss critically the literature on political business and budget cycles, and I present some empirical results for Chile. Section V deals with the political aspects of successful devaluations and stabilization programs. Finally, Section VI contains the concluding remarks, and some suggestions for future research.

## II. Seignorage, Inflation and Political Instability

A number of authors have recently assumed that policymakers behave strategically, taking into account their own political and ideological objectives when making decisions regarding taxation, expenditure and monetary expansion.<sup>4</sup> This approach departs significantly from the traditional view which considers policy actions as either completely exogenous, or as being undertaken by a "benevolent dictator" who tries to maximize the present value of society's wellbeing. In fact, the most important implication of this strategic approach is that policy becomes an endogenous variable that depends on the economic, political and institutional features of the country.

The positive approach to policymaking has its origins in the inability of traditional theories to explain empirically the dynamics of inflation. In particular, analyses of inflation behavior in different developing countries show quite clearly that these do not conform with the implications of optimal taxation theories.<sup>5</sup>

A. Cukierman, S. Edwards and G. Tabellini have recently developed and tested a model of strategic government behavior and inflation.<sup>6</sup> Their analysis is based on the notion that inflation is a highly inefficient form of taxation. In their model an inefficient tax system (i.e., one that facilitates tax evasions, and relies on the inflation tax), acts as a constraint on the revenue collecting capacities of the government. This constraint, however, may be welcomed by those who disagree with the goals pursued by the current government. In particular, a government may deliberately decide not to reform a tax system, for fear that a more efficient tax apparatus will be used in the future by its political opponents, to carry out spending programs that the current government dislikes. This type of strategic behavior is more likely in countries with more unstable political systems, where the likelihood of the government's party not to



be in office during the next period is high. Thus, in the Cukierman et al. model political instability is directly related to inefficient taxes, such as seignorage and trade taxes.

Cukierman, Edwards, Tabellini (1992) confront their model to the data by estimating an equation of the following form:

$$s = f(x, p)$$

where  $s$  = fraction of total revenue collected through seignorage

$x$  = vector of variables measuring the available tax bases (such as size of the manufacturing, mining, and agricultural sectors, size of imports and exports, per capita income, and so on).<sup>7</sup>

$p$  = vector of political variables measuring the political instability and/or polarization of the country.

In the empirical implementation of the model, Cukierman et al., uses an estimated cross-country probit equation in order to compute an index of political instability as the probability of government change for a particular country in a given year. This equation regresses instances of actual government changes against political variables (riots, repressions, and so on), economic variables (consumption growth, inflation, income per capita) and institutional variables.

In addition to the political instability index, Cukierman et al. included the following structural economic variables in their regression analysis: (a) share of agriculture in GDP. Its sign is expected to be positive: since it is relatively costly to tax agriculture, governments with a large agricultural sector will tend to rely more heavily on taxes with low administering cost, such as seignorage and trade taxes; (b) share of mining and manufacturing on GDP and its sign is expected to be negative, also for cost effective reasons; (c) foreign trade share of GDP. Its sign is expected to be positive, since in an open economy it is easier to tax international trade; (d) GDP per capita whose sign is expected to be negative. More advanced nations are able to implement more sophisticated and efficient tax systems, and thus will tend to

rely less heavily on easy to collect but highly distortive taxes such as trade taxes; and (e) urbanization ratio, whose sign is expected to be negative. The reason being that it is relatively easier to tax the urban population than the rural population.<sup>8</sup>

For a sample of 58 developing nations, Cukierman et al. obtained the following results from an instrumental variables regression (t-statistics in parentheses) of seignorage on political instability and other structural variables:<sup>9</sup>

$$\begin{aligned}
 \text{Seignorage} = & -0.0541 + 0.0021 \text{ Share of Agriculture in GDP} & (1) \\
 & (-1.591) \quad (3.500) \\
 & - 0.0278 \text{ Openness} - 0.46\text{E-}5 \text{ GDP Capita} \\
 & (1.390) \quad (17.692) \\
 & + 0.0016 \text{ Urbanization} + 0.3220 \text{ Political Instability Index} \\
 & (3.200) \quad (3.067) \\
 & \bar{R}^2 = 0.409 \\
 & \text{S.E.} = 0.052
 \end{aligned}$$

These results are strongly suggestive. The regressions explain a high percentage of the cross-country variability of seignorage, and all variables have the expected signs.<sup>10</sup> More importantly, the coefficient of the political instability index is highly significant. When a broader group of countries that includes industrialized nations was considered, the results were similar to those reported here. All in all, then, the Cukierman et al., results provide some preliminary support for the hypothesis that, even after controlling for other structural variables, political variables play an important role in explaining long-run cross-country differentials in inflation.

A serious problem faced by this type of empirical analysis, however, refers to finding appropriate indices of political instability. The most traditional indicators of this type -- the observed, or estimated, frequency of government change -- has a series of shortcomings, including the fact that it does not make a distinction between government changes within the same political party, and those that imply a transfer of power to a radically opposing party. In fact, using the observed frequency of

government change results in the rather implausible result that Italy is the most "unstable" of the 79 countries considered by Cukierman et al. (1992).

In a recent paper, Edwards and Tabellini (1991) have tackled this issue by defining a new (and improved) index of political instability which they have called an index of transfer of power. This index measures the instability of the political system by capturing changes in the political leadership from the governing party (or group, in the cases of non-democratic regimes) to an opposition party. In constructing this index Edwards-Tabellini define transfer of power as a situation where there is a break in the governing political party (or dictator's) control of the executive power. More specifically, under a presidential system a transfer of power would occur if a new government headed by a party previously in the opposition takes over the executive. Under a parliamentary regime, a transfer of power is recorded when a new government headed by a party previously in the opposition takes over, or when there are major changes in the coalition that results in the leading party moving to the opposition. However, minor changes in the government party coalition are therefore not recorded, nor are changes of head of government if the coalition remains basically unaltered, even if the new prime minister belongs to a party different from that of the outgoing prime minister. Finally, in the case of single party systems, dictatorships or monarchies, a transfer of power only takes place if there are forced changes in the head of state. Appointments of a successor by an outgoing dictator (as in Brazil during the 1970s) are not recorded as transfers of power.

Using this new index of political instability, Edwards and Tabellini (1991) estimated a set of cross-country regressions, trying to explain cross-country differentials in revenues from the inflation tax. On a data set of 76 countries including both developing and advanced nations, they obtained the following estimates (t-statistics in parentheses):<sup>11</sup>

$$\begin{aligned} \text{Inflation Tax} = & -0.065 + 0.339\text{E-2 Agriculture Share} - 0.054 \text{ Openness} \\ & (-1.107) \quad (2.970) \quad (0.731) \\ & - 0.325\text{E-5 GDP Capita} + 0.216\text{E-2 Urbanization} \quad (2) \end{aligned}$$

(-0.731)

(2.787)

+ 0.398 Transfer of Power  
(2.417)

$R^2 = 0.308$   
S.E. = 0.051

A particularly interesting question refers to whether countries with a history of violent and unscheduled transfers of power via coups exhibit a greater tendency to rely on inflationary financing than democratic governments. This issue was addressed by Cukierman et al. (1992), in two different ways. First, they incorporated a "democracy" dummy variable into their regression analysis on the determinants of seignorage, and second, they included the frequency of attempted coups as an additional explanatory variable. Interestingly enough, they found that the coups variable had a positive and significant coefficient, with a point estimate exceeding that of regular government transfers. Also, they found that the "democracy" dummy had a significant negative coefficient, suggesting that with other things given democratic governments have tended to rely less heavily on inflationary financing.<sup>12</sup>

The results discussed above provide important new empirical evidence supporting the view that, after controlling for structural factors, countries that have a more unstable political system tend to have a higher level of inflation tax. From a broad policy perspective, the main implications of these findings is that creating (and reforming) political institutions that would strengthen democracy and reduce political instability in the developing countries, should have an important priority in the agenda for policy reform. These measures would not only have direct effects on the world's political landscape, but would also impact on inflation and, thus, the welfare of the citizens in the poorer nations.

### III. War of Attrition, Credibility, External "Enforcers" and Inflation

Many of the new developments in the analysis of the political economy of inflation have formally used game theory to describe the way in which different actors interplay in the policymaking process. The purpose of this section is to briefly review



some of the most important features of the theoretical literature on credibility and inflation, placing particular emphasis on stabilization programs.<sup>13</sup>

Generally speaking, the recent political economy models of macroeconomic policymaking stress the distributional impact of both inflation and stabilization. According to this view, the existence of political conflict fuels the inflationary process. The mechanics through which this happens is as follows: different groups in society -- including different political parties -- disagree about the tax system to impose. This conflict constrains the revenue collecting abilities of the government and results in an inefficient tax system, that relies heavily on the inflation tax.<sup>14</sup>

This approach not only explains the origin of inflation, but it also provides insights about the timing of the stabilization. Stabilizing the price level means changing the status-quo. This type of change can generate new disputes among political groups about the share of the burden of the fiscal adjustment needed to effect the stabilization. According to this view, these political disputes will take the form of a "war of attrition", during which all the conflicting groups wait for one of them to finally give up. The group that "blinks first" is forced to bear a disproportionate burden of the adjustment.<sup>15</sup> This "war of attrition" results in a delay of the stabilization. A particularly interesting feature of these models is that this delay takes place in a situation where there is general agreement among conflicting groups about the overall form of the adjustment policies needed to stop inflationary pressures. Of course, postponing the stabilization will usually increase the size of the adjustment effort needed, and thus exacerbates the political conflict.<sup>16</sup>

Existing theoretical models based on the war of attrition notion have been too general in the sense that they have not specified the precise mechanism (or mechanisms) through which the conflict finally is resolved. What makes one of the players retreat? Why at some point the perceived cost of waiting exceeds the benefit? What is the role of political negotiations? Can a third party, or mediator, help bring the conflict to a faster end? Addressing these issues at a theoretical level is well beyond the scope of this paper, but should indeed be high on the priority list for new research in the area.

A somewhat different, although not contradictory, approach to inflation and stabilization is based on the role of institutions and credibility. After the rational expectations revolution, many authors emphasized the importance of expectations during stabilization episodes. A number of them, and most notably Sargent, concluded that in order to put an end to any inflationary process, a "credible" change of the monetary and fiscal regimes was needed.<sup>17</sup> To the extent that a stabilization is not credible -- that is, the stabilization program is not expected to achieve the intended results -- the costs of adjustment escalate and the probability of a successful stabilization becomes smaller.<sup>18</sup>

This view led naturally to look for ways of modifying and influencing expectations during a stabilization. The role of "policy announcements" was analyzed as possible means of affecting inflationary expectations. In this connection, however, it was stressed that in order for these announcements to be "credible" -- and thus to actually affect expectations -- it was necessary for the government to be able to precommit itself to a given course of action. This, of course, turns out to be difficult to do since societies many times lack the institutional setup required for a government to credibly precommit itself. In that regard, a number of authors have discussed how alternative institutional arrangements, such as fixed exchange rates and independent Central Banks, can provide this precommitment technology by helping governments "tie their own hands".<sup>19</sup>

Another interesting line of reasoning in the credibility debate has to do with the role of reputation as a substitute to precommitment. According to this approach the desire of governments to preserve their reputation -- or even, possibly, to improve it -- provides them with a constrained set of policy options.<sup>20</sup> Some authors have recently suggested that expectations can be coordinated and that credibility can be established if it is supported by an external institution, such as the League of Nations in the 1920s and the International Monetary Fund after 1950.<sup>21</sup> The reason is that by granting its "seal of approval" to a stabilization plan, an external institution enhances the confidence in the program. In principle, this "seal of approval" is independent of the financing that the external institution can provide.<sup>22</sup> In fact, the presence of external

involvement can endow the stabilizing government with a "commitment technology" that gives an assurance that the announced program will indeed be fully carried out.

In a recent paper S. Edwards and J. Santaella used data on major stabilization programs during the Bretton Woods era to test the hypothesis that, with other things given, countries with a more unstable political system tended to seek IMF assistance more frequently than politically stable countries.<sup>23</sup> They argue that since countries with a long history of political instability usually lack reputation, and suffer from more severe credibility problems than governments with a history of constitutional government transfers, they will have a greater incentive to seek the IMF seal of approval as a substitute for reputation. A probit analysis on 48 devaluation episodes provides support to this view; every index of political instability had the expected sign and was statistically significant.

An important contribution to the literature on reputation was provided by Persson and Tabellini (1990) who formulated a simple model built on three central assumptions: (a) unexpected policy actions disrupt the system of expectations of private economic agents (for instance, leading to higher expected inflation and to higher nominal wages); (b) the disruption of economic expectations has negative welfare effects on the voters; (c) electing new governments reduces the extent of the disruption (i.e., stabilizes expectations), as the economy focuses on a new set of policy proposals. According to this model the government's incentive to maintain its reputation has an important political dimension: the cost of policy surprises is that the government is less likely to be reappointed in office. The citizens realize that reappointing a government who created policy surprises means higher expected inflation in the future, and hence lower social welfare. Thus, they are less likely to reappoint it. If the government cares about being in office, as governments invariably do, this "punishment" creates incentive not to engage in policy surprises.

The Persson-Tabellini model of reputation yields two implications which can be subject to some form of empirical testing. First, the equilibrium rate of inflation is higher the more the citizens disagree about which political party they prefer. That is, more polarized societies will have more problems in enforcing low inflation through

reputational forces. This is because in highly polarized economies, voters will be highly "loyal" and will seldom switch political parties. Second, the equilibrium inflation rate tends to be higher the more unlikely it is that the government currently in office will be reappointed. This is so because reputation is not very effective if the government is "weak". The reason for this is that, if the political system is highly unstable, with different political parties alternating in office, the reputational constraint is rather low: governments will tend to be replaced independently of reputation.

An important difference between the implications of the Persson-Tabellini model and the model discussed in the preceding section, is that in the former higher political instability is related to a higher inflation rate, while in the latter higher instability is associated with a higher revenue from the inflation tax or higher seignorage. Simple cross-country regressions for 76 countries data between the rate of inflation and the transfer of power instability index discussed above provide some preliminary support to the implications of the Persson-Tabellini model of reputation. The following result was obtained when variables were defined as averages for 1970-82 (t-statistics in parentheses):<sup>24</sup>

$$\begin{array}{lcl} \text{Inflation} = 20.71 + 44.391 \text{ Transfer of Power} & & (3) \\ (7.492) \quad (14.987) & & R^2 = 0.321 \end{array}$$

#### IV. Political Business Cycles, Political Budget Cycles And Inflation

In recent years a number of models that relate electoral activities to business cycles and budget cycles have been developed.<sup>25</sup> These models generally assume that optimizing governments will behave differently in periods surrounding election than at other times. The exact nature of government actions in the neighborhood of elections basically depends on two key aspects of the model: (a) government's preferences, and (b) the mechanism through which voters form their expectations (either myopic or rational). A useful way to organize the analysis of the alternative political business cycle models is to consider two types of government preferences and two alternative expectation formation mechanisms.<sup>26</sup> In terms of preferences governments can either



be motivated in the sense that their primary concern is being re-elected only or, alternatively, they can also have distinct ideologies and try to pursue specific (and different) goals. If governments are exclusively office-oriented we will tend to see a similar behavior by politicians in power, irrespective of their political persuasion (right, left or center-leaning). On the other hand, if ideology-motivated, politicians will exhibit "partisan" behavior, and we would be able to distinguish among different economic actions across political parties.

With respect to voters, the distinction between myopic and rational expectations impinges on whether politicians can repeatedly exploit Phillips curve types of tradeoffs. In the rest of this section I present a brief survey of some of the most representative works in the literature on political business cycles. No attempt is made at deriving new theoretical results; the emphasis is, quite on the contrary, on the empirical implications of these theories. I also discuss alternative ways of testing these theories, and provide some preliminary results obtained for the case of Chile.

Within the economics literature, W. Nordhaus provides an early formal discussion of political business cycles.<sup>27</sup> According to Nordhaus, in a world where politicians seek to be re-elected, inflation (and more specifically monetary policy) is subject to a cycle that is closely related to electoral competition.<sup>28</sup> In its original version the theory assumes that there is an exploitable Phillips curve, and that money growth and inflation will go up in the period immediately preceding an election, and will come down (possibly jointly with a recession) after the election. A key implication of this approach is that this cyclical behavior will tend to be identical for different governments; the ideology of the party in office does not matter. From an empirical perspective the Nordhaus (1975) model has been tested by estimating equations of the following type:

$$\pi_t = \alpha_0 + \sum \alpha_i \pi_{t-i} + X\beta + \sum \gamma_i \text{DEL}_{t-i} + u_t, \quad (4)$$

where  $\pi$  is inflation,  $X$  are other variables that determine inflation,  $\text{DEL}$  is a dummy variable that takes the value of 1 in the election quarter and 0, otherwise,  $u$

is an error term, and the  $\alpha$ 's,  $\beta$ , and  $\gamma$ 's are parameters to be estimated. The number of lags of DEL incorporated into equation (1) will depend on how close to the elections we believe politicians begin to stimulate the economy. Equations of the type of (1) have been estimated for a number of industrialized countries, both with parliamentary and presidential regimes.<sup>29</sup> Interestingly enough in most studies of presidential regimes, such as the U.S., dummies have been included only for presidential elections.<sup>30</sup> This, however, is an important limitation of these studies, since from a political perspective mid-period congressional elections are extremely important, often determining the government's ability to approve key legislation. In the empirical application to the case of Chile presented below, I explicitly incorporate dummy variables to investigate whether political business cycle behavior of the type suggested by Nordhaus (1975) is present in periods surrounding parliamentary as well as presidential elections.

In some important early work developed within the political science tradition, D. Hibbs assumes that politicians are highly partisan, and that they try to further their specific political agenda.<sup>31</sup> This assumption, which sharply contrasts with Nordhaus's model where politicians are only office-motivated, implies that governments will act differently depending on their political persuasion: Rightist (leftist) governments have greater aversion to inflation (unemployment) than leftist (rightist) governments. As in Nordhaus, however, Hibbs's approach assumes that economic agents are myopic and that, consequently, governments can exploit the existence of a Phillips curve. Given their differences in preferences, governments will choose different positions on this Phillips curve, with leftist governments choosing higher inflation rates than rightist governments. From an empirical perspective Hibbs model has been tested by estimating the following type of equations:

$$\pi_t = \alpha_0 + \sum \alpha_i \pi_{t-i} + X\beta + \text{DUMRIGHT} + w_t, \quad (5)$$

where DUMRIGHT is a dummy variable that takes a value of one when rightist governments are in office and a value of zero otherwise.

More recent developments in the theory of political business cycles have relaxed and replaced some of the assumptions of the early work by Nordhaus and Hibbs, by more persuasive ones, including the absence of an exploitable (long run) Phillips curve. Some authors, for example, have assumed that voters are "rational" but have imperfect information, and are unable to find out in a precise way how "competent" policymakers are; politicians, on the other hand, are perfectly aware of their own level of "competence" (Rogoff, 1987). Once the myopic voters assumption is replaced by asymmetric information, results similar to those of Nordhaus are still obtained (see, for example, Rogoff 1987) for inflation and money growth, but not for output -- that is inflation and monetary growth will increase before elections. In this group of models of "rational" business cycles it is still the case that policymakers will behave alike, irrespective of their political party. The reason for this, of course, is that these models do not consider the possibility of partisan political behavior. Although Rogoff's models were originally set up in terms of "budget cycles", they still have implications for inflation and output. In particular, as governments try to signal their degree of "competence", we will observe that inflation will be higher than normal during the first months a new party (or group of parties) is in office. Whether output growth will exhibit an electoral cycle behavior or not will basically depend on specific assumptions regarding the nature of contracts and aggregate production.

Other authors have relaxed the assumption that the politician's objective function is only "office-oriented", and have assumed that political parties have different ideologies. For example, A. Alesina has extended Barro-Gordon's framework to the case of two political parties with different preferences (ideologies) over inflation and unemployment.<sup>32</sup> The "right wing" party (R) has a relative aversion to inflation, while the "left wing" party (L) has a relative aversion to unemployment. In this framework, to the extent that some distortion prevents output from reaching its full employment level, the government's only instrument to get closer to the derived level of employment is an inflation surprise. Given that the private sector forms expectations about inflation before observing the election outcome, the first half of a rightist government's tenure will be characterized by a recession (and low inflation),

while the first half of a leftist will be characterized by an expansion at any phase (and higher inflation). Of course, the great appeal of this extension of the Barro-Gordon framework is that it brings into the picture the role of partisan governments with well-defined ideologies. An important empirical consequence of these models is that political "polarization" plays a key role in explaining macroeconomic policy outcomes.

Table 1 contains a summary of the four most important models of political business cycles, including their empirical predictions as to the relationship between political and inflation behavior. The empirical analysis reported in the sections that follow revolves around these four alternative variants of the political business cycle approach.

Most of the literature is limited to a two-party case, and has focused on the experiences of the developed nations. However, as Persson and Tabellini (1990) have argued, in principle, it is possible to expand most of these models to a multiple parties setup. In the empirical analysis that follows, we make a more subtle distinction as to the existence of "centrist" governments.

#### IV.1 Political Business Cycles in a Developing Country: The Chilean Case<sup>33</sup>

To anyone familiar with Chile's economic history there is no surprise in the statement that the country's macroeconomic policy has been related to the electoral cycles.<sup>34</sup> The question, thus, is not whether politics and macroeconomic policy have been related in this country, but what are the nature and the extent of this relationship. Is macro management different throughout the tenure of governments with different ideologies, or are all governments equally opportunistic and exhibit the same behavior right before elections? In this subsection I use data for a set of macroeconomic time series to investigate the extent to which the basic models of political business cycles discussed above are appropriate for the case of inflation in Chile.<sup>35</sup>

The usefulness and main implications of the models discussed in the preceding section can be evaluated by estimating time series regressions on inflation, money creation and output growth series. Consider, for example, the equation:



TABLE 1

## Alternative Models of Political Business Cycles: A Synthesis

Model	Main Assumptions	Empirical Implications
1. Basic Political Business Cycle (Nordhaus, 1975)	(i) Phillips curve. (ii) Governments care only about re-election. (iii) Agents have myopic expectations.	a. All governments behave alike. b. Inflation (and output) will increase in period preceding (presidential elections) and will decrease after elections.
2. Ideological Policymakers (Hibbs, 1977)	(i) Political parties have strong ideologies and want to pursue their programs. (ii) Economic agents have myopic expectations. (iii) Leftist parties have strong aversion for unemployment; rightist parties have aversion for inflation.	a. Governments from different political parties behave differently; this difference persists throughout the government's tenure in office. b. Leftist governments will tend to have higher inflation.
3. Rational Political Business Cycles (Rogoff and Siebert, 1988)	(i) Short-run inflation-output tradeoff. (ii) Agents have rational expectations and elect parties that are expected to perform best. (iii) Politicians care only about re-election of governments.	a. All governments behave alike. b. Monetary growth and fiscal expansion (but not necessarily output) increase before (presidential) elections. c. Output and inflation increase above "normal" level after elections.
4. Rational Ideological Policymakers (Alesina, 1987, 1988)	(i) Short-run output-inflation tradeoff. (ii) Rational expectations. (iii) Political parties have strong ideologies; leftist parties have aversion for unemployment; while rightist parties have an aversion for inflation.	a. Leftist governments exhibit a (higher) inflationary bias. b. Output is above (below) natural level at beginning of left (right) wing government.

$$\begin{aligned}
X_t = & \Sigma \alpha_i X_{t-i} + \beta \text{ DUMPOL}_t \\
& + \epsilon \text{ DUPRES}_t + \sigma \text{ DUPAR}_t + \gamma \text{ ELA}_t + \delta_1 \text{ ER}_t \\
& + \delta_2 \text{ EC}_t + \delta_3 \text{ EL}_t + \Sigma \psi_i y_{it} + w_t
\end{aligned} \tag{6}$$

where the following notation has been used

- $x_t$  = a generic variable standing for inflation, money creation, monetary base growth, or output growth.
- $\text{DUMPOL}$  = dummy variable that captures the political inclination of the government in office. It takes a value of -1 if the administration is rightist, 0 if it is center, and 1 if it is leftist.
- $\text{DUPRES}$  = Dummy variable that takes the value of 1 before a presidential election.
- $\text{DUPAR}$  = Dummy variable that takes a value of 1 prior to a congressional or parliamentary election.
- $\text{ELA}$  = Dummy variable that takes the value of 1 in the quarter after a presidential election and zero otherwise (i.e.,  $\text{ELA}_t = \text{DUPRES}_{t+2}$ ).
- $\text{HALFR1}$  = Dummy variable that takes the value of one during the early (first half) of a rightist administration.
- $\text{HALFCE}$  = Dummy variable that takes the value of one during the early half of a centrist administration.
- $\text{HALFLE}$  = Dummy variable that takes the value of one during the first half of a leftist administration.
- $y_i$  = Other determinants of  $X$ .
- $w_t$  = error term with standard properties.

The  $\alpha$ 's,  $\beta$ 's,  $\gamma$ 's,  $\delta$ 's,  $\epsilon$ 's,  $\sigma$ 's, and  $\psi$ 's are parameters to be estimated.

The fundamental implications of the four basic political business cycle models discussed above are nested into this equation, allowing us to directly and formally

compare the usefulness of the alternative models, at the same time as investigating whether some combination of the basic approaches is basically more appropriate. More specifically, the different models will have the following implications:

(i) Nordhaus' Political Business Cycle: In this case when  $X$  refers to inflation and output growth, we would expect that  $\epsilon > 0$ ;  $\beta = \sigma = \gamma = \delta_1 = \delta_2 = \delta_3 = 0$ . That is, according to Nordhaus' model all governments behave alike expanding the economy in the period prior to presidential elections.

(ii) Hibbs' Model of Ideological Policymakers: In its simplest and strictest version, this model predicts that  $\beta > 0$  and that  $\theta = \sigma = \gamma = \delta_1 = \delta_2 = \delta_3 = 0$ , for all four macro variables considered here (money growth, base creation, inflation and output growth).

An interesting extension of this empirical model is to assume that in addition to being a "permanent" difference in behavior between policymakers with different ideologies as captured by  $\beta$ , there is also a difference in their pre-election behavior, with parties more inclined towards the left having a tendency to expand more before elections. The implications of this Hibbs-Nordhaus model would be that  $\beta > 0$ ;  $\epsilon > 0$ ;  $\sigma > 0$ ; and  $\delta_1 = \delta_2 = \delta_3 = 0$ .

(iii) Rational Political Business Cycles: As pointed out in our previous discussion, this class of models yields predictions with respect to money supply behavior very similar to the Nordhaus model (with the exception that under rationality the duration of the cycles will tend to be shorter). However, under "rational" voters we should not see such a cyclical response for output. Thus, when  $X$  refers to inflation on money growth, we would expect  $DUPRES > 0$ , but we will expect this coefficient to be zero for output growth. Additionally, the model by K. Rogoff and A. Siebert suggests that in the period after presidential elections we would observe a significant upsurge in inflation (and possibly output).<sup>36</sup>

(iv) Rational Ideological Policymakers: According to this family of models, politicians are ideologically oriented and voters have rational expectations. As explained above, we would then expect to see different behavior in the two halves of a

given administration. Leftist governments will exhibit higher inflation than others during the first part of their office tenure. In terms of equation (3) we would expect the same pattern of parameter signs as in the Hibbs' version, except for output growth, for which we expect  $\delta_1 < \delta_2 < \delta_3 \neq 0$  and  $\beta = \epsilon = \sigma = \gamma = 0$ .

Previous studies undertaken for the case of advanced nations have tended to estimate partial versions of our general equation (3), without actually nesting the different hypothesis. This presents two problems. First, by not nesting the different models, it is not possible to truly discriminate among them, and second by testing the implications of one isolated model at a time researchers have neglected the possibility that the data will support an eclectic model combining the implications of two or more of the basic theoretical formulations discussed above.<sup>37</sup>

Variants of equation (3) were estimated on time series on inflation for Chile during the period 1952-73. What makes this period particularly interesting is that four governments of very different political persuasion alternated in power. Since in presidential regimes, mid-period congressional elections are extremely important -- actually determining the executive's ability to implement its preferred legislation -- we considered both presidential and congressional elections. Naturally throughout the empirical analysis I tested whether there was a noticeable difference in government's behavior around these two types of elections.<sup>38</sup> According to Chilean legislation in effect throughout the period under analysis, the totality of the House of Deputies and one half of the Senate was renewed every four years. Additionally, there was no limitation to the number of times a member of the Congress could be re-appointed. On the other hand, the presidential period lasted six years, and re-election was barred by the Constitution. Table 2' contains a detailed calendar of the elections during these 21 years. Figure 1 displays the evolution of the rate of inflation during this period.

Three important data problems introduce some caveats into this analysis. First, the sample only includes three complete presidential periods. The Allende administration came to a sudden end when the military took over in September of 1973, three years before the constitutional tenure was due.<sup>39</sup> This implies that our



TABLE 2  
 Presidential and Congressional Elections In Chile:  
 1952-1973

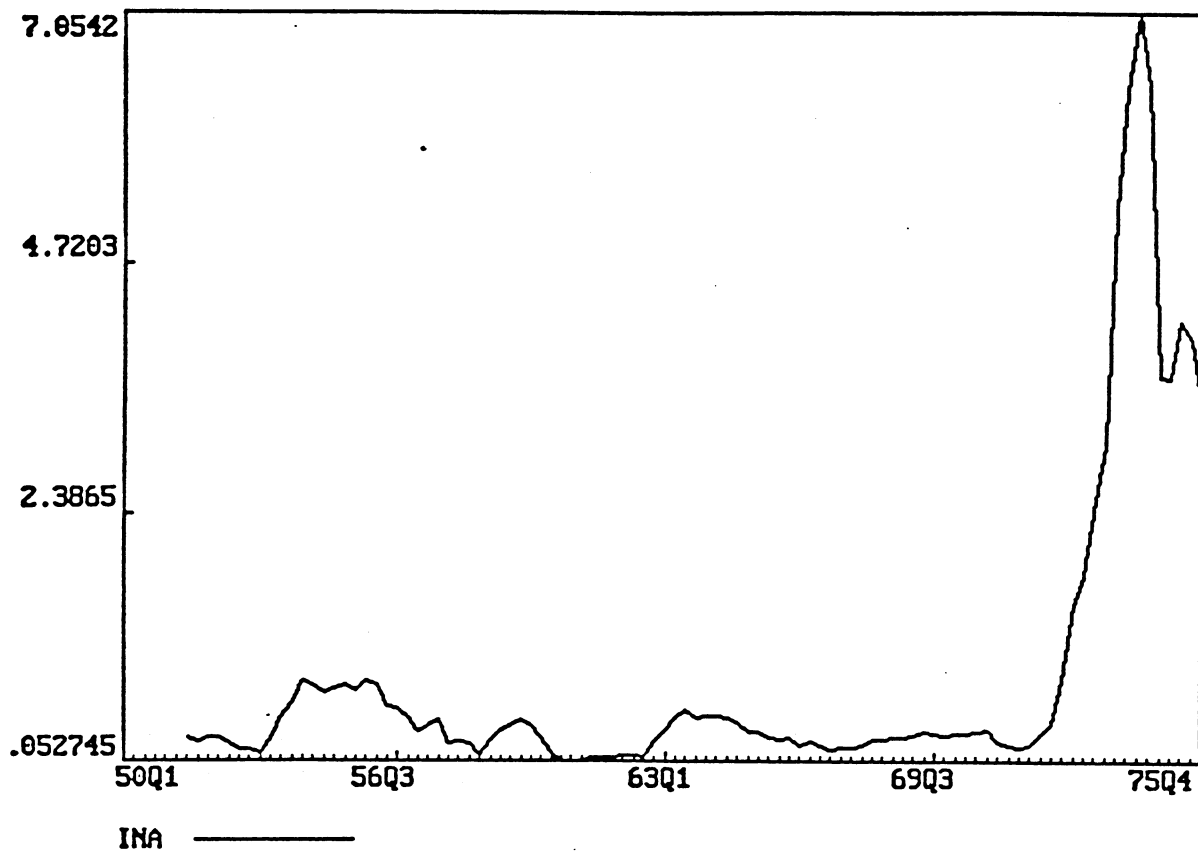
<u>Date</u>	<u>Type of Election</u>	<u>President Elected</u>
1. September 1952	Presidential	Carlos Ibáñez
2. March 1953	Congressional	-
3. March 1957	Congressional	-
4. September 1958	Presidential	Jorge Alessandri
5. March 1961	Congressional	-
6. September 1964	Presidential	Eduardo Frei
7. March 1965	Congressional	-
8. March 1969	Congressional	-
9. September 1970	Presidential	Salvador Allende
10. March 1973 <sup>a</sup>	Congressional	-

Source: P. Tupper, Las Elecciones en Chile, (1990).

<sup>a</sup>The military coup of September 11, 1973 put an abrupt end to the democratic process.

INFLATION IN CHILE: ANNUAL AVERAGES

FIGURE 1



analysis of the hypothesis that ideologically motivated governments behave differently during the first and second halves of their tenure in office will be limited. Moreover, in testing that particular hypothesis we will be constrained to investigating whether there is a difference in behavior between right leaning and centrist policymaker. In order to capture the open nature of Chile's economy in the estimation of the political business cycle regressions, the U.S. rate of inflation was included into the regressors as a proxy for world inflation.<sup>40</sup> The results reported in Table 3 are quite interesting. They suggest, as we expected, that during the period under study Chile's inflation was subject to non-trivial political influences. A particularly interesting feature of these results is that they do not provide support to a single model of political business cycles; rather, these regressions suggest that a more eclectic view that combines features of several specific models is more appropriate. More specifically there is clear evidence of an ideological element as well as of a pre-election effect.

In every regression where DUMPOL was included its estimated coefficient was significantly positive, indicating that with other things given, and as suggested by Hibbs theory, as we moved in the political spectrum from the right towards the left, we should observe, on average, higher rates of inflation. A second important result is that there is evidence that inflation tends to increase in the period immediately preceding elections. More importantly, this pre-electionary effect is present before both presidential and congressional elections. Although DUPRES1 is never significant, the coefficient of DUPRES2 is significant at the 10% level in 3 of the 4 equations; the coefficient of DUPAR1 is significant at the 10% level in 2 of the regressions, and that of DUPAR2 is always significantly positive (and in two of the equations at the 5% level). All in all, these regressions suggest that the most important political cycle effect on inflation takes place two quarters prior to presidential and congressional elections. Moreover, a Wald test on the equality of the coefficients of DUPRES2 and DUPAR2 does not reject this hypothesis. (The resulting chi-square was  $\chi^2(1) = 0.29$ .) This important result indicates that by ignoring mid-period congressional elections, a number of studies for the case of the more advanced nations have also

TABLE 3  
Inflation and Political Business Cycle  
in Chile 1952-1973 (OLS)

	EQ. 4.1 <u>1952-73</u>	EQ. 4.2 <u>1952-73</u>	EQ. 4.3 <u>1952-73</u>	EQ. 4.4 <u>1952-73</u>
CONSTANT	0.013 (0.441)	-0.016 (-0.665)	0.015 (0.424)	0.022 (0.784)
$\pi_{t-1}$	1.707 <sup>**</sup> (16.523)	1.732 <sup>**</sup> (16.661)	1.693 <sup>**</sup> (16.471)	1.714 <sup>**</sup> (16.628)
$\pi_{t-2}$	-0.681 <sup>**</sup> (-5.258)	-0.679 <sup>**</sup> (-5.179)	-0.663 <sup>**</sup> (-5.142)	-0.696 <sup>**</sup> (-5.379)
$\pi_{t-1}^{US}$	-2.353 (-0.898)	-0.082 (-0.035)	-2.731 <sup>**</sup> (-1.018)	-2.690 <sup>**</sup> (-1.076)
DUMPOL <sub>t-1</sub>	0.052 <sup>**</sup> (2.225)	-	0.070 <sup>**</sup> (2.702)	0.055 <sup>**</sup> (2.414)
DUPRES1	-0.010 (-0.158)	-0.024 (1.353)	-0.004 (-0.065)	-0.014 (-0.212)
DUPRES2	0.106 <sup>*</sup> (1.671)	0.093 (1.353)	0.110 <sup>*</sup> (1.652)	0.105 <sup>*</sup> (1.650)
DUPAR1	0.080 <sup>*</sup> (1.642)	0.056 (1.164)	0.065 <sup>*</sup> (1.380)	0.052 (1.302)
DUPAR2	0.103 <sup>**</sup> (1.960)	0.095 <sup>*</sup> (1.781)	0.096 <sup>*</sup> (1.803)	0.100 <sup>**</sup> (1.961)
HALFRI	-	-	0.046 (-0.457)	-
HALFCE	-	-	-0.014 (-0.457)	-
ELA 1	-	-	-	0.024

Table 3 (cont.)

	<u>EQ. 4.1</u> <u>1952-73</u>	<u>EQ. 4.2</u> <u>1952-73</u>	<u>EQ. 4.3</u> <u>1952-73</u>	<u>EQ. 4.4</u> <u>1952-73</u> (0.391)
ELA 2	-	-	-	-0.062 (-1.079)
N	84	84	84	84
D.W.	2.223	2.200	2.208	2.236
R <sup>2</sup>	0.872	0.967	0.879	0.942

Notes: t-statistics in parentheses; N is the number of observations.

neglected an important channel through which political considerations interact with macroeconomic policy.

The results in Table 3 also show that for the period under study there is no detectable difference in behavior during the first and second halves of different administrations, as predicted by the Alesina family of models.<sup>41</sup> Also, these results do not capture a cyclical effect in the post-presidential electionary period as suggested by the Rogoff-Siebert model.

A potential problem with the results reported in Table 3 is that in every equation the coefficient of  $\pi_{t-1}$  is greater than one indicating that Chile's inflationary series were not stationary during this period. In order to analyze whether the results reported here are affected by this fact, a number of regressions were also run on first differences of inflation. The results obtained provide ample support to those in Table 3. An example of these regressions is:

$$\begin{aligned} \Delta\pi_t = & 0.005 + 0.596 \Delta\pi_{t-1} + 0.277 \Delta\pi_{t-2} \\ & (0.379) \quad (5.249) \quad (2.215) \\ & - 3.693 \Delta\pi_{t-1}^{US} + 0.043 \text{DUMPOL}_{t-1} + 0.017 \text{DUPRES1} \\ & (-1.588) \quad (2.219) \quad (0.260) \\ & + 0.073 \text{DUPRES2} + 0.082 \text{DUPAR1} + 0.105 \text{DUPAR2} \quad (7) \\ & (1.315) \quad (1.798) \quad (2.090) \end{aligned}$$

$\bar{R}_2 = 0.514$   
 $\text{D.W.} = 2.083$   
 $N = 84$

## V. Stabilization Programs and Devaluations: Preliminary Results From a Political Economy Perspective

An increasingly important question in analyses of macroeconomic adjustment in the developing countries refers to the political economy of stabilization programs. Why do some countries engage in stabilization programs at the first sign of disequilibrium, while others wait until it is (almost) too late? Why are some adjustment programs successful, while others fail miserably? Why do some countries



prolong unsustainable fiscal policies, in spite of having made a commitment to fixed exchange rates? The new political-economy based theories of macroeconomic policy -- including those based on credibility, reputation and war of attrition -- have shed some important insights into these issues.<sup>42</sup> In particular, a number of researchers have argued that governments that are politically stronger will find it easier to implement the policies required for a successful macroeconomic adjustment.<sup>43</sup> The reason for this is that stronger governments will be able to allocate the costs of adjustment to the different sectors of the population, without fearing a crippling reduction in their power.

In the subsections that follow I use data on 39 major devaluation episodes to investigate the relationship between successful adjustment and political developments.<sup>44</sup> From an empirical point of view these broad propositions can be analyzed within the context of stabilization-cum-devaluation adjustment programs. A first specific test would be to inquire -- using non-parametric methods, for example -- whether devaluations indeed tend to fail in those countries with more unstable and polarized political environment. A second test would be to investigate the timing of devaluation episodes. Since in democratic regimes governments are usually stronger at the beginning of their administration, we would expect to find most devaluation attempts taking place in the early years of a government's tenure in office.<sup>45</sup> A third potential test is related to the idea of decentralization and policy coordination proposed recently by J. Aizenman.<sup>46</sup> In general, we would expect that in those nations with more decentralized (and more polarized) political systems, it would be more difficult to implement the fiscal adjustment required by a successful devaluation.

### V.1 The Data Set

The data set on devaluations used in our empirical investigation corresponds to that I assembled in a study on real exchange rates in developing countries.<sup>47</sup> The episodes are listed in Table 4, and have been classified into a group (Panel A) of countries that implemented a stepwise devaluation and a group (Panel B) that adopted a crawling peg after devaluing. As can be seen all devaluations are substantial -- of at least 15%.

TABLE 4

## Successful and Unsuccessful Devaluation Adjustments

## In Selected Developing Countries

<u>Country</u>	<u>Year of Devaluation Crisis</u>	<u>Percent of Devaluation</u>	<u>Successful (S), Limited Success (L), Unsuccessful (U)</u>
<u>A. Stepwise Devaluations</u>			
Argentina	1970	25.0	U
Bolivia	1972	66.6	U
Bolivia	1979	25.0	U
Colombia	1962	34.3	U
Colombia	1965	50.0	U
Costa Rica	1974	28.8	S
Cyprus	1967	16.6	S
Ecuador	1961	20.0	L
Ecuador	1970	38.8	S
Egypt	1962	23.9	L
Egypt	1979	78.8	S
Guyana	1967	15.9	S
India	1966	58.6	S
Indonesia	1978	50.6	S
Israel	1962	66.6	S
Israel	1967	16.6	L
Israel	1971	20.0	U
Jamaica	1967	15.9	L
Jamaica	1978	86.4	U
Malta	1967	16.6	L

Table 4 (cont.)

<u>Country</u>	<u>Year of Devaluation Crisis</u>	<u>Percent of Devaluation</u>	<u>Successful (S), Limited Success (L), Unsuccessful (U)</u>
Nicaragua	1979	43.0	U
Pakistan	1972	130.1	S
Peru	1967	44.4	L
Philippines	1962	94.0	S
Philippines	1970	63.7	S
Sri Lanka	1967	24.1	S
Trinidad	1967	15.9	L
Venezuela	1964	38.1	S
Yugoslavia	1965	66.6	U
<u>B. Devaluations Followed by Crawling Peg</u>			
Bolivia	1982	684.0	U
Chile	1982	88.2	S
Colombia	1967	16.7	S
Ecuador	1982	32.6	U
Kenya	1981	35.9	L
Korea	1980	36.3	S
Mexico	1976	59.6	U
Mexico	1982	267.8	U
Pakistan	1982	29.6	L
Peru	1975	16.2	U

\*Devaluation of the official rate with respect to the U.S. dollar. In the case of multiple rates the IFS reports the "most common" of them.

Source: S. Edwards, Real Exchange Rates, Devaluation and Adjustment.

The stated objective of these devaluations, and their accompanying packages, was to solve the external crises in these countries by reversing the real exchange rate overvaluation -- that is, by generating a real exchange rate depreciation -- improving the current account and improving the net foreign position.<sup>48</sup> Edwards analyzed the degree of economic success of these devaluations using a two step procedure. First, he analyzed the evolution of a set of external sector indicators -- the real exchange rate, the current account, and the net foreign asset position -- in the period following the devaluations. The second step consisted of analyzing the behavior of a group of macroeconomic policy indicators.<sup>49</sup>

In classifying these devaluation episodes in successful and unsuccessful, Edwards (1989) concentrated on the behavior of three key indicators during the period following the devaluations: (1) Real exchange rates. The focus here was on the behavior of an effectiveness index defined as the ex-post real exchange rate elasticity of nominal devaluations; (2) behavior of net foreign assets of the monetary system; and (3) behavior of the current account ratio. To overcome some of the limitations associated with this binary classification, an (improved) three way classification was used instead: (1) successful episodes; (2) unsuccessful episodes; (3) devaluations with a limited degree of success.<sup>50</sup>

Table 4 also contains Edwards' 39 episodes classified according to this criterion. As can be seen, among the 29 stepwise devaluers, there are 13 clearcut successful cases (S), 9 clearcut failures (U) and 7 limited-success cases (L). For the 10 crawlers there are three successful episodes, five unsuccessful ones and two cases of limited success. The 13 successful stepwise devaluers were able to sustain substantial real depreciations in the medium term. The average for the effectiveness index after 3 years is 0.66 indicating that on average 2/3 of these nominal devaluations had been transmitted into a real devaluation. For these 13 countries as a group, 3 years after the crisis the real exchange rate index stood on average 66% higher than its value immediately before the devaluations. For the 9 stepwise cases with limited success the average value of the effectiveness index is still an impressive 0.49. On the whole, then, this evidence strongly shows that for a large number of cases nominal

devaluations have been helpful in generating real exchange rate realignments. For the 9 unsuccessful stepwise episodes, on the other hand, the index of devaluation effectiveness had an average of -0.21 three years after the crisis, indicating that at that time the RER was more than 20% below its value immediately prior to the crisis. For these cases devaluations not only failed to generate a real exchange realignment, but even worse, three years after the event the magnitude of the external disequilibrium had greatly increased. In fact, for these countries in the three years following the devaluation the net foreign assets ratio declined on average by more than 10%.<sup>51</sup>

Additionally, discriminant analysis for the stepwise-devaluers was used to test whether it was possible to statistically discriminate among successful and unsuccessful groups based exclusively on the behavior of macroeconomic variables. The two groups of countries pursued macroeconomic policies (domestic credit and fiscal policies) that were significantly different from a statistical point of view. In fact, the results obtained from the discriminant analysis were quite striking, indicating that by and large it was possible to statistically discriminate between these two groups on the basis of their macroeconomic policies alone. According to these results, three years after the devaluation only one country which was classified as successful did not belong to that group (Egypt 1979) and the posterior probability of it belonging to the successful group was only 2%. These results, then, confirm the existence of a strong and statistically significant relation between macroeconomic (and especially fiscal) policies and successful stepwise devaluations.

The question that remains to be answered is why some countries were able to indeed implement corrective fiscal policies alongside devaluations and others were not. As argued in the preceding discussion, our answer is that this has to do with the political economy of fiscal policy. In the rest of this section we turn to the empirical analysis of this hypothesis.

## V.2 The Timing of Devaluations and Political Regimes

An important empirical implication of the political economy approach to stabilization discussed above is that governments will tend to implement adjustment

policies earlier in their tenure in office. The reason for this is that at this time governments in democratic regimes are usually politically stronger than later in their period. We partially address this prediction of the theory by investigating the timing of the devaluations in each country. Two indicators were constructed: (1) number of years elapsed between the last government change and the devaluation, and (2) number of years between the devaluation and the next government change. Additionally countries were classified according to their political regime into three groups: presidential democracies, where the date of the election is predetermined; parliamentary democracies and dictatorial regimes. For some countries, however, this is far from being completely straightforward. Two particularly difficult cases refer to Egypt under Nassar and Cyprus under Makarios, where the leaders term was extended beyond what was considered "normal". Both cases, however, were labelled as democratic presidential regimes.

Table 5 contains summary statistics for the timing of the 39 devaluations episodes. This information is quite impressive, showing that, as suggested by the theory, under democratic regimes devaluations tend to take place during the early years of each administration; with a few devaluation attempts taking place during the last few years. An additional interesting piece of information in this table is that there is no evidence that dictatorships front-load their devaluations.

### V.3 Political Determinants of Successful Devaluations

Another important empirical implication of our previous discussion is that countries with a weaker, more unstable and polarized political environment will generally have greater difficulties in implementing the fiscal adjustment required for a devaluation to be successful. This suggests that for these type of countries it should be possible to "predict" the degree of success of a devaluation through the use of political variables only.

The data set elaborated by J. Jodice and C. Taylor was used to define three groups of political indicators for the different devaluation episodes.<sup>52</sup> The first set captures the historical political environment of the countries prior to the devaluation. It relates to a



TABLE 5

## Summary Statistics on Timing of Devaluations

	<u>Presidential Democracies</u>	<u>Parliamentary Democracies</u>	<u>Dictatorial Regimes</u>
Percentage of cases where 2 or <u>fewer</u> years elapsed since last government transfer	77.3%	70.0%	42.9%
Percentage of cases where devaluation took place 1 or fewer years years before <u>next</u> government transfer	31.8%	20.0%	0.0%

number of political variables, such as political riots, successful coups and the like, taking place in a given country from 1948 (the first year in the data set) to the year prior to the devaluation. Similarly, the second and third data sets relate to the political environment one year after the devaluation and for the three year period following the devaluation.

Ten variables in each of these sets of indicators for measuring the degree of political instability were actually used: (1) politically motivated attacks; (2) politically related deaths; (3) successful coups attempts; (4) politically motivated strikes; (5) political demonstrations and riots; (6) politically motivated assassinations; (7) frequency of government transfers, either regular or unscheduled (via coups); (8) an overall measure of violence defined as the frequency of protests, strikes, deaths, assassination attempts and attacks; (9) frequency of unsuccessful government transfers, including unsuccessful coups; and (10) frequency of political repression computed as the number of related executions plus political sanctions imposed by the government on its opponents.

In order to correct by country size, those variables were defined in per capita terms. Table 6 contains some summary statistics for the last four indicators -- frequency of government change, violence index, unsuccessful transfers and repression index. Additionally, in order to shed additional light on these data we have added the frequency of successful coups.

Once these data sets were assembled a subset of these political indicators was selected to test whether it was possible to discriminate between successful and unsuccessful devaluations on the basis of the political environment only. The results obtained were very encouraging, showing that in most cases by using political variables we could classify most devaluation episodes correctly. The purpose of the first exercise was to classify the devaluation episodes into three groups: successful devaluations, limited success and unsuccessful devaluations. In this discriminant analysis the

TABLE 6  
Summary Statistics on Political Instability  
For Devaluation Episodes

	Frequency of Govt. <u>Transfers</u>	Frequency of Coups	Violence <u>Index</u>	Unsuccessful Transfer <u>Attempts</u>	Regression <u>Index</u>
A. <u>Historical (1948 to 1 year prior to devaluation) Indicators</u>					
Successful	0.55	0.06	0.05	0.29	0.30
Limited Success	0.67	0.07	0.18	0.28	0.25
Unsuccessful	0.54	0.13	0.20	0.35	0.15
B. <u>Post Devaluation (3 Years) Indicators</u>					
Successful	0.33	0.06	0.07	-	0.09
Limited Success	0.44	0.01	0.36	-	0.07
Unsuccessful	0.73	0.11	0.36	-	0.08

following political indicators were used: successful coups; attacks; assassinations, deaths, strikes and riots; that is, we used variables (1) through (6) from the list. Each of them was defined for both the country's political history as well as for the 3 year period following the devaluation. As can be seen from Table 7, only 2 of the 39 devaluations episodes were misclassified: Jamaica 1967 and Kenya. According to the economic classification criterion summarized in Table 4 both of these devaluations were of limited success. However, according to the political indicators criterion they were classified as successful. The posterior probability of these episodes belonging to the successful devaluation group were 0.63 for Jamaica and 0.91 for Kenya.

Overall, these results provide some support to the contention that the political environment is clearly related to the degree of success of adjustment and devaluation episodes: only 2 episodes out of 39 appear to be misclassified. However, a possible problem with these results is that the discriminant analysis incorporates too many variables (12) for purposes of classification. More specifically, it is possible to think that by incorporating the political indexes for the period of 3 years following the devaluation we are providing "too much" information. In order to investigate how the results were affected by these considerations we also undertook discriminant analyses using separately the historical political variables, on the one hand, and the post-devaluation indexes on the other.

When historical variables alone were used the results were still very supportive of the theory: only five of the episodes were misclassified. One of the episodes classified as successful on economic grounds (Chile) is classified as "limited success" on political grounds; whereas another 3 economically successful devaluation episodes are misclassified as unsuccessful when the political criterion is used (Ecuador 1979, Colombia 1967, and Egypt 1970). Finally one of the episodes classified as unsuccessful on economic grounds (Israel, 1971) is misclassified as having had limited success when the political criteria is used. All in all, however, the results are still remarkable with only 12.8% of the episodes being misclassified.<sup>53</sup>

In a different but complementary set of exercises, indicators on frequency of government change, overall violence, unsuccessful transfer attempts and political

TABLE 7

Discriminant Analysis of Devaluation Episodes  
According to Political Instability

	Percentage of Countries <u>Classified Correctly</u>
Successful	100.0%
Limited Success	77.8%
Unsuccessful	100.0%

executions (variable (7) through (10) in the list) were used to analyze the relationship between political development and successful adjustment programs. In the initial analysis I used these indicators for all three time periods: historical, for one year after and three years after the devaluation. When this was done, all 39 episodes were classified correctly. In order to check for the robustness of these results, I also performed a discriminant test where these four political indicators were defined for the historical period and for the three years after the devaluation. The results obtained in this case are reported in Table 8. As can be seen they are still remarkably strong, with only 6 episodes out of 39 being misclassified.

It may be argued that the classification of the 39 episodes into three groups (successful, limited success and unsuccessful) is somewhat arbitrary. In order to determine whether this three-way classification indeed affected our analysis, I reclassified the devaluation episodes into two groups: successful -- which now pulls together the previous successful and limited success groups -- and unsuccessful. The rationale behind this is that there are at least some grounds for arguing that in the so-called "limited success episodes" some of the objectives of the devaluation programs were accomplished. When the discriminant analysis was redone for this two-way classification of the degree of success of the devaluations the results were even more favorable than before: now every episode is classified correctly. When other groups of variables were used in two-way classification discriminant analyses, the results were also very satisfactory; in most cases every episode was correctly classified.

In a recent paper Edwards and Santaella (1993) used a data set comprised of 48 major adjustment-cum-devaluation programs during the Bretton Woods era (1950-1971) to analyze whether the degree of success of these programs was related to political and institutional developments. Using a criteria similar to the one described above, they classified the 48 adjustment episodes into successful, unsuccessful and limited success episodes. They then used the data set compiled by Taylor and Jodice to define a number of political indices the period following each adjustment program. In particular, they defined five indices capturing, on the one hand, the degree of political



TABLE 8

Discriminant Analysis: Aggregate Instability Indexes -  
Historical and 3 Years After Devaluation

	Percentage of Countries <u>Classified Correctly</u>
Successful	87.5%
Limited Success	100.0%
Unsuccessful	71.4%

resistance generated by the adjustment program and, on the other hand, the extent to which the government repressed dissidents. Additionally, they also obtained information on whether there was a coup attempt in the period immediately following the devaluation.

They found that "failure" countries indeed appeared to have a more unstable political structure: the frequency of politically motivated strikes and riots is higher than that for the "effective" devaluation countries. Moreover, their study indicates that the governments of the unsuccessful countries tried to exercise a stricter control on dissidence. Finally, the "failure" episodes also experienced a higher incidence of coups. In fact, it is quite impressive how many of these episodes were indeed followed by a coup attempt: Argentina's four episodes, Colombia 1965, Ecuador 1961, Uruguay 1963 and 1971, and Ghana 1971.

In order to gain additional insights on the influence of political instability and weakness on the outcome of devaluation outcomes, Edwards and Santaella estimated a series of probit regressions where the dependent variable was defined as a dummy that took a value of one if the episode was classified as either being a "success" or a "limited success", and a value of zero if the episode was a "failure". In addition to political instability and weakness variables, they also included measures of political ideology, democracy and IMF presence at the time of the adjustment program. The results obtained were quite encouraging, providing additional statistically significant support to the view that governments with greater political instability and weakness have more difficulty implementing successful adjustment.

## **VI. Concluding Remarks**

This paper has dealt with some aspects of the political economy of inflation and stabilization in developing countries. Two fundamental questions were asked: first, is it possible to detect systematic political determinants of inflation across countries? and second, what are the political (as well as economic) determinants of successful stabilization programs? The analysis started by discussing a series of recently developed models on the relationship between political instability and inflation. Special

attention is given to the work of Alesina, Cukierman, Edwards and Tabellini. It is argued that existing cross country evidence provides support to the idea that the inflation tax depends positively on the degree of political instability of the country in question. This result appears to be quite robust to different definitions of political instability. Moreover, it is argued that the evidence provides some support to the notion that the use of inflationary financing is the deliberate result of policy actions undertaken by governments that act strategically.

Section IV of the article deals with political business and budget cycles. It is argued that the traditional literature on the subject suffers from two shortcomings. First, most works have tended to ignore the role of congressional elections, and second, no effort has been made to nest competing theories when testing them empirically. This section discusses in some detail the Chilean case between 1952 and 1973. The empirical analysis supports the idea that there was a clear electoral budget cycle in Chile during this period. Moreover, this analysis indicates that the presence of congressional elections played a very important role in the political cycle during this period.

The discussion also deals with some political aspects of stabilization-cum-devaluation programs. Discriminant analysis is used on a 39-episode data set to investigate whether "successful" and "unsuccessful" stabilization programs can be identified based on the political characteristics of the episodes. The results obtained provide some support to the notion that countries with more volatile political sectors are less likely to have successful stabilizations.

All in all, the results reported in this paper provide broad support for the view that political variables have affected in a systematic way economic developments in the developing countries. Of course, this is not new to the careful observer of the developing nations' scene. What is new, however, is the systematic incorporation of these political variables into basic economic analysis. Until recently mainstream economics tended to ignore the political motivations behind government actions. The results reported here indicate that, when properly interpreted and handled, the techniques and models recently built to study industrial countries can be helpful in

explaining certain behaviors in the less advanced nations. It is important, however, not to become over-enthusiastic about this line of research. Game theory-based models often are too general to provide true insights, and cross section regression analyses cannot deal adequately with issues of causality. At the end of the road there are no substitutes for in-depth, careful and insightful historical analyses.

## ENDNOTES

<sup>1</sup>On the monetarist-structuralist controversy see E. Cardoso and A. Helegwe, Latin American Economy: Diversity, Trends and Conflicts (Cambridge, MA: MIT Press, 1992). Some authors, however, followed a more pragmatic approach trying to combine in their empirical analyses both demand and supply factors. See V. Corbo, Inflation in Developing Countries: An Econometric Study of Chilean Inflation (Amsterdam: North Holland, New York, NY: American Elsevier, 1974).

<sup>2</sup>For a comprehensive, and somewhat technical survey of this literature see T. Persson and G. Tabellini, Macroeconomic Policy, Credibility and Politics (New York and Melbourne: Harwood Academic Publishers, 1990). The pioneer work on this area is B. Frey, Modern Political Economy (New York, NY: Wiley, 1978) is the pioneer work in this area.

<sup>3</sup>No claim is made here to survey the complete body of political economy literature. For a work with that broad scope see T. Persson and G. Tabellini, Macroeconomic Policy. In surveying this literature I have summarized some of the work, both published and unpublished, that I have undertaken on the subject during the last 5 years. Some of this work was undertaken with Alex Cukierman and Guido Tabellini.

<sup>4</sup>See, for example, T. Persson and G. Tabellini, Macroeconomic Policy, and A. Alesina and G. Tabellini, "Voting on the Budget Deficit" American Economic Review 80, no. 1 (March, 1990): 37-49.

<sup>5</sup>G. Mankiw (1987) argues that if governments optimize society's welfare dynamically the inflation rate and the tax rate should exhibit a unit root and that their rates of change should be positively correlated. On this point, see his "The Optimal Collection of Seignorage" Journal of Monetary Economics 20, no. 2 (September, 1987): 327-41. However, S. Edwards and G. Tabellini, "Explaining Fiscal Policy and Inflation in Developing Countries" Journal of International Money and Finance 10, no. 5 (March Supplement, 1991): S16-48, and N. Roubini, "Economic and Political Determinants of Budget Deficits in Developing Countries" Journal of International Money and Finance 10, no. 5 (March Supplement, 1991): S49-72, have found that contrary to the implications of optimal taxation theory, inflation tax revenues and tax rates do not exhibit a positive correlation in the majority of the developing countries.

<sup>6</sup>A. Cukierman, S. Edwards and G. Tabellini, "Seignorage and Political Instability" American Economic Review 82, no. 3 (June, 1992): 537-55.

<sup>7</sup>See A. Tait, W. Gratz and B. Eichengreen, "International Comparisons of Taxation for Selected Developing Countries" IMF Staff Papers 26, no. 1 (March, 1979): 123-56.

<sup>8</sup>As was pointed out to me by Nick Stern, the observed relationship between political instability and inflation may be due to reasons different from those posited in the model by

Alex Cukierman, S. Edwards and G. Tabellini, "Seignorage and Political Instability". For example, political instability may produce gridlock and, thus, inflation. S. Edwards and G. Tabellini, "Explaining Fiscal Policy and Inflation," deal with some possible explanations of these results.

<sup>9</sup>All variables are measured as averages for 1971-82. Seignorage is the change of high-powered money as a percentage of government tax revenue plus increase in high-powered money. Openness is measured as imports plus exports over GDP. Notice that this equation excludes the mining and manufacturing shares, including results in an insignificant coefficient, with the expected sign, with no other changes in the regression.

<sup>10</sup>Urbanization has a positive rather than a negative coefficient. This however is consistent with the view that political polarization matters: political disagreement is generally considered by political scientists to be more acute in urban areas.

<sup>11</sup>The dependent variable (inflation tax) was defined as  $(\pi_t m_{t-1})/y_t$ , where  $\pi$  is inflation,  $m$  is real money balances ( $M1$ ) and  $y_t$  is real GDP.

<sup>12</sup>In obtaining this result, A. Cukierman et al., "Seignorage and Political Instability," also included a dummy for industrialized countries.

<sup>13</sup>A technical survey can be found in T. Persson and G. Tabellini, "Macroeconomic Policy".

<sup>14</sup>The models on inflation tax and political instability discussed provide formal underpinnings for this view.

<sup>15</sup>For more details on this outcome, see A. Alesina and A. Drazen, "Why Are Stabilizations Delayed?" American Economic Review 81, no. 5 (December, 1991): 1170-88.

<sup>16</sup>On the effects of a postponed adjustment, see S. Edwards and P. Montiel, "Devaluation Crises and the Macroeconomic Consequences of Postponed Adjustment in Developing Countries" IMF Staff Papers 36, no. 4 (December, 1989): 875-903.

<sup>17</sup>This was the message of T. Sargent, "Stopping Moderate Inflation" in R. Dornbusch and M. Simonsen (eds.), Inflation, Debt and Indexation (Cambridge, MA: MIT Press, 1982): 54-95.

<sup>18</sup>Along similar lines, see R. Dornbusch, "Credibility and Stabilization" Quarterly Journal of Economics 106, no. 3 (August, 1991): 837-50.

<sup>19</sup>See, e.g., P. Agenor and P. Montiel, "Exchange Rate Management and Credibility Issues in Developing Countries," International Monetary Fund: mimeo (May, 1991).

<sup>20</sup>See T. Persson and G. Tabellini, "Macroeconomic Policy".

<sup>21</sup>See J. Sachs, "Conditionality, Debt Relief, and the Developing Country Debt Crisis" in J. Sachs (ed.), Developing Country Debt and the World Economy (Chicago, IL: NBER and University of Chicago Press, 1989): 275-84; S. Edwards, Real Exchange Rates, Devaluation and Adjustment (Cambridge, MA: MIT Press, 1989); and J. Santaella, "Stabilization Programs and External Enforcement: Experience From the 1920s" IMF Staff Papers (forthcoming, 1993).

<sup>22</sup>Accounts of the support given by external credits and loans to stabilizing countries are in the League of Nations, The Course and Control of Inflation (Geneva: League of Nations, 1946) and R. Dornbusch and S. Fischer, "Stopping Hyperinflation: Past and Present" Weltwirtschaftliches Archiv 122, no. 1 (undated, 1986): 1-47.

<sup>23</sup>S. Edwards and J. Santaella, "Devaluation Controversies in the Developing Countries: Lessons From the Bretton Woods Era" in M. Bordo and B. Eichengreen (eds.), A Retrospective on the Bretton Woods System (Chicago, IL: NBER and University of Chicago Press, 1993): 405-55.

<sup>24</sup>For a list of the countries used see S. Edwards and G. Tabellini, "Explaining Fiscal Policy".

<sup>25</sup>See, for example, the survey in A. Alesina, "Politics and the Business Cycle in Industrial Democracies" Economic Policy 8 (April, 1989): 55-98.

<sup>26</sup>This classification of countries has been suggested, among others, by A. Alesina, "Politics and the Business Cycle".

<sup>27</sup>See W. Nordhaus, "The Political Business Cycle" Review of Economic Statistics 42, no. 2 (April, 1975): 169-90.

<sup>28</sup>Here we should understand "politician" as referring to political parties.

<sup>29</sup>See, for example, A. Alesina, "Politics and the Business Cycle;" A. Alesina and J. Sachs, "Political Parties and the Business Cycle in the United States: 1948-1984" Journal of Money, Credit and Banking 20, no. 1 (February, 1988): 63-82; N. Roubini and J. Sachs, "Fiscal Policy, Government Spending and Budget Deficits in the Industrial Countries" Economic Policy 8 (April, 1989): 99-132; and N. Roubini and J. Sachs, "Political and Economic Determinants of Budget Deficits in Industrial Democracies" European Economic Review 33, no. 5 (May, 1989): 903-33.

<sup>30</sup>An exception is A. Alesina, "Politics and the Business Cycle," who has included mid-term dummies in his study of the model by K. Rogoff, "Reputational Constraints in Monetary Policy" Carnegie-Rochester Conference Series on Public Policy 26 (Spring, 1987): 141-81.

<sup>31</sup>See, e.g., D. Hibbs, "Political Parties and Macroeconomic Policy" American Political Science Review 71, no. 4 (December, 1977): 1467-87.



<sup>32</sup>A. Alesina, "Macroeconomic Policy in a Two-Party System as a Repeated Game" Quarterly Journal of Economics 102, no. 3 (August, 1987): 651-78; R. Barro and D. Gordon, "Rules, Discretion and Reputation in a Model of Monetary Policy" Journal of Monetary Economics 12, no. 1 (July, 1983); R. Barro and D. Gordon, "A Positive Theory of Monetary Policy in a Natural Rate Model" Journal of Political Economy 91, no. 4 (August, 1983): 589-610.

<sup>33</sup>For a more detailed discussion see S. Edwards and A.C. Edwards, Monetarism and Liberalization: The Chilean Experiment (Chicago, IL: University of Chicago Press, 1991).

<sup>34</sup>Between 1952 and 1973 Chile had four elected governments: from 1952 to 1958, President Ibanez headed a center coalition, and had an average rate of inflation of 47%; Jorge Alessandini was president from 1958 to 1964 with inflation averaging 26%; centrist Eduardo Frei governed between 1964 and 1970 when inflation averaged 27%; leftist Salvador Allende was president between 1970 and 1973 with an average inflation of 93%.

<sup>35</sup>In S. Edwards, "Stabilization and Liberalization Policies in Central and Eastern Europe: Lessons From Latin America" NBER Working Paper 3816 (1991), I tackle a more extensive data set including other macroeconomic series.

<sup>36</sup>K. Rogoff and A. Siebert, "Elections and Macroeconomic Policy Cycles" Review of Economic Studies 55, no. 1 (January, 1988): 1-16.

<sup>37</sup>See, for example, the survey of results in A. Alesina and N. Roubini, "Political Cycles in OECD Economies" NBER Working Paper 3478 (1990).

<sup>38</sup>In principle it may be argued that municipal elections were also important and subject to a political cycle. This, however, is less clearcut since in Chile the municipalities ability to tax and spend autonomously is highly curtailed by the central government.

<sup>39</sup>For a discussion of the economic policies during the military regime, see S. Edwards and A.C. Edwards, Monetarism and Liberalization.

<sup>40</sup>A more extensive use of other macroeconomic variables as regressors can be found in S. Edwards, "Stabilization and Liberalization".

<sup>41</sup>Naturally, this result refers to the average effect throughout the period. In fact, and as documented in detail in the second half of this study, macropolicy was very different in the first and second three years of the Ibáñez administration.

<sup>42</sup>See, e.g., A. Berg and J. Sachs, "The Debt Crisis: Structural Explanations of Country Performance" Journal of Development Economics 29, no. 3 (November, 1988): 271-306.

<sup>43</sup>See A. Alesina and A. Drazen, "Why are Stabilizations Delayed?" American Economic Review 85, no. 1 (December, 1991): 1170-88; S. Edwards and G. Tabellini, "The Political Economy of Fiscal Policy and Inflation in Developing Countries: An Empirical

Analysis" (paper prepared for the World Bank, 1991); and P. Sanguinetti, "Fiscal Policy Coordination and Tax Reform in High Inflation" (unpublished UCLA Ph.D. Dissertation, 1992).

<sup>44</sup>The analysis that follows summarizes and extends results discussed in S. Edwards and G. Tabellini, "Explaining Fiscal Policy," and S. Edwards and J. Santaella, "Devaluation Controversies in the Developing Countries: Lessons From the Bretton Woods Era".

<sup>45</sup>Nick Stern pointed out to me that independently of the political strength of the government the classical rule is "devalue immediately and blame it on your predecessors". The test presented here inquires whether there is a statistically strong connection between the nature of the political regime and the timing of the devaluation.

<sup>46</sup>J. Aizenman, "Competitive Externalities and the Optimal Seignorage" Journal of Money, Credit and Banking 24, no. 1 (February, 1992): 61-71.

<sup>47</sup>S. Edwards, Real Exchange Rates, Devaluation and Adjustment.

<sup>48</sup>These are in fact the stated objectives of the IMF programs that were associated with most of these devaluation episodes.

<sup>49</sup>Although this approach is highly revealing it does have some problems, including the fact that other variables are not kept constant. These episodes were originally selected to study the consequences of major devaluations. The selection criteria was based on (1) data availability; and (2) magnitude of the devaluations -- only devaluations exceeding 15% were included. For further details, and a discussion of the methodological limitations of this approach, see S. Edwards, Real Exchange Rates, Devaluation and Adjustment.

<sup>50</sup>In order for an episode to qualify as successful the following two conditions had to be met: (1) three years after the devaluation the effectiveness index had to exceed 0.3; and (2) three years after the devaluation either the current account or net foreign assets indicators had to exhibit an improvement relative to the year before the crisis. The first requirement implies that in order for an episode to be classified as successful no more than 70% of the devaluation impact on the real exchange rate has to be eroded in three years. The second requirement means that a real depreciation per se is not enough for the nominal devaluation to be considered a success; in addition, the external sector accounts had to be improved. An episode was defined as unsuccessful if three years after the devaluation the real exchange rate was below its value the year before the crisis -- that is, the effectiveness index was negative -- or if even when the effectiveness index was positive (but still below 0.3) both the net foreign assets and current account positions had worsened 1 and 3 years after the devaluation. These definitions of success and failure are quite strict and are able to sharply discriminate between countries. A number of episodes, however, sit in between these two extreme groups. We have called them limited-success episodes, since in most of them we observe some improvement in the level of the real exchange rate and/or the external sector accounts.

<sup>51</sup>See Chapters 6 and 7 of S. Edwards, Real Exchange Rates, Devaluation and Adjustment.

<sup>52</sup>See J. Jodice and C. Taylor, World Handbook of Social and Political Indicators (New Haven, CT: Yale University Press, 1983).

<sup>53</sup>When instead of using the historical political variables only, we restricted the analysis to the post (3 years) devaluation indicators, the results were similar: only 5 (different) episodes were misclassified.

