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Politics and Exchange Rates in Latin America

(Revised Version of "Politics and Exchange Rates: A Cross-Country Approach for Latin America")

by

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Introduction

Before the collapse of the Bretton Woods system in 1973, an overwhelming majority of countries, including 90 percent of Latin American countries, had fixed exchange rate regimes. Since then, however, Latin American countries have had a wide variety of experiences with exchange rate regimes, and, more generally, their exchange rate policy. Different countries, at different times, have adopted exchange regimes in search of different objectives, such as inflation control, reduced exchange rate volatility, or improved competitiveness. Table 1 illustrates the shift away from fixed regimes in Latin American countries.

This paper explores the impact of political economy factors on exchange rate policy in Latin America. It studies the determinants of the choice of exchange rate regime in Latin America, placing special emphasis on political, institutional and interest group explanations. The presumption is that differences in institutional and political settings, as well as differences in economic structure, can have an effect on the choice of regime and, more generally, on exchange rate policy. In addition to these structural elements, the paper examines whether such political events as elections and changes in government affect the pattern of nominal and real exchange rates.

There is evidence that political economy factors are indeed important for the determination of the exchange rate regime. Governments with strong support in the legislature tend to choose fixed regimes, as do governments that face a fragmented opposition. This is consonant with the idea that sustaining a fixed rate may require politically difficult adjustment. Economies with an important manufacturing sector are more prone to adopt either floating regimes or backward-looking crawling pegs, both of which tend to deliver more competitive real exchange rates. The influence of the manufacturing sector on the exchange rate regime appears more important in periods when trade was liberalized, so that this sector had to face the competition of foreign producers. There is also strong evidence that major political events such as elections and government changes affect the path of nominal and real exchange rates. More specifically, devaluations tend to be delayed in the run-up to elections, and only occur immediately after the new government takes office.

Political Economy Determinants of the Choice of Regime

Traditionally, explanations of exchange rate policy built on the optimal currency area and related approaches.[1] Scholars focused on how different exchange rate regimes might be desirable for countries with different economic characteristics, and investigated the impact of these characteristics on policy choice.[2] Findings indicated a tendency for small open economies facing few external price shocks to fix rather than float, but they were typically weak and contradictory.

More recently, attention has shifted to the potential credibility effects of exchange rate policy. Specifically, it was argued that governments could gain anti-inflationary credibility by fixing to a nominal anchor currency (e.g., Giavazzi and Pagano, 1989 and Weber, 1991). This constitutes an easily observable target, and deviating from it may impose greater costs on policymakers than deviating from a monetary target. In addition, some authors have argued that a fixed exchange rate disciplines the government because any fiscal excess might end in a currency collapse.[3] While there is little systematic empirical evidence on this score, it has no doubt played a role in many Latin American experiences in the 1990s.

A weakness of these approaches is that they tend to assume a benevolent social welfare-maximizing government. This is problematic for two reasons. First, there is no consensus on welfare criteria for exchange rate regime choice, so that even such a benevolent government might face strongly conflicting advice from experts. Second, and perhaps more important, the assumption of such a benevolent government seems hard to justify on theoretical or empirical grounds. There is little reason to believe that currency policy is made any differently—that is, any less politically—than other economic policies.

In this light, a new generation of investigations of exchange rate policy explicitly incorporates political economy variables. Some studies on developed countries, especially in Europe, have looked at the impact of institutional, electoral, and interest-group factors on currency policy (e.g., Bernhard and Leblang, 1997; Blomberg and Hess, 1997; Eichengreen, 1995; Frieden, 1994, 1998; and Hefeker,

[1] See for example Mundell (1961), McKinnon (1962), and Kenen (1969); a modern survey is Tavlas (1994).
[2] A useful survey is Edison and Melvin (1990).
[3] See Aghevli *et al*. (1991). Tornell and Velasco (1995) argue against this logic, pointing out that under fixed exchange rates politicians with a high discount rate will be more prone to fiscal excesses, as the inflationary cost of such excesses is delayed.

1997). Apart from the possibility that studies of OECD economies, most prominently of European monetary integration, may have limited applicability to the developing world, the literature is far from a consensus on the sorts of political and political economy variables expected to affect currency policy.

Some recent studies have included developing countries in the analysis of the political economy of exchange rate policy. Collins (1996) and Edwards (1996), who use probit analysis to study the determinants of exchange rate regime, build their empirical models around a framework in which the political cost associated with devaluation under fixed exchange rates plays a major role. Depreciation under more flexible regimes is less visible and, it is assumed, does not carry the same stigma. They tend to find that factors that increase the need for frequent adjustment or, in the case of Edwards, increase the political cost of readjustment, reduce the likelihood that a country will fix. While Collins does not directly use political economy variables in her analysis, Edwards introduces variables that measure the degree of political instability and the strength of government. He finds that weaker governments and unstable political environments reduce the likelihood that a peg will be adopted.

The present study examines a wide range of economic, political economy, and political variables that might affect exchange rate policy. It contributes to the literature in several ways. First, it uses a richer and more realistic classification of exchange rate regimes than the usual fixed/flexible dichotomy. Second, it examines closely the impact of interest group variables, a factor overlooked in much previous work.[4] Third, it looks at a large number of Latin American and Caribbean countries over a relatively long period of time (between 1960 and 1994).[5] Finally, it uses new data on political institutions, based on the composition of legislatures.

Exchange Rate Arrangements: A Discussion

Countries do not choose regimes for the regime *per se*. Different regimes produce different outcomes, and countries choose them according to the outcomes they desire. In choosing their exchange rate arrangement, policymakers must therefore make tradeoffs among three values: credibility, flexibility,

[4] Frieden (1994, 1998) and Hefeker (1997) are exceptions.

[5] The countries included in the study are the 26 borrowing members of the Inter-American Development Bank: Argentina, Bahamas, Barbados, Belize Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El

and stability. Implicit in the discussion that follows is the assumption that governments do have the ability to affect the level of the real exchange rate, at least in the short and medium term, through the use of exchange rate policy. This assumption is supported by the findings of the literature on purchasing power parity, which shows that deviations from PPP are very slow to die out.[6]

Governments might choose to adopt fixed exchange rates in the hope of gaining *credibility* in their fight against inflation, as mentioned above. The use of a fixed exchange rate as a commitment technology to control inflation has become common, and it clearly responds to the needs of some governments some of the time. At the same time, fixing the exchange rate may provide *stability* of both nominal and real exchange rates, which are relative prices of great importance to local economic agents. This is especially the case in very open economies, in which exchange rate volatility may have substantial costs in and of itself (especially in the absence of well-developed forward markets).[7]

Fixed exchange rates, however, give up the third value, *flexibility*, which can have consequences for both internal and external balance. On the domestic front, fixed exchange rates entail the loss of the ability to use monetary policy to react to real shocks. This loss of flexibility, according to the theory of optimal currency areas, should be more problematic if shocks in the country that pegs are uncorrelated to those in the country to which the currency is pegged.[8]

Regarding external balance, a drawback of fixed exchange rates is that an inflation differential between the pegging country and the anchor generates an appreciation of the real exchange rate that, in the absence of compensating productivity gains, hurts the tradable sector and might generate a balance of payments crisis. Flexibility is indeed potentially valuable to a government that is unwilling to forego the use of nominal depreciations for policy purposes. Perhaps the most common such purpose among developing countries is to restore or ensure the competitiveness of its tradable

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Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay and Venezuela.

[6] Studies for developed countries show that deviations from PPP have a half-life of between three and five years. See, for example, Rogoff (1996). For developing countries the evidence shows that misalignments tend to die out more rapidly. However, movements in the nominal exchange rate are still very important to determine changes in the real exchange rate. Kiguel and Ghei (1993) and Goldfajn and Valdez (1999), for example, show that large real depreciations tend to go together with large nominal depreciations.

[7] In contrast, in high inflation countries where fixed regimes tend to require frequent readjustments, pegging the exchange rate may exacerbate, rather than reduce, the volatility of nominal and real exchange rates. See, for example, Gavin and Hausmann (1997).

[8] Recent studies such as Hausmann, Gavin, Pagés and Stein (1999), Calvo and Reinhart (2000), and Hausmann, Panizza and Stein (2000) suggest, however, that flexible exchange rate countries in Latin America, as well as in other emerging

producers. Sachs (1985) indeed associates the greater success of East Asia relative to Latin America during the debt crisis of the early 1980s with the propensity of the former to maintain "more realistic" (i.e., weaker) exchange rates than the latter, thus encouraging the production of exportables. Interestingly, he attributes this policy difference to interest group effects.

The benefits and costs of fixed exchange rates depend on the characteristics of the country in question. For example, concern about both credibility and competitiveness should be affected by existing levels of inflation, albeit in different ways. A country with extremely high inflation, desperate to stabilize, might be more likely to use a fixed exchange rate as a nominal anchor for expectations—that is, for credibility purposes. On the other hand, the higher the rate of inflation —perhaps below some hyperinflationary threshold–the more a fixed rate will impose competitive pressures on tradables producers and, more generally, pressures on the balance of payments.

Given the history of high inflation in Latin America, this tradeoff between credibility and competitiveness is especially important.[9] And the degree to which policymakers opt to sacrifice competitiveness to credibility, or vice versa, will presumably be a function of a variety of political economy variables. These might include the existence of other credibility-enhancing mechanisms, popular pressures to reduce inflation, and the political influence of tradables producers.

In most of Latin America, the credibility-competitiveness tradeoff is central to the political economy of exchange rate policy. For this reason, this is the main trade-off considered in defining the left-hand side variable to be used in our empirical analysis. At the same time, the desire for nominal and real exchange rate stability may sometimes matter. The classification of regimes we use is flexible enough to allow organizing the regime variable along the stability vs. flexibility dimension, if desired.

Most studies of the determinants of exchange regimes, including Collins (1996) and Edwards (1996), use the classification of exchange rate regimes in the *IMF Exchange Arrangements and Exchange Restrictions* to create their dependent variable. Although the IMF classification has undergone some changes over time, in its most recent version it classifies regimes in the following categories:

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markets, have not really allowed the exchange rate to fluctuate much. Thus, they have not really made use of the flexibility to conduct anticyclical monetary policy.

[9] Calvo *et al*. (1995) have derived the trade-off between the real exchange rate and the inflation objectives in the context of an intertemporal optimization model. See also Lizondo (1991,1993) and Montiel and Ostry (1991, 1993).

1. pegged (to a single currency or basket of currencies)
2. limited flexibility (for cases such as ERM)
3. adjusted according to indicators
4. other managed float
5. free float.

Both Collins and Edwards group the arrangements into two regimes: fixed, and more flexible. Everything other than "pegged" is lumped together under the "more flexible" label.[10] This classification has some unfortunate consequences. For example, Mexico before the *tequila* is classified as "more flexible." So are the *tablitas* of the Southern Cone countries in the late 1970s. Yet, within the inflation-competitiveness trade-off that underlies these authors' work, these cases are clearly attempts to lower inflation or keep it at bay, even at the cost of accepting a larger misalignment from the target exchange rate.[11]

Cottarelli and Giannini (1998) have recently expanded on the IMF classification, including a special category for forward-looking crawling pegs such as the *tablitas.* This appears to be a step in the right direction. The classification below goes a step further, taking advantage of the fact that, while the IMF classification is not disaggregated enough for the present purpose, the descriptions that appear in *Exchange Arrangements and Exchange Restrictions* are detailed enough to allow a reclassification. Distinctions are made among the following regimes:[12]

1. Pegged to single currency
2. Pegged to basket of currencies
3. Pegged with frequent adjustments (sustained less than six months)
4. Forward-looking crawling pegs (such as the tablitas)

[10] Edwards also tries including the limited flexibility cases together with the fixed, with no change in his results.

[11] In the *tablitas*, the path of the nominal exchange rate was preannounced, and the rate of devaluation decelerated, in an effort to have domestic inflation converge with that of the anchor.

[12] The regimes were classified month by month. Whenever there were changes in regime, a country's regime in a given year is the one that was in place a larger fraction of the year.

5. Forward-looking crawling bands[13]
6. Backward-looking crawling pegs
7. Backward-looking crawling bands
8. Managed floating
9. Free floating

This classification makes it possible to capture different dimensions related to the exchange rate regime by grouping the different categories in different ways. For the credibility vs. competitiveness dimension emphasized in this paper, these nine categories are placed in the following four groups: fixed (which includes fixed to single currency, to basket of currencies and fixed with frequent adjustments), forward-looking crawling pegs and bands, backward-looking crawling pegs and bands, and flexible (including free and managed floating).[14] Lumping the two floating regimes together is justified since, in emerging markets, even countries classified as independently floating have engaged in a substantial amount of intervention.[15]

In order to discuss how these groups should be ordered on the credibility vs. competitiveness dimension, it is useful to look first at some of the outcomes associated with each of them. Table 2 presents, in the first row, the mean of the real exchange rate for each of these four groups.[16] To make the comparison meaningful, the real exchange rate in each country was normalized to average 100 throughout the period. The second row presents the average rate of change of the real exchange rate under each group, and the third row presents the average annualized rate of inflation.

The results in Table 2 suggest possible orderings of the different groups along the credibility-competitiveness dimension. The fixed and forward-looking regimes have produced, on average, both appreciated and appreciating real exchange rates. The forward-looking pegs and bands are the regimes associated with the most appreciated rate (an average real exchange rate of 90.3), followed by the fixed regimes, with an average of 97.4.[17] Likewise, the forward-looking regimes produce, on average, an annual appreciation of more than 6.3%, compared to 1.6% in the case of the fixed

[13] Tthe term forward-looking is used for those regimes in which the path of the exchange rate is either preannounced, as in the *tablitas*, or targeted according to desired or expected inflation.
[14] Given the difficulties in classifying the fixed with frequent readjustments "regime" into one of the four groupings, in some exercises the observations under this regime will be excluded in order to check the robustness of the results.
[15] Calvo and Reinhart (2000) have called this behavior "fear of floating."
[16] The real effective exchange rates calculated by Goldfajn and Valdez (1999) were used.

regimes. The fixed regime, in turn, is associated with the lowest average inflation. This should not be surprising, as the forward-looking is usually implemented only when inflation is high enough that a peg would not be sustained.

These two regimes are clearly at the credibility (or anti-inflationary) end of the spectrum. It is not obvious, however, how they should be ordered. On the one hand, the fact that the forward-looking regimes are the ones that tend to deliver the most appreciated and appreciating real exchange rates should not come as a surprise. Countries fix their exchange rates for a variety of reasons, only one of which is to provide a credible and visible target to fight against inflation. For example, low-inflation, small and very open economies with geographically concentrated trade, such as most Caribbean countries, may choose to fix in order to stabilize exchange rates. In these cases, a fixed exchange rate need not cost the country that adopts it a loss of competitiveness. Forward-looking crawling pegs such as the *tablitas*, however, are unmistakably meant to bring inflation under control, and since the exchange rate is used as a nominal anchor for inflation, this inflation objective comes at the expense of an appreciation of the real exchange rate and loss of international competitiveness. On the other hand, after controlling for the rate of inflation, fixing should deliver lower inflation and faster competitiveness loss, compared to a preannounced crawl. For this reason, this study's empirical tests will place the fixed exchange rate first in the ordering, followed by the forward-looking regimes. However, the tests will also check whether the results obtained depend critically on this choice.

At the other extreme of the trade-off are backward-looking regimes. These are the regimes associated with the most depreciated rate, 109.0, compared to 106.0 for the flexible regimes. The greater rate of depreciation under flexible regimes may be due to the fact that these regimes are sometimes implemented immediately after balance of payments crises, following an appreciated exchange rate, while backward-looking regimes are usually put in place when the exchange rate is already depreciated in order to keep its level competitive. A backward-looking crawling peg, adjusting according to inflation differential, appears to be a more active policy for maintaining competitiveness than flexible regimes.

The appropriate technique when working with multinomial discrete dependent variables, when one has reasons to expect a certain ordering of the groups, is ordered logit or probit. Following the above discussion, most of the empirical tests will make use of a left hand side variable, REGIME,

[17] Higher values of the real exchange rate indicate a more depreciated rate.

which takes the following values:

0	Fixed (to single currency, basket, or frequent adj.)
1	Forward-looking crawl and bands
2	Floating (managed or independent)
3	Backward-looking crawl and band.

As discussed above, however, robustness checks are performed to see whether these results change under different specifications of the left hand side variable, such as switching the order of the first two groups, or excluding from the sample the observations associated with fixed with frequent adjustments.

The Potential Determinants of Exchange Rate Regimes

Macroeconomic, External and Structural Variables

Inflation is expected to have an important effect on the exchange rate regime. High inflation makes a peg unsustainable, and even moderate inflation will require frequent readjustments of the peg. If there is a political cost to abandoning a peg, inflation increases the probability of incurring this cost and decreases the likelihood of choosing a fixed regime. High inflation should not discourage, however, the adoption of forward-looking crawling pegs, such as the *tablitas*. On the contrary, high inflation increases the gains from credibility that nominal anchors provide, and forward-looking pegs can provide this nominal anchor function without making the regime unsustainable.

The empirical analysis uses the log of inflation, as the effects are not expected to be linear, and the variable is lagged one period to avert potential endogeneity problems, as the regime can have an effect on contemporaneous inflation.[18] In addition to the log of inflation, a dummy variable (HYPER) is used, which takes a value of 1 when the inflation rate is greater than 1,000 percent. This variable captures the fact that it may be easier to stabilize prices by fixing the exchange rate starting from a hyperinflation, as compared with moderate or high inflation. Under hyperinflation, the nominal exchange rate becomes a natural reference for prices, and this makes it easier to stop the inertial component of inflation by pegging the exchange rate. It is expected that, controlling for inflation, a

hyperinflation will increase the likelihood of adopting a peg.

Another factor that affects the sustainability of fixed exchange rate regimes is the availability of foreign reserves. Lack of reserves increases the probability of adjusting or abandoning the peg, and thus the probability of incurring the political cost of doing so. Rather than the more traditional measure of reserves in terms of months of imports, we (RESM2), the ratio of central bank reserves over money supply (M2).[19] Since the effects of reserves are likely to be non-linear, an alternative dummy variable is used (RESERVESD) that takes a value of 1 when the ratio of reserves to M2 is below a critical threshold.[20] A high value of reserves is expected to be associated with fixed regimes, and reserves below the threshold to be associated with more flexible arrangements. Due to possible endogeneity problems, both variables are lagged in the regressions.

The desirability of fixed exchange rate regimes may also depend on other policies in place. For example, controls on capital flows may increase the sustainability of fixed exchange rates, since it is less likely that inconsistencies between fiscal or monetary policy and exchange rate policy will result in capital outflows and the collapse of the regime. A related point is that capital controls make it possible for countries to fix the exchange rate without sacrificing their monetary policy. For these reasons, fixed exchange rate regimes are expected to be more prevalent in periods in which countries have capital controls.

Two different measures of capital controls were used in the econometric tests. The first is a dummy that indicates the existence of restrictions on capital account transactions. The second is a variable that adds together four dummy variables, each representing the existence of i) restrictions on capital account transactions; ii) restrictions on current account transactions; iii) multiple exchange rates; and iv) surrender of export proceeds. The original source for the capital controls data is the IMF Exchange Arrangements and Exchange Restrictions.[21] As will be discuseed in more detail below, this dataset has serious shortcomings, in that it provides information only on the existence of controls, rather than the severity of the controls. Since 1996, the IMF has been publishing much more detailed data on capital account restrictions, which takes into account a large variety of dimensions. Unfortunately, this dataset is not available for the period under study.

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[18] More precisely, the present tests use the log (1+inflation/100).
[19] Data on reserves and M2 come from the *International Financial Statistics* of the IMF.
[20] This threshold is defined as the mean of the ratio minus the standard deviation.
[21] The authors are grateful to Gian Maria Milesi Ferreti for making available this data in electronic form.

It is expected that more open economies will tend to adopt fixed exchange rates, for several reasons. First, the more open the economy, the larger the potential cost of exchange rate volatility. Second, in more open economies domestic monetary shocks are more easily channeled abroad, so there is less need for an autonomous monetary policy. Third, in more open economies, the law of one price is more likely to operate. In this context of more flexible prices, one of the advantages of floating exchange rates—that they allow changes in real exchange rates when prices are sticky—fades away. Fourth, commitment to fixed exchange rates may become more credible in open economies since, in a context of flexible prices, governments will be less able to engineer a real devaluation through a nominal devaluation. In other words, devaluations become less effective as a means of achieving internal or external balance, and so the temptation to devalue becomes weaker. The empirical analysis includes an indicator of openness, measured as imports plus exports as a share of GDP, and it is expected to have a negative sign.[22]

It is further expected that countries that are subject to significant external shocks will be more likely to adopt more flexible regimes. To measure the importance of external shocks the tests use the coefficient of variation of the terms of trade for the whole period (TOT VOLATILITY). The lack of monthly data on the terms of trade prevented the construction of a variable for the volatility of the terms of trade that can change over time, in response to changes in the structure of imports and exports that may occur in a country over an extended period such as the one considered here. The effects of the terms of trade shocks should be more severe for more open economies. For this reason, the measure of terms of trade volatility interacted with openness is also considered.[23]

Collins (1996) introduced a time trend into her empirical analysis to capture what she called the "climate of ideas" regarding the appropriate exchange rate regimes for small open economies. A possible drawback of this measure is that it assumes a linear trend in the climate of ideas. As an alternative, this paper presents a different variable, VIEWS, which measures the percentage of countries in the world under fixed exchange rate regimes. The data for the construction of this variable comes from Goldfajn and Valdez (1999). However, the correlation between the VIEWS variable and the time trend turned out to be extremely high (-0.96). For this reason, the empirical

[22] The data comes from the Economic and Social Database of the Inter- American Development Bank.

[23] Notice that the variation within countries of this interactive term comes solely from variations in openness. The volatility of terms of trade was measured for the whole period in each country. This would only be a problem for those countries that significantly altered the composition of their trade during the period under consideration.

analysis that follows presentes only the results using the time trend.

Institutional Variables

An institutional variable that could have an effect on the exchange rate regime is the degree of central bank independence. However, it is not clear in which direction central bank independence should affect the regime. In countries where the central bank is in charge of exchange rate policy, an independent central bank that pursues the objective of price stability may be more prone to tie its own hands by adopting a fixed exchange rate regime. On the other hand, central bank independence may be seen as an alternative to a peg as a means to provide credibility.[24] As a measure of central bank independence, this study uses the index of legal independence developed by Cuckierman, Webb and Neyapti (1992), which includes criteria such as appointment, dismissal and terms of office of the governor, the objectives of the central bank, and limitations on its ability to lend to the public sector. One problem in using this variable is that it is available only for half of the countries in the sample.

Interest Group Variables

We also explore the impact of sectoral interest groups, an issue that has been overlooked in previous work. This neglect is probably due to the difficulty associated with understanding the preferences of different interest groups, and finding good variables to capture the influence that these groups may have on policymakers. In addition, it is often believed that exchange rate policy has broad effects on the population, rather than specific effects on different groups. In contrast, trade policy has long been recognized as having important distributional effects. Even though the role of interest groups may be stronger in trade policy, the present hypothesis is that different groups have very different preferences regarding exchange rate policy and that these preferences can play a role in the choice of regime. In addition, as countries advance in the process of trade liberalization, this role becomes more fundamental. This hypothesis is supported by several case studies.[25] While an array of subsidies and specific tariffs are available to compensate those who are hurt by the exchange rate policy in place, special interest groups tend to concentrate their demands on these specific measures.

However, as liberalization makes these compensatory mechanisms less available, these groups become

[24] Even if one did find that central bank independence is associated with fixed regimes, one should be cautious in the interpretation of these results. Both variables could in fact be explained by a third factor, which is not easy to capture in a model: society's aversion for inflation. Posen (1995) has made exactly this point in questioning the importance of central bank independence as a determinant of the rate of inflation.

vocal about exchange rate policy.

It stands to reason that tradables producers should favor a regime that avoids a real appreciation. This should be true both of producers of goods for exports, whose (domestic-currency) earnings are higher the weaker the exchange rate, and of import-competers. However, there are many potential complications to this simple expectation. One has to do with the price of inputs: firms that use a high proportion of tradables in general, and imports in particular, get less benefit from a depreciation. Many mining firms, for example, use extremely high shares of imported inputs and may be indifferent to the exchange rate. Similarly, some firms or sectors may care less about the exchange rate to the extent that they have international market power and/or the demand for their product is inelastic. The most important (perhaps only) Latin American example is that of coffee growers while the International Coffee Agreement was in force. For them, the principal decision variable was the world price of coffee.

Perhaps the most important peculiarity in trying to think about sectoral interests in Latin American currency policy is the role of trade policy, and especially the very high levels of trade protection prevailing in most of the region until the middle 1980s. Where trade barriers to finished manufactured goods were prohibitive, as they were in much of the region from the 1940s until the 1980s, many manufacturers were essentially in nontradable production. They were relatively indifferent to the impact of the exchange rate on their output prices, as they were sheltered by trade barriers. Even more, some of them preferred a strong (appreciated) real exchange rate, which made imported inputs—machinery, intermediates, raw materials, spare parts, and borrowing—cheaper in local currency terms. There is in fact substantial anecdotal evidence that Latin American industrialists, on occasions, supported appreciated real exchange rates during the import-substituting industrialization (ISI) period.

The empirical tests include three different variables representing different tradable sectors: agriculture, manufacturing and mining. In light of the discussion above, the agricultural sector is expected to favor pro-competitiveness regimes (i.e, enter the regressions with a positive sign); the mining sector is expected to be indifferent; and the manufacturing sector is expected to support more flexible regimes when trade is liberalized and to be indifferent when operating in highly protected markets. For lack of a better indicator of the lobbying power of each group, it is simply assumed that

[25]See, for example Jaramillo, Steiner and Salazar (1998) and Ghezzi and Pascó-Font (2000).

each sector's influence on policymakers is proportional to its share in the country's GDP. Due to concerns about endogeneity (for example, there may be a shift to nontradable production under an appreciated exchange rate), these variables (AGRIL, MININGL and MANUFL) are lagged one period.

A separate set of regressions explores changes in preferences as trade becomes liberalized. A dummy variable (LOWTARIFF) is constructed to pick up cases of liberalized trade. The construction of this variable, though, confronted the problem arose of the lack of good databases on tariffs and other barriers with the coverage needed in terms of countries and years. It was possible, however, to gather data from different sources on average tariffs for 21 of the 26 countries in the sample. However, in most cases data starts only in 1985, and in the best cases in 1980.[26] The criterion used in this instance was to assign a value of 1 to cases where the average tariff was lower than 20%. The choice of this threshold took into account the fact that during the period of ISI, tariffs for final goods were much higher than those for intermediate inputs and capital goods. An average tariff of 20% generally implies a higher tariff for final goods, and an even higher effective rate of protection. For those years where data were not available, the series was completed using information on dates of trade reform in Edwards (1994), and on the basis of the authors' knowledge of the countries. It is expected that LOWTARIFF will have a positive sign, indicating that pressures for a competitive exchange rate are greater when barriers to trade are small.

If the manufacturing sector's changes regarding the exchange rate regime in fact depended on the degree of protection, the share of manufactures in GDP would be expected to have a larger impact when trade is liberalized. This hypothesis is tested by interacting the LOWTARIFF dummy with a measure of the importance of manufacturing, expecting the coefficient for the interactive term to be positive—i.e., in more liberal, low trade barrier periods, manufacturers would support exchange rate policies associated with greater attention to competitiveness—and the coefficient for MANUFL to be insignificant, indicating indifference about the regime during highly protected periods.

It would have been desirable to include a variable that captured the degree of liability dollarization in the economy. Presumably, individuals and firms with dollar liabilities would be

[26] Data on average tariffs was provided by Alan Winters, of the Trade Division in the World Bank, and by Antoni Estevadeordal of the Integration Division of the Inter-American Development Bank.

more supportive of fixed exchange rate regimes, since devaluations may hurt them considerably. Unfortunately, it was not possible to find a good measure of dollar liabilities.[27]

Political Variables

Two variables were constructed using data on the composition of the legislature, obtained from the Nohlen's *Enciclopedia Electoral Latinoamericana*: the share of government seats in the legislature (GOVSEATS), and the effective number of parties in the legislature (EFPART).[28] GOVSEATS is expected to have a negative sign for two reasons, both associated with the political cost of devaluing or abandoning a *tablita*. First, a higher share of seats means that the government faces less political competition, so a readjustment may be less costly. In addition, a stronger government may be in a better position to implement the necessary measures to prevent an exchange rate adjustment. This last idea is consistent with the findings of the literature on political economy of fiscal policy, which suggests that stronger governments are associated with lower deficits.[29]

The effective number of parties is generally used to measure the fragmentation of the party system.[30] We do not have a clear prior of how this variable on its own would, affect exchange rate policy, except for the fact that where fragmentation is greater, the government will probably have a smaller share of seats in the legislature.[31] As an indicator of the strength of government, the share of government seats is obviously much better. However, the effective number of parties has a simple interpretation once the share of government seats is accounted for: it measures the fragmentation of the opposition. Therefore, the effective number of parties in the legislature is expected to have an

[27] The tests included proxying dollar liabilities with the ratio of foreign liabilities of deposit money banks (lines 26c+26cl of the IFS) over quasi-money (line 35 of the IFS). This was expected to be a reasonable measure of the share of deposits denominated in foreign currency, which in turn could be a good proxy for dollar liabilities. However, in some countries this ratio was often greater than 1. In any case, the variable was not significant when included in the regressions.

[28] One problem with GOVSEATS is that there is not always complete information available regarding the coalitions in Congress. Where coalitions were known, the share corresponding to the coalition was counted and not just that of the party of the president. This continuous variable is preferable to simply recording whether the government has a majority in the legislature, since it captures the fact that 5% and 35% shares represent a very different situation in terms of the ability of the government to pass key legislation through Congress, in particular when the opposition is fairly fragmented. A majority variable was also used in the regressions, with fairly similar results.

[29] See for example Grilli, Masciandaro and Tabellini (1991) and Roubini and Sachs (1989), among others.

[30] The effective number of parties is defined as $EFPART = 1/\sum s_i^2$, where s_i is the proportion of representatives party i has in the lower (or single) house.

[31] These two variables are in fact highly and negatively correlated.

effect similar to that of the share of government seats. A weaker and more fragmented opposition diminishes the political cost of a devaluation and at the same time makes it easier for the government to achieve a winning coalition in support of the adjustment programs necessary to sustain a peg. The effective number of parties is expected to be more important whenever the government does not control a majority of seats. For this reason, EFPART is interacted with MINORITY, a dummy that takes a value of 1 when GOVSEATS<50%, in order to be able to test this conjecture.

Also included is a measure of political instability (POLINS), based on the number of government changes per year, as well as the occurrence of coups. The POLINS variable is a dummy that takes a value of 1 if a country has gone through three or more government changes in the last five years, or if it has gone through two or more government changes in the last three years.[32] It also takes a value of one in years in which there were successful coups, and in the first year following a successful coup.[33] More unstable political systems have been associated with larger government deficits, which would suggest a positive coefficient, indicating that more unstable systems will make it more difficult for the government to sustain a peg. On the other hand, governments in unstable situations tend to have a higher discount rate and therefore may not care as much about the long-term sustainability of the policies they follow. This may make it more likely for them to choose fixed regimes (see Edwards, 1996).

Finally, a dummy is included for dictatorship (DICT) based on the variable "democracy" from the Polity III database.[34] The expected sign of this variable is not clear. On the one hand, dictatorships could be more prone to choose fixed regimes, as the political cost of devaluing should be smaller for de facto governments. In addition, they tend to be strong governments and may find it easier to impose adjustment measures needed to sustain a fix. On the other hand, dictatorships tend to be comparatively more attuned to interest groups, from whom they derive rents, and less to the

[32] As an exception, countries are coded as politically stable if they are in the fourth year of a government, even if they have had three government changes in the past five years. For example, if a country has three government changes in 1970, and then has the same government for four years, it would be coded as politically unstable in 1970 through 1972, but stable in 1973.

[33] Data on government changes, as well as on coups, was taken from Nohlen's *Enciclopedia Electoral* Latinoamericana (1992), and complemented for the last few years from Zarate's political leaders database, which may be found in Zarate's political collection website, http://www.terra.es/personal2/monolith. Although other databases on government changes and coups exist, they did not have the desired coverage and were plagued by inaccuaracies.

[34] The Polity III democracy variable is an index which takes values from 0 to 10, and captures the competitiveness of political participation, the openness and competitiveness of executive recruitment, and the existence of constraints on the power of the executive. Here, the dummy DICT is used, which takes a value of 1 when the index of democracy is 3 or below.

population at large, as they do not need to buy their votes.

Table 3 presents descriptive statistics for each of the explanatory variables. Table 4 presents the means of these variables for each of the four groups of exchange rate regimes, as defined above.

Empirical Results

The results of the ordered logit regressions are presented in Tables 5 through 7. Table 5 begins by using only macroeconomic/external/structural variables as regressors, then we introduce, in turn, institutional, interest group, and political variables. The regressions in Table 6 explore the impact of trade liberalization in more detail. Finally, Table 7 presents some sensitivity analysis. The main results of Table 5 can be summarized as follows:

Macroeconomic/external/structural factors: The log of inflation (lagged) is never significant as a determinant of exchange rate regime. This probably reflects two conflicting effects of inflation on the exchange rate regime: while high inflation makes credibility more desirable, it reduces the sustainability of fixed exchange rates. The hyperinflation dummy is significant in all of the regressions and has a negative sign. This is consistent with the view that it is easier to get out of a hyperinflation by providing a nominal anchor than it is to stabilize prices in this way under moderate or high inflation, as during hyperinflations the nominal exchange rate becomes a natural reference point for prices. The coefficient for openness was also negative and significant in all the regressions, indicating that more open economies, as expected, are more likely to adopt fixed exchange regimes

Surprisingly, the coefficient for the reserves/M2 ratio was marginally significant but had a positive sign. Thus, the prior that countries with low reserve ratios would be less prone to fix due to sustainability issues was not confirmed by the data. This result was highly robust to a variety of definitions for the reserves variable. For example, the contemporaneous reserves ratio was used in place of the lagged one, as well as a dummy that takes a value of 1 when the ratio of reserves to M2 is below a certain threshold, defined as the sample mean of the ratio minus the standard deviation. Both cases produced similar results The explanation for this apparent puzzle is that
emerging countries tend to keep large stocks of reserves, even when they are formally floating their

exchange rates.[35]

Perhaps even more puzzling is the effect of the volatility of the terms of trade. Countries subject to strong external shocks were expected to prefer more flexible regimes, yet the coefficient came out negative and significant. There are, however, some concerns about the measurement of this volatility. The variable used adopts the same value for the whole period in each country, ignoring the fact that many countries have substantially altered the composition of exports and imports during the sample period. Similar results were obtained by using the interaction of the coefficient of variation of terms of trade and openness in place of volatility.

The dummy for the restrictions on capital account transactions, included in the first regression of Table 5, was not significant, while the composite capital controls variable (not shown) was positive and significant. This result is also surprising, as fixed exchange rate regimes were expected to be more likely when restrictions on the capital account were present. This result is very likely due to the important shortcomings of the capital controls dataset. As discussed above, this dataset provides information on the existence of controls, rather than the severity or the nature of the controls. Careful examination of the dataset revealed that, contrary to what was expected, capital controls in the world, according to this measure, have not had a declining trend, and, in the case of Latin America, they have increased over time. This casts serious doubts on the quality of the capital controls data. In fact, the IMF has more recently (since 1996) begun to publish much more detailed data on capital account restrictions, which take into account a large variety of dimensions. Unfortunately, this dataset is not available for the period under study.[36] In addition to the variables discussed above, all regressions in Table 5 include a time dummy, which was positive and highly significant.

Institutional factors: The coefficient for central bank independence, measured by the legal index of independence (which is included in regression 2 in Table 5) had a positive sign, suggesting that CBI is to some extent a substitute for fixed exchange rate as a way to provide credibility. The coefficient, however, was not significant.

Interest group factors: Column 3 presents the regression where all three tradable sectors are included. As expected, the share of mining in GDP was not significant, since mining generally is a

[35] This behavior, which has been documented by Calvo and Reinhart (1999) as well as by Hausmann, Panizza and Stein (2000), has prompted Calvo to say that emerging countries that float do so "with lifejacket."

highly capital intensive activity with a large proportion of imported inputs. Contrary to our priors, the share of agriculture in GDP did not have a significant effect on the choice of regime either. One possible explanation is that the share in GDP is an imperfect indicator of the lobbying power of this sector, more so than in the other sectors studied. This could be the case due to the important heterogeneity found across countries in terms of the composition of the agricultural sector. While in some countries this sector is composed mainly of very small farms, whose owners are not organized as a group, in others the sector is highly concentrated, and the landowners are a strong class with important influence on government policy. The immobile character of land may be another factor that limits the leverage of this sector. The coefficient corresponding to the share of manufacturing in GDP, in contrast, was positive and significant, a result that is robust to a variety of specifications. Thus, economies with a larger share of manufacturing tended to choose more flexible, pro-competitiveness regimes. As will be discussed in more detail below, this result is even stronger during periods of liberalized trade.

Political factors: These are introduced in regressions 4 through 6 in Table 5. Column 4 introduces the political instability dummy, as well as the dictatorship dummy. The dictatorship dummy has a negative and significant coefficient, suggesting that authoritarian governments tend to rely more heavily on regimes that cater to the anti-inflation objective, even after controlling for the rate of inflation.[37] It is important to note that a time trend is included in the regression, so this result is not simply explained by the coinciding trends toward more democracy and more backward-looking and flexible exchange rate regimes. Political instability also seems to increase the likelihood of adopting fixed exchange rate regimes.[38]

Column 5 introduces the share of government seats in the legislature, as well as the effective number of parties. Both variables have negative and significant coefficients. This confirms the priors that strong governments tend to fix, as do governments with a weak opposition. Our interpretation is that government strength relative to the opposition diminishes the political cost associated with

[36] Miniane (2000) has extended backwards the new capital controls series, but the coverage of Latin American countries is extremely limited. Interestingly, according to this new classification, there is a clear downward trend in capital account restrictions, a result that is consistent with our priors.

[37] Similar results were obtained when the Polity III democracy index was used instead of the dictatorship dummy.

[38] This result contrasts to that in Edwards (1996), who finds that political instability reduces the likelihood of adopting pegs. In his work, Edwards used political instability measures (such as government changes and government transfers) for the 1970s to explain the exchange rate regimes of the 1980s and early 1990s. This variable more accurately captures the existence of the type of political instability that would matter for the adoption of an exchange rate regime.

devaluation, and at the same time makes the need for a devaluation less likely, as it is easier for the government to achieve a winning coalition in support of the necessary adjustment programs.

Column 6 provides further support for this interpretation. In addition to the effective number of parties, in this regression we include an interactive term of the effective number of parties, with a slope dummy which takes a value of 1 when the government does not have a majority in Congressand 0 otherwise. Although the coefficients for the effective number of parties and the interactive term are not significant by themselves, a test of the hypothesis that the sum of the coefficients is 0 is rejected at the 5% significance level, indicating that EFPART was significant when the government did not have a majority of seats in the legislature, but not otherwise. This suggests that the weakness of the opposition is particularly important when the government does not have majority of legislative seats, but is not crucial when it does.

It should be noted that the dictatorship variable is not included together with the variables based on the composition of the legislature. The reason is that in a very significant portion of the observations classified as dictatorships (index of democracy smaller than or equal to three), there is no data for the composition of the legislatures, in most cases because there is no legislature.[39]

The Role of Trade Liberalization

Table 6 explores the role of trade liberalization in the choice of exchange rate regime. Column 1 adds the trade liberalization dummy to the specification shown in column 5 of the preceding table.[40] The coefficient for this dummy is positive and significant. This is consistent with the hypothesis that pressures for a competitive exchange rate, and for a regime that delivers it, are smaller during the periods in which trade barriers are very high. This result is also consistent with anecdotal evidence from other countries.[41] The third column incorporates, in addition to the low tariff dummy, an interaction term of low tariffs and the share of manufacturing in GDP. Neither of the coefficients is significant. Columns 2 and 4 present regressions similar to those in columns 1 and 3 but exclude the

[39] When all four political variables were included together, the dictatorship variable lost significance, and the political instability variable became only marginally significant. None of the other results changed.
[40] The specification that includes the dictatorship dummy and not the political variables based on the composition of the legislature was used since the combination of these last variables and the trade liberalization dummy together reduce the size of the sample to less than half of the total observations.
[41] See, for example, the Colombian case in Jaramillo, Steiner and Salazar (1998).

time trend, which is very highly correlated with the trade liberalization dummy.[42] When the time trend is excluded, both the liberalization dummy and the interactive term become significant. Therefore, the result that trade liberalization matters for the choice of regime is even stronger when the time trend is excluded from the regressions.

Some Sensitivity Analysis

Table 7 explores whether the main results are robust to different definitions of the left-hand side variable, as well as to different sample periods. Column 1 in the table simply reproduces regression 5 in Table 5. The second column excludes observations prior to 1973. The reason for this is to see whether the results change if the Bretton Woods years are excluded; during those years more than 90 percent of the observations correspond to the fixed exchange rate regime (see Table 1). All the variables included, with the exception of the log of inflation, are significant. The next subsection will use this regression in order to interpret the economic significance of the explanatory variables. Columns 3 and 4 test the robustness to small changes in the specification of the regime variable. Column 3 excludes the observations in which the arrangement was fixed but with frequent adjustments. The reason is that it is not obvious in which grouping one should include this arrangement. Results are very similar to those in column 1, with the single exception of political instability, which loses significance.

Column 4 inverts the order of the dependent variable. As discussed above, there are arguments in favor of placing the fixed variable at the beginning of the order, as done throughout the paper. But there are also arguments that would suggest placing the preannounced crawling pegs and bands at the beginning of the order. In particular, countries may fix for different reasons, but they only adopt preannounced crawls in order to reduce the rate of inflation, even at the expense of competitiveness. For this reason, column 4 orders the regimes in the following way: 1) Forward-looking (or preannounced) crawling pegs and bands; 2) Fixed; 3) Flexible; and 4) Backward-looking crawling pegs and bands.[43] As in the previous regression, the only change is that political instability loses significance.

[42] The correlation coefficient between these two variables is 0.58. It is likely that at least part of the time effect is explained by the move toward trade liberalization in the region.

[43] It is worth noting that, since the dependent variable is ordinal, and not cardinal, this does not imply important changes, given the scarcity of observations in the forward-looking grouping. There are only 29 observations in this grouping, out of a total of 910.

In summary, Table 7 suggests that the results are quite robust to changes in the specification of the model.

Economic Interpretation of the Results

While the tables presented above show the statistical significance of the variables of interest, they do not express the economic significance of these variables. In order to explore their economic significance under the ordered logit model, more calculations are needed. This contrasts with OLS models, in which the impact of the different explanatory variables can be directly seen from the size of the coefficients. This section provides the economic interpretation for one of the regressions shown above: the second column of Table 7, which excludes the Bretton Woods years, a period during which there is very little variation regarding the exchange rate regime.

The exercise carried out is the following: for each non-dummy variable, the change in the probability of each regime is calculated when the variable of interest increases by one standard deviation, centered on the mean, and all the other variables remain at their means. For the dummy variables, the change in the probabilities is calculated when the dummy goes from 0 to 1.[44] The results of the calculations are presented in Table 8.

The first column in the table presents the changes in the probability of each regime when the log inflation variable changes by one standard deviation around its mean.[45] This change of one standard deviation around the mean is equivalent to an increase in inflation from around 2% to 90%. Consistent with the results of the regressions, the effect of this variable on the probability of the different regimes is minimal. In contrast, hyperinflation has a large effect on the probabilities. Having inflation greater than 1,000 percent increases the probability of adopting a fixed exchange rate regime by nearly 21 percentage points. Openness also has important effects. A change in openness from 47 to 86 percent (representing a one standard deviation increase, centered on the mean) increases the probability of adopting a fixed exchange rate regime by 25 percentage points.

The effect of the share of manufacturing in GDP is quite substantial as well. A 5.5 percentage point increase in the share of manufacturing, centered on its mean, reduces the probability of a fixed

[44] While the marginal effects are often used to interpret the effects of explanatory variables in the logit models, Long (1997) argues in favor of looking at the impact of discreet changes instead, given that the effects are non-linear.
[45] The mean and standard deviation correspond to the period 1973-1994.

regime by 11 percentage points. This means that each percentage point increase in the share of manufacturing in GDP reduces the probability of fixing by around two percentage points. As will be seen below, the effect of the share of manufacturing has changed substantially across time, in line with the predictions above regarding the impact of trade liberalization. Political instability increases the probability of fixing by 19 percentage points, while an increase of one standard deviation in the share of government seats in the legislature, and the effective number of parties, increase the probability of a fixed regime by 7 and 6 percentage points, respectively.

Since these effects are non-linear, and vary depending on the value of the explanatory variables at which they are measured, it is worthwhile to look at some of them in more detail. Particular attention will be paid to the effects of the manufacturing share on the share of government seats in the legislature and on the effective number of parties. It is worthwhile to further explore the the differential impact that the share of manufacturing that this variable can have under highly protected trade policy and under liberalized trade. The probabilities of each regime are therefore presented as a function of the share of manufacturing, for 1975, as well as for 1992. In 1975, all countries for which data were available were highly protectionist. In 1992, almost all countries in the sample had liberalized their trade flows substantially Comparing Figures 1 and 2, which show the cumulative probabilities for the different regimes, it is easy to see that the effects of manufacturing share on regime choice are much larger during the liberalized period. For example, a change in the share of manufacturing from 15% to 25% in 1975 would have been associated with a reduction in the probability of choosing a fixed regime of around 8.5 percentage points. In contrast, in 1992, a similar change would lead to a reduction in the probability of adopting a fixed regime of nearly 25.8 percentage points. Similarly, the probability of adopting a backward-looking crawl increases by 2 and 21 percentage points in 1975 and 1992, respectively.

The effect of changes in the share of government seats on the probability of the different regimes is shown in Figure 3. The probability of a fixed regime increases with the share of government seats. Furthermore, while there are non-linearities in the effects, these do not seem to be that important. For example, an increase of one standard deviation (equivalent to 20 percentage points) in the share of government seats starting from 10% increases the probability of a fixed regime by 9 percentage points, while a similar increase starting from 60% raises the probability of a fixed regime by 6.2 percentage points.

Figures 4 and 5 show the effects of the effective number of parties on the choice of regime. As discussed above, the strength of the opposition could be an important variable when the government does not control the legislature, since it may be easier to form coalitions when different small groups are competing for the perks that may be involved in forming an alliance with the government. However, this variable is not expected to be as important when the government already has control of the legislature. This hypothesis has already been explored in the first set of regressions, but in that case no information was obtained about the magnitude of the effects. Figure 4 shows the impact of the effective number of parties when the share of government seats in the legislature is 30%, while Figure 5 shows the same when the share of government seats is 70%. Comparing both figures reveals that the effects are larger when the government does not control the legislature. In this case, for example, an increase in the effective number of parties from 2 to 3 results in an increase in the probability of a fixed regime of 6 percentage points. By comparison, when the government controls 70% of the seats, a similar increase in EFPART results in an increase in the probability of a fixed regime of 4.3 percentage points. This complements the results of the last regression in Table 5, which suggested that the effective number of parties is not significantly different from 0 when the government controls the legislature, but is significant when it does not.

Elections, Government Changes, and the Timing of Devaluations[46]

In addition to the more structural variables which can affect the choice of regime, the timing of shifts in exchange rate policy may also be affected by the timing of political events such as elections and changes in government. If there is in fact a political cost associated with devaluation, as suggested by Cooper (1971), at no time should that cost be more salient than before elections. The run-up to an election is the time when the gap between the politician's discount rate and that of the public is at its peak, and governments may be willing to let the economy incur large costs in the long term (here the long term starts immediately after the election, or, at the most, after the change in government) in exchange for (real or apparent) benefits in the short run. In contrast, at no time should the political cost of devaluation be smaller than immediately after the transfer of government, as the incoming government can blame the outgoing government for making the devaluation necessary.

[46] This section draws on Stein and Streb (1999).

This has led to many episodes of electorally motivated delayed devaluation, among which are the Cruzado Plan in Brazil in 1986, the failed Primavera Plan in Argentina in 1989, and the 1994 Mexican Peso crisis. In the Cruzado Plan, the exchange rate peg gave rise to mounting current account deficits. But "in the best Brazilian political tradition," according to Cardoso (1991), corrective actions were put on hold until right after the legislative elections. The main element of the Primavera Plan was the reduction of the rate of crawl in an attempt to moderate inflation in the run-up to the 1989 presidential elections (Heymann, 1991). However, a speculative attack led to a sharp devaluation that ended the stabilization attempt before the elections, with disastrous electoral results for the ruling party. Regarding the Mexican experience in 1994, Obstfeld and Rogoff (1995) have noted that the skepticism over exchange rate commitments prevailing in Mexico in 1994 was compounded by the government's previous track record of devaluing in presidential election years.[47]

Why are devaluations politically costly? First, a devaluation can have a negative effect on real income, particularly in the short term. Devaluations affect real income through a variety of channels. On the one hand, by increasing the price of foreign goods relative to domestic goods, they increase the demand for domestic output. This is the substitution effect, which is expansionary. On the other hand, they reduce real wealth, provided that some of it is in domestic currency. This is a contractionary income effect. In addition, devaluations shift income from wage earners with a high propensity to spend to profit recipients with a low propensity to spend. As this shift involves many losers and few winners, it can be particularly costly around elections.[48] For a long time, it has been argued that in the case of developing countries, devaluations are contractionary (see Díaz Alejandro, 1963, and Krugman and Taylor, 1978), which means that the income effect is larger than the substitution effect. The most recent empirical evidence is not conclusive, but it suggests that the effect is likely to be contractionary in the short term, while it is more neutral in the long term.[49] Before elections, naturally, the predominant focus is what happens in the short term.

Stein and Streb (1998, 1999) identify another channel through which devaluations can be

[47] Until 1994 the exact timing in Mexico had been after elections, but before the change in government. In this way, the outgoing president would spare his successor (who was actually named by the incumbent) the political cost of devaluing. This pattern changed in 1994, where the devaluation occurred after the change in government.

[48] There are of course, other important channels through which a devaluation affects real income. For a comprehensive account of these, see Agenor and Montiel (1996).

[49] The counterpart of this is the expansionary effects associated with exchange rate based stabilizations in the short run, characterized by the real appreciation of the currency appreciation (see Kiguel and Liviathan, 1993). This is one reason why

politically costly, in the context of a rational political budget cycle model in the Rogoff (1990) tradition. Voters dislike devaluation (which, in the context of the one-sector model used by the authors, coincides with the rate of inflation) because it acts as a tax on money balances. Governments face a trade-off between devaluation today and tomorrow, and, under incomplete information, they exploit this trade-off for electoral purposes, using a low rate of devaluation before elections as a signal of their competence, thus increasing their chances of reelection. Hence, the pattern of devaluations around elections is part of a political budget cycle, a feature that has been overlooked in conventional stories of political budget cycles that concentrate on a closed economy.[50] The model in Stein and Streb (1999) has very clear-cut empirical implications for the evolution of exchange rates around elections: governments do not always have incentives to manipulate exchange rates around elections. But when they do, it is always in the same direction: postponement of devaluations until after elections.

An alternative source of exchange rate movements in electoral years is uncertainty regarding the results of elections, even if one ruled out manipulative theories. Not only is it uncertain who the winner will be, but there is also uncertainty regarding the policies each candidate would follow. In this case, however, the pattern of the exchange rate around elections is not as clear. Part of the devaluation could occur before the elections take place, reflecting increased uncertainty, and the chances of the different candidates. After elections the exchange rate would appreciate or depreciate, depending on who the winner is and which economic policies are followed. In expected value, one should not anticipate a devaluation immediately after elections through this channel.

What does the existing evidence say? There are a few more systematic empirical studies that look at the relationship between elections, changes in government, and the timing of devaluations. This incipient literature appears to support the hypothesis that devaluations tend to be delayed until after elections or government changes. Gavin and Perotti (1997) include in a recent study of fiscal policy in Latin America a section on the determinants of shifts in exchange rate regimes from fixed to flexible. They find that the likelihood that such a shift will occur increases significantly right after an election has taken place. Klein and Marion (1994) study the duration of exchange rate pegs to the

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stabilization programs that occur shortly before elections tend to be based on the use of the exchange rate as a nominal anchor (Stein and Streb, 1998).

[50] See Rogoff (1990), Rogoff and Sibert (1989) and Persson and Tabellini (1990). An exception to the focus on the closed economy is Clark (1998)

US dollar for a sample of 17 Latin American countries in the period 1956-1991. In contrast with Gavin and Perotti, who focus only on regime shifts, these authors consider step devaluations as the end of one spell and the beginning of another. They find that the likelihood a peg will be abandoned increases immediately after an executive transfer. Edwards (1993) studies the timing of 39 large devaluations (15% or more) in democratic regimes, and finds that they tend to occur early on in the term in office. Edwards suggests that governments tend to follow the classic rule of "devalue immediately and blame it on your predecessors."

The present purpose is to extend the empirical literature regarding the pattern of nominal and real exchange rates around political events such as elections and changes in government. The data on elections and changes in government is based on the *Enciclopedia Electoral Latinoamericana*, coordinated by Nohlen (1992), and on the Lijphart Elections Archive.[51]

The Evidence

The methodology we use is a very simple one. The pattern of nominal and real exchange rates around major political events (elections and government changes) is studied by averaging the behavior of the relevant exchange rate variables around these events over all the episodes of each type. It is easy to describe the method followed with an example. Take, for instance, the pattern of the nominal exchange rate changes around elections. First all election episodes in the database are database are pulled together (a total of 242, counting both presidential and parliamentary elections). The behavior of nominal exchange rates is considered by looking at a 19-month window centered on elections. For each episode, month 0 corresponds to the month of the election, month –1 the month prior to the election, and so on. The rate of nominal depreciation across all episodes is then averaged for each of the 19 months in the window (-9 through 9). The average nominal rate of depreciation, month by month, is presented in Figure 1.

The pattern in the figure is striking and provides strong support for the hypothesis that devaluations are delayed until after elections. In months 2, 3 and 4 after an election, the average rate of nominal depreciation is 2 percentage points higher than it is for other months, and the average rate of depreciation is more than doubled. The larger effect occurs two months after the election. (It

[51] See http://dodgson.ucsd.edu/lij/

should be stressed that geometric averages rather than arithmetic averages were used in order to lessen the effects of outliers.[52])

The pattern is even stronger when only presidential elections are considered, as shown in Figure 2. In this case, the average rate of nominal depreciation in month 2 reaches 7%, around 4.5 percentage points higher than in other months. The behavior of the nominal exchange rate around parliamentary (non-presidential) elections, in contrast, did not show any interesting pattern.

Are devaluations delayed until after elections, or after government changes? The previous pictures do not provide a clear answer, since different countries at different times have different lags between the dates of elections and those of government changes. Figure 3 shows the behavior of the nominal exchange rate around changes in government. It is clear from the picture that the most relevant event is the change in government. In this case, all the effect is concentrated in month 1, and the depreciation at this time is around 5.5 percentage points higher than in other months. It seems clear that the fact that devaluations occur 2-4 months after elections is a reflection of the fact that the lag between the election and the change in government in most cases is between one and three months. This suggests that, while in some cases such as Mexico pre-1994, the outgoing government implemented the devaluation, in most cases the incumbent does not want to endure the political cost of the devaluation, even once the election has taken place. An interesting topic for future research is whether the pattern differs for the cases where the government is followed by another government of the same party.

Figure 4 restricts the episodes to constitutional government changes. The effect is even stronger: the average devaluation one month after elections is now greater than 10%, and around 7 percentage points higher than in other months. The effects for the case of non-constitutional changes in government are much smaller (see Figure 5). Interestingly, in this case the depreciation starts in month 0, which would suggest that, at least in some cases, the changes in government are endogenous to exchange rate crises. This is a matter which, again, is left for future research.

The real exchange rate shows a similar pattern. In this case, to make the level of the exchange rate comparable across countries, the real exchange rate in each country is normalized so that the (geometric) average would be 100. For the purposes of the figures, the month-by-month averages are normalized so that they would be 100 at time 0 (the date of election or government change).

[52] The figure calculated with arithmetic averages was even more striking.

Figure 6 shows the pattern of the real exchange rate around presidential elections. There is a gradual 3% appreciation in the months preceding an election, followed by a much steeper depreciation after elections have taken place. As with the nominal exchange rate, the real depreciation, which totals 6%, occurs in months 2 through 4. From month 5 onwards, the real exchange rate returns to the pattern of gradual appreciation. As with the nominal exchange rate, the pattern is even more crystal-clear around constitutional government changes (see Figure 7). In this case, most of the depreciation (almost 7%) occurs in month 1, and the appreciation resumes in month 3.

The preceding figures show a very clear picture of the average behavior of nominal and real exchange rates around major political events. However, it is interesting as well to know something about the distribution of the behavior of the exchange rate around these events. In order to see this, the following experiment is performed: at any given time, the probability that the real exchange rate will appreciate or depreciate by certain pre-specified amounts during the following six months is calculated from the data. These probabilities are presented in the first column of Table 5. The last figure in the column indicates that, at any point in time, the probability of a real depreciation of 25% or more within the next six months is 3.84%.

A subsequent question is how these probabilities change around major political events. More specifically, what are these probabilities if there is a constitutional government change sometime between t+1 and t+5? A government change in the middle would be expected to increase the probability of a large real depreciation. The probabilities, which appear in column 2 of the table, confirm the priors. The probability of a large real depreciation of at least 25% is now close to 10%. Thus, the change in government increases the probability of a large devaluation by a factor of 2.5.

How do these probabilities change when there is a presidential election immediately after t+6? (more precisely, if the election occurs between t+7 and t+10). The resulting probabilities are listed in column 3. An impending presidential election, as expected, reduces the probability of a large real depreciation by more than 30%. The most interesting comparison, however, is between columns 2 and 3 in the table. Compared to the "impending presidential election" situation, the "recently inaugurated constitutional government" case is 3.7 times more likely to have produced a large real depreciation (of 25% or more). In contrast, the "impending election" scenario is 2.4 times more likely to have produced a real appreciation (larger than 5%).

Conclusions

This paper has explored the political economy determinants of exchange rate policy in Latin America, finding that political economy factors have in fact played a role in shaping exchange rate policy. In particular, there is evidence that governments with strong support in the legislature tend to choose fixed regimes, as do governments that face a fragmented opposition. This is in line with idea that sustaining a fixed rate may require politically difficult fiscal adjustment, and that strong governments are in a better position to engineer such adjustment. At the same time, these findings may be capturing the fact that governments with strong support in Congress suffer a smaller political cost in case of devaluation.

Economies with an important manufacturing sector are more prone to adopt either floating regimes or backward-looking crawling pegs, both of which tend to deliver more competitive exchange rates. The influence of the manufacturing sector on the exchange regime appears more important in periods where trade was liberalized, so that this sector had to face the competition of foreign producers. This result is complemented by similar findings in country studies by Ghezzi and Pascó-Font (1998) for Peru, and Jaramillo, Steiner and Salazar (1998) for the case of Colombia.

Finally, there is also find strong evidence that major political events such as elections and government changes affect the path of nominal and real exchange rates. More specifically, devaluations tend to be delayed in the run-up to elections, and only occur immediately after the new government takes office.

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Table 1. Use of Exchange Arrangements by Period

	1960-73		1974-81		1982-88		1989-94	
Type of arrangement	# of Obs	%	# of Obs	%	# of Obs	%	# of Obs	%
Fixed to single currency	322	88.5	159	76.4	110	60.4	56	35.9
Fixed to basket					4	2.2		
Fixed w/frequent adj.	18	4.9	12	5.8	4	2.2	3	1.9
Forward looking crawling peg			9	4.3	4	2.2	10	6.4
Forward looking crawling band							6	3.8
Backward looking crawling peg	12	3.3	22	10.6	46	25.3	12	7.7
Backward looking crawling band							7	4.5
Dirty Floating	8	2.2	6	2.9	5	2.7	22	14.1
Free Floating	4	1.1			9	4.9	40	25.6
Total	364	100.0	208	100.0	182	100.0	156	100.0

Table 2. Real Exchange Rates and Inflation by Regime

Regime	Fixed	Forward looking	Backward looking	Floating
Average real exchange rate	97.4	90.3	109.0	106.0
Average annual depreciation	-1.55%	-6.31%	0.98%	1.39%
Average annual rate of inflation	17.2%	54.4%	50.3%	42.8%

Higher values of real exchange rate indicate more depreciated rates

Table 3. Summary Statistics of Explanatory Variables

Variable	# of obs	Mean	Std. Dev.	Min	Max
Log inflation	812	0.248	0.537	-0.1216	4.775
Hyper	837	0.016	0.128	0	1
Open	836	0.637	0.405	0.083	2.498
Views	910	0.715	0.230	0.391	0.992
Capital Controls 1	721	0.717	0.450	0	1
Capital controls 2	720	2.512	1.293	0	4
Reserves/m2	860	0.242	0.205	0.00042	1.552
Reserves dummy	860	0.059	0.236	0	1
TOT volatility	805	0.133	0.080	0.030	0.418
Manufl	815	0.183	0.057	0.069	0.321
Agrl	793	0.168	0.093	0.018	0.469
Minl	734	0.062	0.072	0.00047	0.331
Low tariff	645	0.184	0.388	0	1
Polins	907	0.196	0.397	0	1
Dict	745	0.474	0.500	0	1
Efpart	646	2.454	1.296	1	8.68
Govseats	647	0.597	0.197	0.039	1

Table 4. Summary Statistics: Means of Explanatory Variables Under Different Exchange Rate Regimes

Variable	Fixed	Forward Looking	Flexible	Backward looking
Log inflation	0.162	0.639	0.535	0.436
Hyper	0.0095	0.069	0.043	0.023
Open	0.699	0.476	0.550	0.380
Views	0.772	0.494	0.506	0.577
Capital Controls 1	0.693	0.620	0.631	0.940
Capital controls 2	2.354	2.310	2.190	3.656
Reserves/m2	0.225	0.220	0.271	0.333
Reserves dummy	0.065	0.000	0.045	0.051
TOT volatility	0.135	0.168	0.141	0.103
Manufl	0.172	0.219	0.199	0.225
Agrl	0.176	0.118	0.149	0.153
Minl	0.067	0.066	0.052	0.042
Low tariff	0.060	0.517	0.586	0.272
Polins	0.227	0.000	0.159	0.070
Dict	0.534	0.482	0.215	0.391
Efpart	2.304	3.754	3.324	2.285
Govseats	0.633	0.448	0.447	0.557

Table 5. Ordered Logit Regressions for REGIME with Economic, Institutional, Sectoral and Political Factors

	(1)	(2)	(3)	(4)	(5)	(6)
Log inflation	0.079 (0.44)	0.022 (0.08)	0.13 (0.63)	-0.052 (-0.26)	-0.11 (-0.48)	-0.12 (-0.52)
Hyper	-1.47 (-2.22)	-2.59 (-2.50)	-1.78 (-2.56)	-1.57 (-2.24)	-1.79 (-2.38)	-1.80 (-2.39)
Open	-2.43 (-5.29)	-6.68 (-6.37)	-2.37 (-4.90)	-2.76 (-5.42)	-3.49 (-5.95)	-3.44 (-5.84)
Reserves/m2	0.73 (1.78)					
TOT volatility	-4.06 (-1.97)					
Capital controls 1	0.21 (0.92)					
CBI		1.67 (0.77)				
Manufl			10.96 (3.87)	8.28 (3.65)	11.95 (4.20)	12.42 (4.30)
Agrl			0.0057 (0.004)			
Minl			1.28 (0.61)			
Polins				-1.10 (-3.39)		-0.92 (-1.97)
Govseats					-2.58 (-2.77)	-3.06 (-3.04)
Efpart					-0.29 (-2.31)	-0.098 (-0.57)
Efpart * Minority						-0.19 (-1.61)
Dict				-0.49 (-2.15)	-1.07 (-2.29)	
Trend	Yes	Yes	Yes	Yes	Yes	Yes
N	616	323	679	670	562	562

A positive sign means that the variable increases the probability of adopting "pro-competitiveness" regimes.
z-statisics in parenthesis

Table 6. The Impact of Trade Liberalization

Ordered logit regressions. Dependent variable: REGIME

	(1)	(2)	(3)	(4)
Log inflation	-0.079 (-0.41)	0.25 (1.35)	-0.043 (0.22)	0.31 (1.68)
Hyper	-1.30 (-1.89)	-1.04 (-1.50)	-1.37 (-1.96)	-1.16 (-1.65)
Open	-2.83 (-5.36)	-1.83 (-3.99)	-2.83 (-5.36)	-1.88 (-4.05)
Manufl	5.27 (2.08)	5.29 (2.23)	4.93 (1.93)	4.65 (1.94)
Manufl*Low Tariff			1.55 (0.72)	3.89 (1.82)
Low Tariff	0.52 (1.97)	1.75 (8.14)	0.29 (0.69)	1.13 (2.75)
Polins	-1.11 (-3.17)	-1.28 (-3.77)	-1.13 (-3.22)	-1.29 (-3.81)
Dict	-0.47 (-2.00)	-0.81 (-3.70)	-0.47 (-1.99)	-1.81 (-3.67)
Trend	Yes	No	Yes	No
N	552	552	551	551

z-statistics in parenthesis

Table 7. Sensitivity Analysis

Ordered logit regressions. Dependent variable: different definitions of regime

	(1) REGIME	(2) REGIME (1973-1994)	(3) REGIME2 (Excluding adjustable pegs)	(4) REGIME3 (forward looking before fixed)
Log Inflation	-0.11	-0.009	-0.19	0.16
	(-0.48)	(-0.04)	(-0.83)	(0.82)
Hyper	-1.79	-1.98	-1.47	-1.86
	(-2.38)	(-2.54)	(-1.86)	(-2.32)
Open	-3.49	-3.46	-3.56	-1.17
	(-5.95)	(-5.63)	(-6.08)	(-3.69)
Manufl	11.96	11.12	13.51	8.54
	(4.20)	(3.50)	(4.62)	(3.64)
Polins	-0.91	-1.38	-0.75	-0.30
	(-1.98)	(-2.59)	(-1.59)	(-0.90)
Govseats	-2.58	-1.88	-3.06	-2.01
	(-2.77)	(-1.87)	(-3.23)	(-2.64)
Efpart	-0.30	-0.26	-0.37	-0.23
	(-2.31)	(-1.99)	(-2.53)	(-2.10)
Trend	Yes	Yes	Yes	Yes
N	562	380	538	562

z-statistics in parenthesis

Table 8. Economic Interpretation: Change in the Probability of the Different Exchange Rate Regimes in Response to Changes in Explanatory Variables (using regression 2, Table 7)

	log inflation	hyper	open	manufl	polins	govseats	efpart
Mean of variable	0.336363	0.0254	0.66505	0.1857	0.1503	0.595	2.4429
Change in variable[1]	0.629907	1	0.3968	0.0553	1	0.2009	1.3122
Δp(fixed)	0.0012	0.2076	0.2503	-0.1129	0.1928	0.0695	0.0632
Δp(forward looking)	-0.0002	-0.0487	-0.0437	0.0209	-0.0416	-0.0129	-0.0118
Δp(flexible)	-0.0006	-0.1016	-0.1200	0.0547	-0.0942	-0.0337	-0.0307
Δp(backward looking)	-0.0004	-0.0574	-0.0866	0.0373	-0.0571	-0.0228	-0.0207

[1]The magnitude of the change in the explanatory variable is one standard deviation around the mean, in the case of the non-dummy variables, and 1 in the case of dummy variables.

Table 9: Probabilities of Changes in Real Exchange Rate between t and t+6

Size of real depreciation	All cases	Recently inaugurated constitutional govt.	Impending presidential elections
<-25% (app)	1.18	1.63	2.18
-25% to -20%	1.27	2.09	0.24
-20% to -15%	2.28	2.09	4.36
-15% to -10%	4.57	5.81	6.05
-10% to -5%	12.86	9.53	15.74
-5% to 5%	60.89	56.51	53.51
5% to 10%	7.47	6.74	7.75
10% to 15%	2.84	3.72	3.63
15% to 20%	1.82	2.09	2.91
20% to 25%	0.98	0.00	0.97
>25%	3.84	9.76	2.66
Number of observations	7247	430	413

Figure 1.

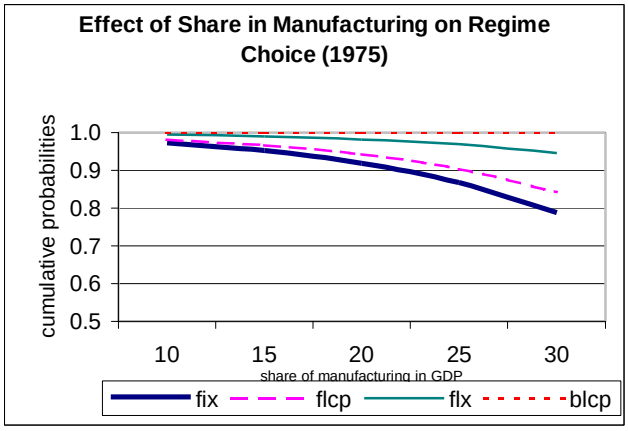

Figure 2.

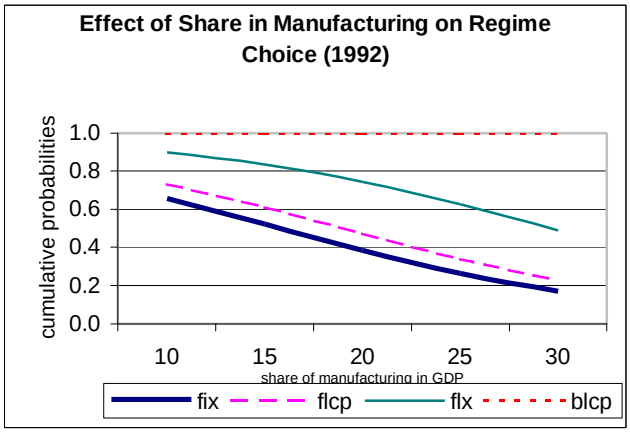

Figure 3.

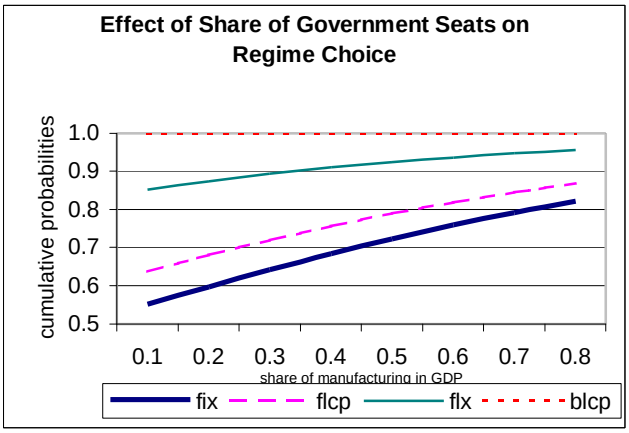

Figure 4.

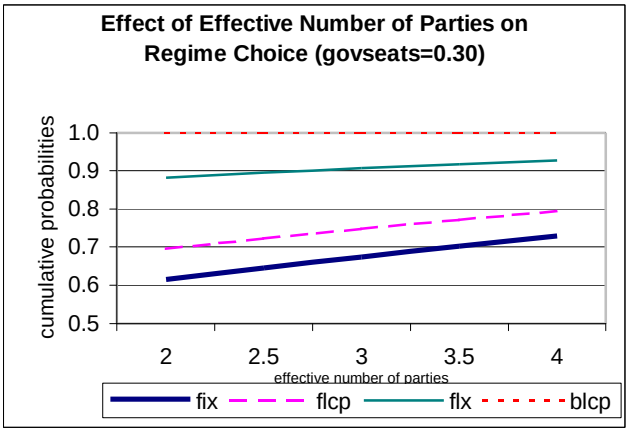

Figure 5.

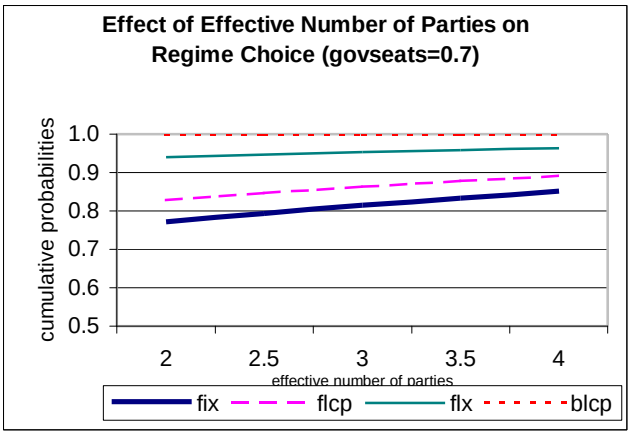

Figure 6.

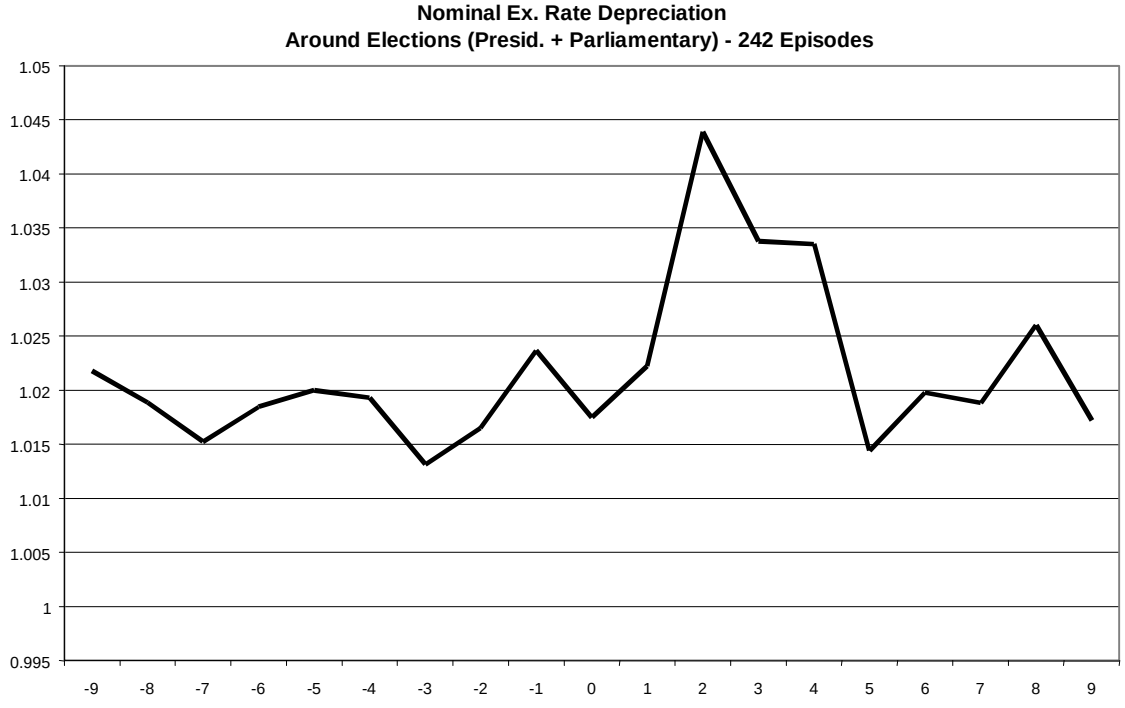

Figure 7.
Nominal Ex. Rate Depreciation
Around Elections (Presidential) - 131 Episodes

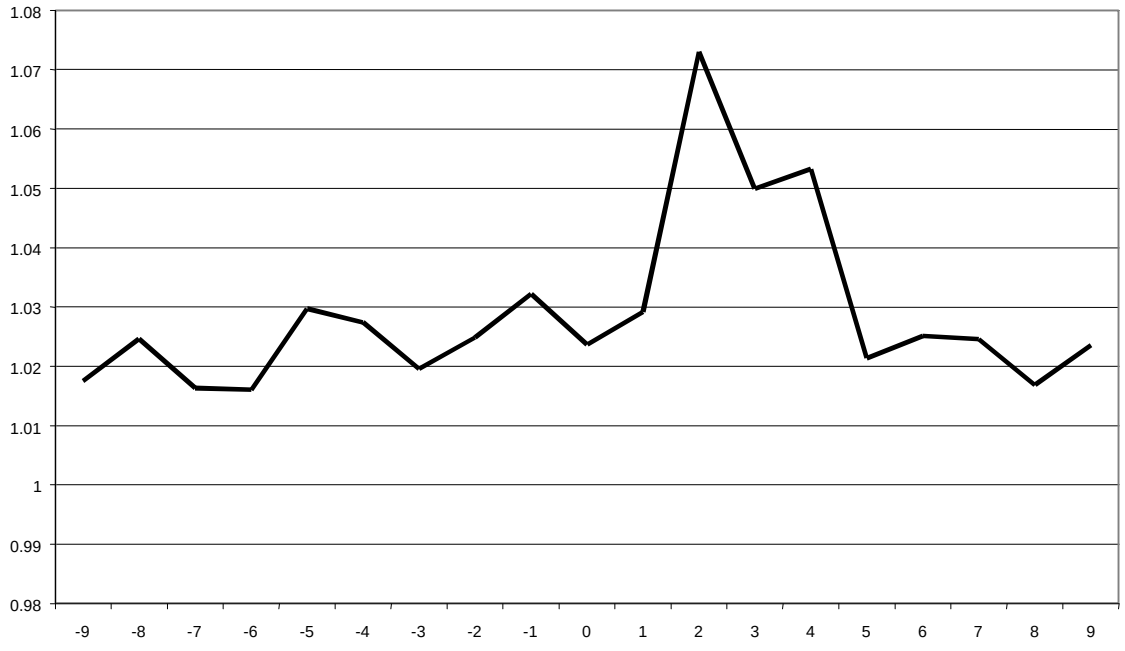

Figure 8.

Nominal Ex Rate Depreciation
Around Governmental Changes - 187 Episodes

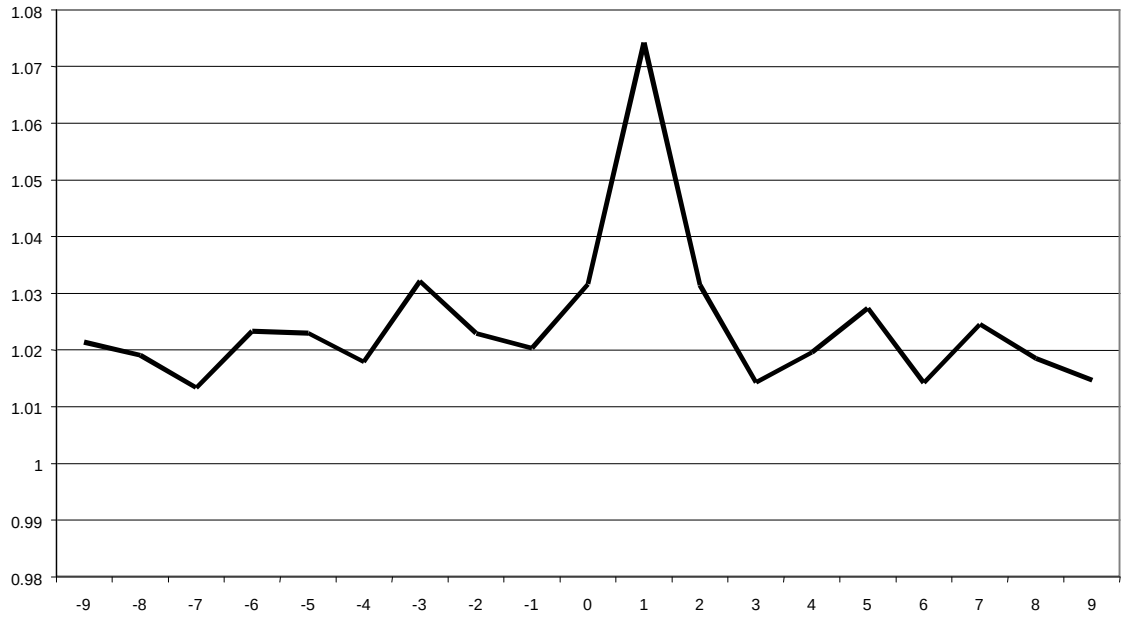

Figure 9.
Nominal Ex. Rate Depreciation
Around Constitutional Changes - 118 Episodes

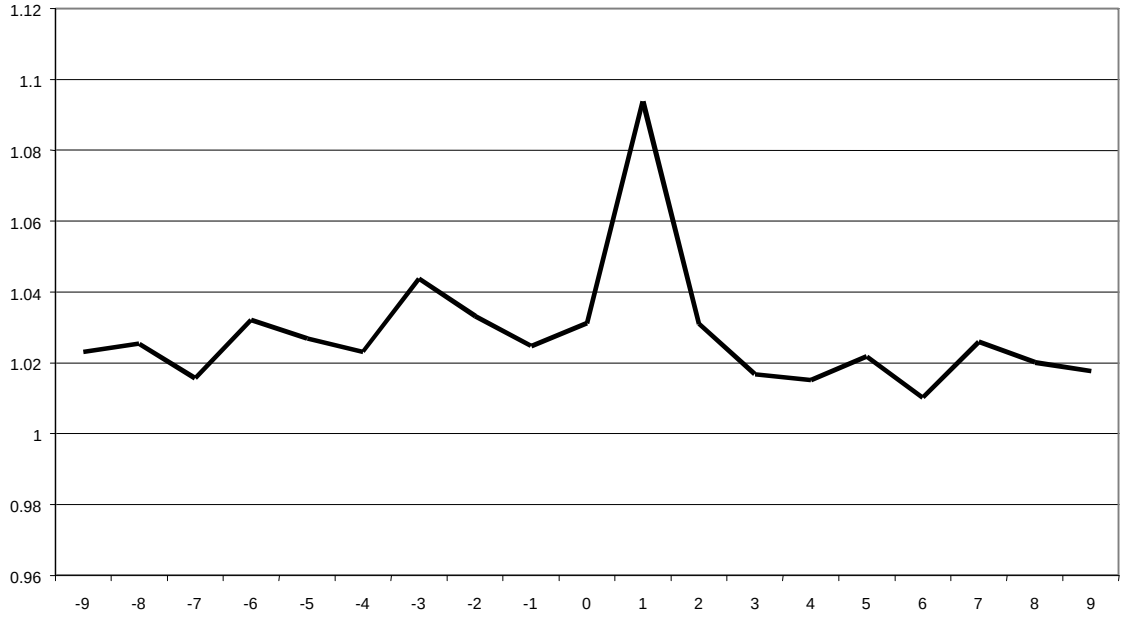

Figure 10.

Nominal Ex. Rate Depreciation
Around Non Constitutional Changes - 69 Episodes

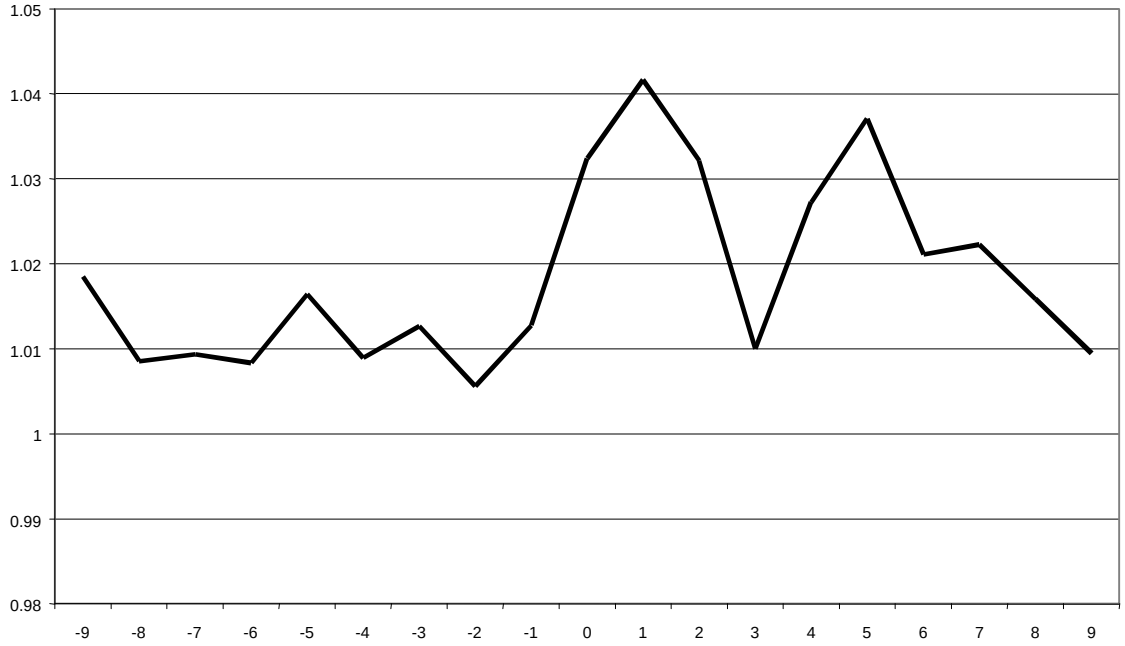

Figure 11.
Real Ex. Rate
Around Elections (Presidential) - 106 Episodes

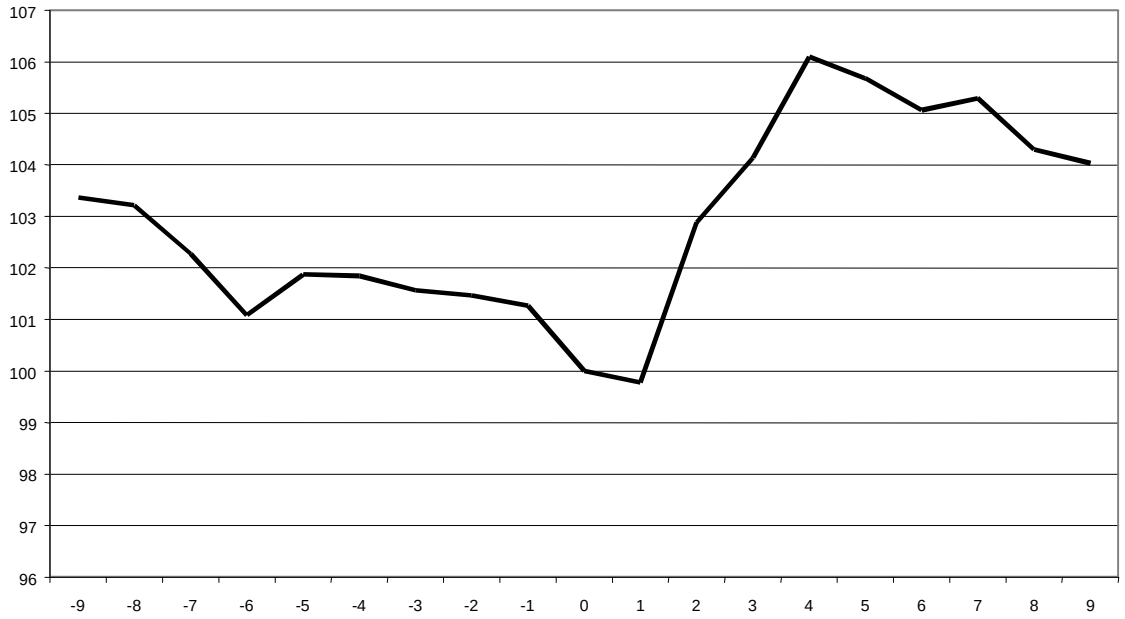

Figure 12
Real Ex. Rate
Around Constitutional Changes - 86 Episodes