

Political Determinants of Currency Crises

– Evidence from four Countries

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Abstract

This paper looks at political and institutional factors that affect exchange rate dynamics. While much has been said about the economic fundamentals' role in determining the exchange rate and the occurrence of currency crises, the literature on the political determinants took off only recently. We try to empirically identify the relevant political factors explaining exchange rate policy and the occurrence of currency crises in four large countries that experienced speculative attacks (ARG, BRA, MEX, TUR). Our results confirm previous findings, such that left governments are less likely to have a pegged regime in place and the political business cycle theory that pegged regimes are more often in place after elections. However, we also find that currency crises occur less often after elections. Additionally, we found a higher number of veto players having a significant impact in that it reduces the probability of a currency crisis while it increases the propensity to peg the currency. These results need further theoretical research to be explained.

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1 Introduction

In the aftermath of the 2002 crisis in Argentina, both political and economic causes have been widely analyzed towards a better understanding of the crisis' origin. On the one hand, the causes of currency crises are of scientific interest helping to understand the functionality of international financial markets. On the other hand, policy makers need to know about the behavior of markets to potentially encounter a threatening speculative attack.

The economic literature concerning this matter theoretically traces back to Krugman's (1979) seminal paper. Starting from his balance-of-payment-crisis model, a strand of models –often referred to as “first-generation-models” was developed concluding that the economic fundamentals solely explain the occurrence of currency crises. Economists therefore stressed the importance of a consistent fiscal and monetary policy. Nevertheless, the predictive power of these models was weak so that with the outstanding work of Obstfeld (1986, 1996) and others, the “second generation models” evolved integrating a microeconomic based model of interaction between a government and currency speculators. As a crucial finding, the evolution of a currency regime henceforth lost is predetermined uniqueness. In this models, the market participants' expectations of governments decisions and on the other hand government's optimal policy taken investors' behavior as given are the determinant factors explaining the occurrence of speculative attacks. The usual assumptions hereby are rational expectations of the investors and a government maximizing an intertemporal welfare index (or minimizing a concrete loss function).

On the other hand, starting from Nordhaus (1975) there has been a wide strand of literature regarding the influence of political institutions like elections on the economic outcomes. There has also been a broad discussion on the importance of the partisanship of government on economic policy (see e.g. Hibbs (1977)). They find that in modern consensual democratic regimes, as in effect in most countries, electoral outcomes, for instance, play a crucial role in determining future political decisions and that the government decides on political measures partly because of the expected distributional outcomes.

One could therefore expect that politics play also a crucial role in determining a) governments behavior and b) thus investors' expectation on political measures such as the abandonment of a pegged exchange regime. Thus we conclude that political characteristics like the degree of democracy, the electoral clock or the partisanship of the chief executive contribute significantly to the explanation of the occurrence of currency crises.

Albeit the recent work in this field, there remain several shortcomings: First, empirical evidence is quiet mixed: Meanwhile Freeman et al. (2000) like Eichengreen et.al. (1995) find no systematic relationship, Frieden (1999) concludes that left-wing governments are more likely to have stable currencies – a finding somewhat contrary to Hibbs (1977) distributional considerations. In conformance with Leblang (2000) his investigation aside show that devaluations seem to be delayed until after elections, a result according to the theory of the political business cycle.

Regarding the influence of political variables on speculators' behavior, Leblang (2002) discovers that speculative attacks occur more likely under left governments and during a certain period after elections.

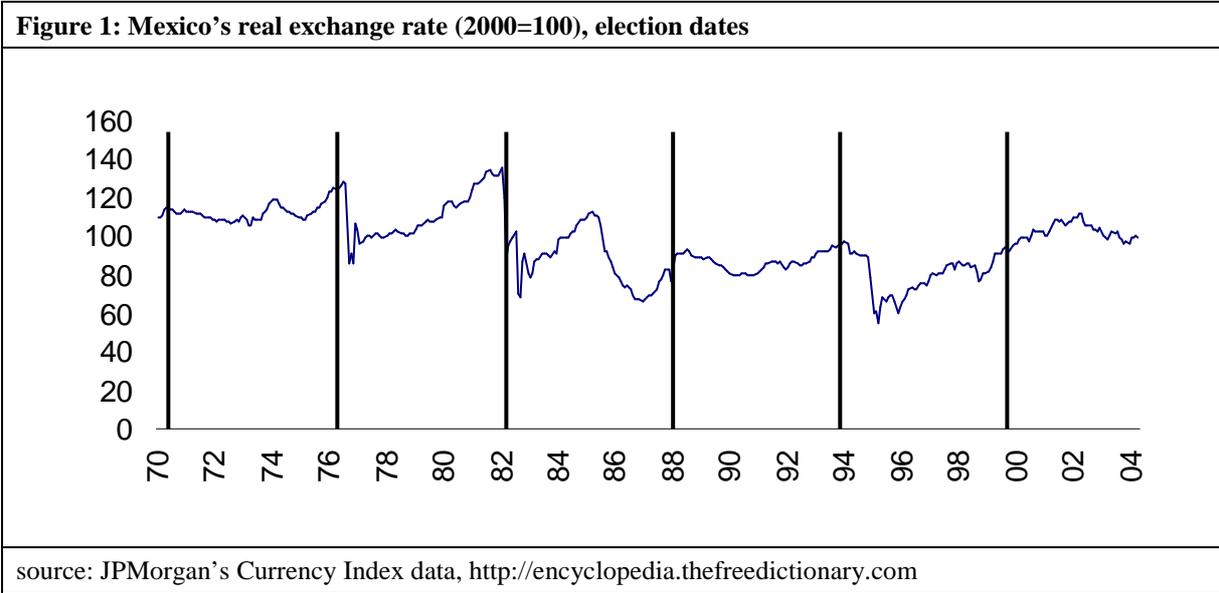
All the papers mentioned above make use of various political data bases, like World Bank's Database of Political Institutions (DPI) and the Polity IV Project among others. However, one crucial point in the empirical analysis appears to be the selection of appropriate variables to measure the expectations on policy makers' decisions. Generally, variable that are easy to obtain like electoral timing and outcomes and measures of the political spectrum have been used. Although they seem plausible determinants of government's character to the exchange market, these measures are only of somewhat use especially to catch expectations on election results. In order to find more accurate variables, a) public opinion poll results on presidential approval or b) estimated re-elections probabilities or the use of adequate instrumental variables could be a solution. However, data availability and potential simultaneity problems restrict these approaches.

Whereas the stated literature uses mainly large cross-country panel data sets, this study focuses on a subgroup of the three "big" Latin-American countries Mexico, Argentina and Brazil including also the case of Turkey.

This paper is organized as follows: I first take a look on the political crises and turmoil that came along with the currency crises taken into account. Afterwards, I present some theoretical considerations with respect to the links between politics and economics. This includes a review of the recent literature of the specific context of currency crises. In Section 3, various political and institutional variables are considered on these theoretical backgrounds to influence currency crises including some alternative and possibly better ones that are not easy to obtain. The hypotheses are then tested in chapter 4 using a multivariate probit model to estimate the probability of currency crises and pegged regimes. Section 5 concludes.

2 Political and Financial Crises – some stylized facts

The Mexican Tequila Crisis of 1994 fell in to a period of quiet successful stabilization policy in Mexico implemented since the late 1980's. The crawling peg exchange rate regime and fiscal and monetary discipline enabled Mexico to reduce annual inflation from 160% in 1987 to 6.9% in 1994. On the other hand, the current account deficit increased steadily reaching – 6.5% of GDP in 1993. Masson (1998) examined the economic background of the crisis concluding that Mexico's fundamentals have been in the “crisis-region”. Nevertheless, like figure 1 suggests, there is a remarkable coincidence of devaluations and presidential elections (marked as vertical bars). In 1994, the final abandonment of the crawling peg in December has been preceded by months of political instability:



The Institutional Revolutionary Party (PRI), that had governed Mexico for more than 60 years, officially won the election in August 1994 with 50,17% of the vote. However, even though many improvements in the electoral process had been made since 1988, widespread vote fraud and irregularities has been observed. Furthermore, in the run-up there has been a countrywide turmoil following the Zapatista rebellion in Chiapas starting on January 1st of 1994 and the assassination of the presidential candidate Luis Donaldo Colosio on March 23 that led to widespread uncertainty about the future of the government. When the presidency was handed over to Ernesto Zedillo on November 30th, it took only 20 days up to the collapse of the peso and the following crisis that spread over most emerging countries –an effect henceforward labeled as contagion. On the political field, the hegemony of the PRI was put to an end leading to a segmentation of the party system with the leftist Democratic

Revolutionary Party (PRD) and the rightist National Action Party (PAN) on the two ends of the spectrum.

In Brazil, the fixed peg exchange rate regime known as “plano real” was introduced in early 1994 mainly to fight inflation (which had peaked in 1993 at 2500%). In the following years, this subjective was achieved and even accompanied by stable growth and a decrease in income inequality contributing to a major part to the election of the then finance minister Fernando Henrique Cardoso of the Brazilian Social Democratic Party (PSDB) as president in October 1998. Since 1997, however, the situation had worsened mainly through the crises in Asia and in Russia. While the fiscal was growing interest rates rose due to the international turbulence leading to the collapse of the Real on January 29th of 1999, only 3 months after Cardoso’s reelection, when it was devalued by 44% after a floating regime was introduced on January 18. The enduring economic depression, corruption scandals and political infighting caused President Cardoso's approval rating to fall by half until 2001. Consequently, the leftist former Worker’s Party (PT) leader Luiz Ignácio Lula da Silva was elected in 2002 elections. Since then, the situation has been stabilized including a revaluation of the Real against the dollar.

In the case of Argentina, there have can be detected two important effects on the political field: First, the populist character of the predominant Peronist Party and second a group of technocrats maneuvering in an often corrupted way. At the beginning in 1991, the currency board has been widely acknowledged as a great success. Inflation went down to 0.1% in 1996, initially without provoking a recession. From 1995 on, however, monetary stabilization became more and more costly: unemployment soared to 18% mainly due to the external shock provoked by the Mexican Crisis when a responding devaluation was impeded by the exchange rate regime. Since then, the economy only slightly recovered and from 1999 on the situation again worsened leading to the political and financial crisis at the end of 2001. A closer look on the political environment in the developing crisis reveals two interesting findings: First, in acknowledging the prerequisites of a fixed exchange rate regime there have been introduced deep reforms especially in the trade and financial area. As Rodrick (1993) points out, “it is ironic that these reforms were instituted under a Peronist president, Carlos Menem, since Peronism has been virtually synonymous with populism and protectionism”. Second, politics differed considerably between the federal executive branch and the provinces. Meanwhile the (negative) overall balance of the federal government only doubled between 1997 and 2001, it increased six fold in the Provinces.¹ One reason of these phenomena is intrinsic to the party

¹ Buscaglia (2003), p.7.

system of Argentina: Both the Peronist and the Radical Party UCR), the main opposition party by then, span the whole political spectrum, including reformist as well as the old protectionist and state-intervention policy supporters. The political instrumentation of the reforms could therefore be analyzed in a strategic context with the provinces, local politicians, business groups or labor unions as actors in a “rent-seeking capitalism game” where the president’s power is highly restricted. Nevertheless, this is beyond the scope of this paper.

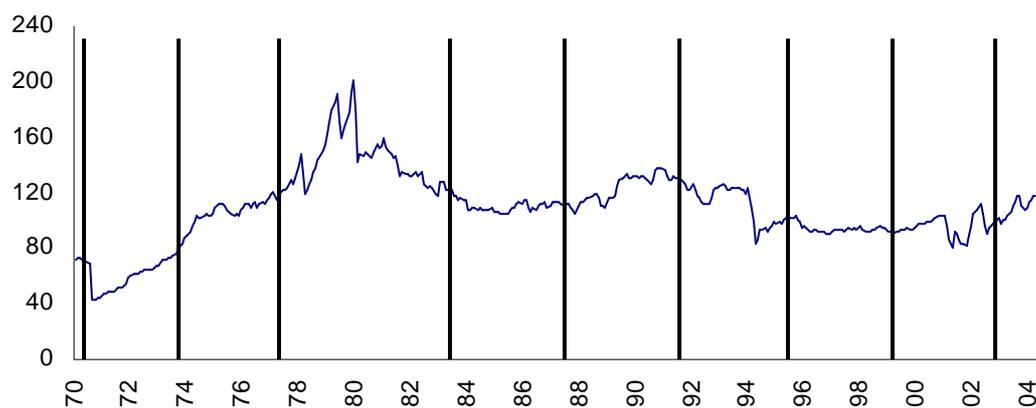
On the federal level considered here, the financial collapse was indeed preceded by a political crisis: De la Rúa, who succeeded Menem in 1999, resigned at the end of 2001 after 2 years of stagnating reforms, ongoing recession and organized riots that took place in Buenos Aires that “swept” him out of office. The following political turmoil, with five presidents in 15 days, did evidently worsen the situation. On the one hand, the commitment of the government to maintain the currency board became even more incredible; on the other hand, the UCR began publicly discussing how to abandon the Convertibility and when Mr. Duhalde of the UCR took office in 2002, his first statement was that “this model destroyed everything”². Hence, the close link between politics and exchange rate policy commitment became once again evident.

In Turkey, the first currency crises of the Nineties occurred in 1994. In the first quarter, the Turkish Lira was devalued by more than 50%, the GDP contracted in ‘94 by 6% and inflation reached 112%. However, these consequences were of modest severity in comparison to the crises that hit Turkey in 2000/2001. At the end of 1999 Turkey had signed a stand-by agreement with the IMF and started to implement a stabilization program. From February 2000 on, a crawling peg replaced the old managed floating regime in effect since 1990. However, the situation deteriorated and at the beginning of 2001 – only 4 months before the announced end of the peg, the devaluation was conceded and brought the country into a deep recession. Leading from a failing banking system undermining the confidence in the Turkish financial system, the economy experienced a fully fledged speculative attack in the late February of 2001. The Turkish lira was allowed to float on February 22nd and lost 44% of its value that day after overnight rates had reached an unprecedented 2600%.

As the banking sector plays a crucial role in the 2001 crisis in Turkey, the “third generation models” that specifically include banking crises has been found appropriate to explain the causes of the collapse. Özatay et al. (2002) found that first and second generation models fail to explain the crisis. However, I disregard this relationship and consider the Turkish case equally to the ones described above as the point outlined here lies in the political factors.

² La Nación, February 1, 2002 (<http://www.lanacion.com.ar>)

Figure 2: Turkey's real exchange rate (2000=100), election dates



source: JPMorgan's Currency Index data, www.electionresources.org

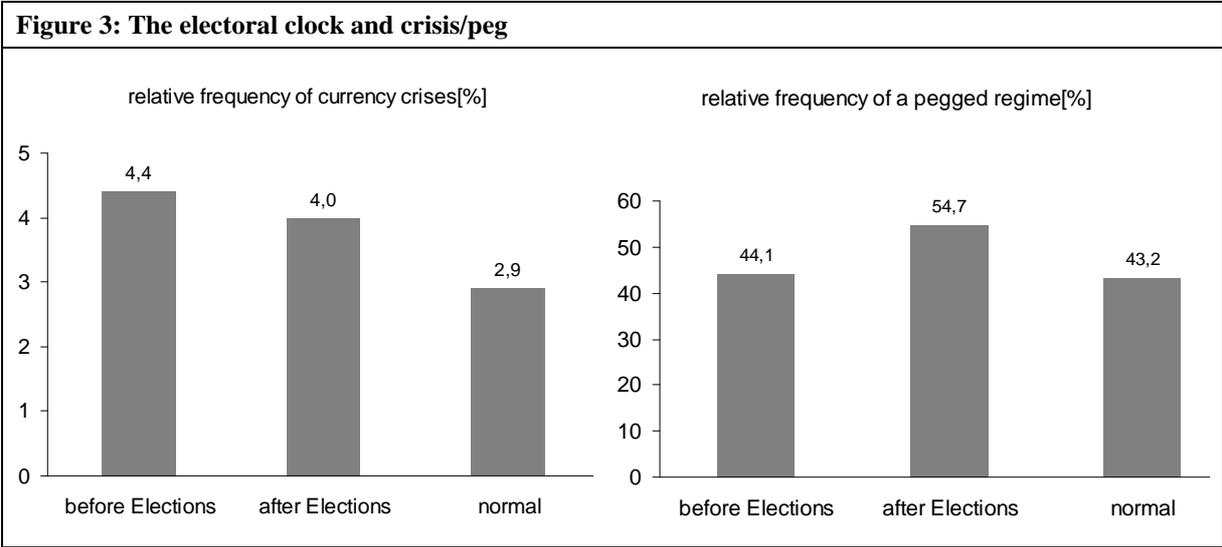
The political system of Turkey appeared to be unstable ever since the new constitution of 1983 had become effective: The fragmentation and fluctuation of the party system has been enormous³: There is no party that has been represented in the parliament ongoing from 1991 until today. In 1999, when Bulent Ecevit of the Democratic Left Party (DSP) formed his minority cabinet, 65% of the participants of an opinion poll stated that they “would prefer to vote for a party that does not yet exist”. Consequently, the Justice and Development Party (AKP) won a landslide victory in the 2002 elections, only one year after its foundation. Mr. Erdogan was elected as prime minister whereas Ecevit's DSP managed just over 1% of the vote. Nevertheless, as shown in figure 2, there appears no evident relationship between the real exchange rate and elections. On the other hand, Turkey's political history was dominated not mainly by the electoral clock but by votes of no confidence (like in 1999), early elections (as in 2002) or prime ministers resigning like Mrs. Chiller in 1995. These events are likely to be directly connected to the occurrence of financial distress, even though the direction of causation might be ambivalent. In this study, however, they are not taken into account for the sake of simplicity.

Recapitulating there are both similarities and differences in the four cases of financial crises described above: On the one hand there are evident economic factors—even though partly different ones—that showed a clear deterioration in the run-up of the currency crises. This connectivity has been analyzed in-depth in the recent literature on currency crisis predictions (see for instance, Kaminsky and Reinhart (1999)). On the other hand, the four countries

³ One reason is the high electoral threshold of 10% that one party has to obtain to be represented in congress; however, considerations of the electoral institutional design are not considered here in general due to the restriction of the country set to only four. For recent discussion of this relationship see e.g. Eichengreen and Leblang (2003). They include these categories in their analysis spanning from 1880 to 1997.

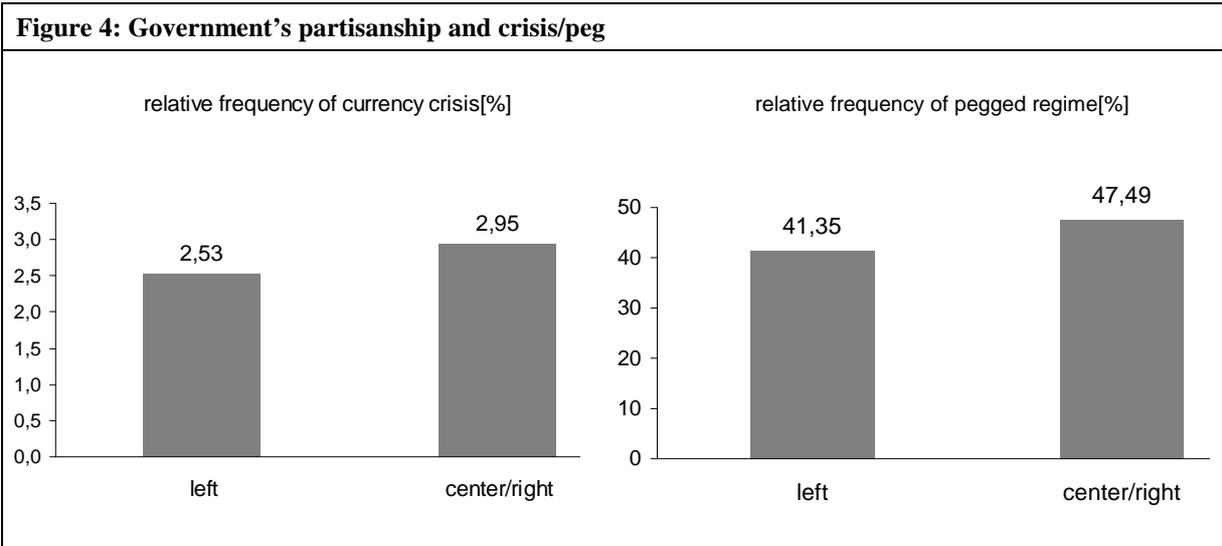
suggest political factors like elections or the partisanship of the government as being also determinants of the occurrence of speculative crises.

Regarding the electoral clock, the expected relationship seems to hold in our data as figure 3 suggests:



In the period surrounding elections, currency crises appear to be more likely confirming the assumption that elections are associated with greater uncertainty and thus volatility on the currency markets.

The distinction between left and center/right governments seems far less supported by the data used. Even though Figure 4 exhibits that left governments are less likely to both be hit by a currency crisis and to peg its currency, this evidence is far from certain.



Beside these two determinants, electoral clock, there are two more political variables considered in this paper: Given that all four countries have been shaken up by political unrest

since 1980, the question evolves whether the process democratization influenced the occurrence of currency crises. Moreover, I include the number of veto players –an approach that has occupied comparative politics- in the analysis.

3 Some theoretical considerations

The shift from one equilibrium to another even though a decisive point in the second generation currency crises models, have until recently not been put into question. One cause of this change considered has been a change in the credibility of policymakers leading to a speculative attack. From a political point of view, however, the credibility of the government is assumed to be influenced by electoral, ideological and institutional factors. The question whether political instability causes financial fragility or vice versa is crucial to the answer of this question. Chang (2003) has therefore developed a theoretical model combining political and financial crises to study their coherences in a formal model of debt. He highlights the asymmetric information between the government and its people in the simultaneous determination of the probability of political and currency crises. Whereas he focuses on the financial markets and its effects on the politics, I concentrate more on the opposed causal connection. The electoral timing is one point discussed in this context:

Nordhaus (1975), who coined the term of the political business cycle, argues that an incumbent government in attempting to be reelected will adopt political measures to win the elections. Therefore, in the run-up to an election there should be a lower unemployment rate when the short-run Phillips Curve relationship holds –that is, the adaptation of the inflation rate requires a certain period of time. To transmit his theory on financial crises, some considerations have to be made regarding the distributional effects of different exchange rate regimes. Simplifying, it is assumed that a pegged regime helps in lowering inflation while the unemployment situation is probably to worsen. A floating exchange rate is otherwise contributing to lower unemployment through the improvement of the competitiveness meanwhile the price stability has to be sacrificed at least partly. Following Nordhaus, it is therefore expected that after an election, the government will be more likely to sustain or introduce a peg in order to stabilize the economy meanwhile the pressure to be reelected seems ‘far away’. Alesina and Drazen (1991), for instance, developed a model of fiscal policy indicating that stabilization measures are likely to be delayed until after an election following the argumentation above. On the other hand, the new government could be forced to convince the market of its commitment to a tight monetary and fiscal discipline, implying a higher than normal probability of the continuance of the peg after an election. As Sachs et al. (1996) point

out, “governments that commit to a peg and then renege on the promise typically face costs- loss of pride, voter disapproval, maybe even removal from office- that need not be proportional to the size of the devaluation” (p.8).

Additionally, an effect of elections on the occurrence of currency crises through investors’ expectations appears reasonable. As electoral outcomes are rarely determined in the run-up, I expect that the probability of crises is higher in the pre-election period. On the other hand, in the period followed by the election, the skepticism on government’s identity should be the lowest. Therefore I expect the probability being lower than normal.

Reviewing the literature on this topic, there is a wide consensus that speculative behavior increases in the periods surrounding an election (see e.g. Frieden (1999), Leblang and Bernhard (2000b)) whereas Leblang (2002) only finds that the probability of crises increases after elections. Contrariwise, Eichengreen et al. (1995) find no evidence for the OECD countries. Regarding the abandonment of the exchange rate peg, numerous studies like Frieden (1999), Frieden et al. (2001) and Klein and Marion (1997) found that the devaluation is often until after the election - a result somewhat contradicting the theory of the political business cycle stated above.

The second question considered here is whether the partisanship of the executive has an impact on the exchange rate policy. The literature ongoing from Hibbs (1977) agrees that parties on the Left put more emphasis on employment and income distribution while the Right is more concerned with maintaining price stability. Henceforward I assume for simplicity, that a pegged exchange rate lowers inflation while it threatens the competitiveness and thus aggravates the unemployment situation. Therefore I assume that leftist governments are less likely to peg its currency than rightist ones⁴. One would additionally expect that under left governments the speculative behavior will rise given the lower commitment to defend the exchange rate. Yet, the empirical evidence is quiet mixed in this field: Other than Hibbs, who finds evidence for the preference of left governments for lower unemployment and higher inflation, the previous studies regarding currency markets are differ substantially. Whereas Leblang (2002) finds that speculative attacks are more likely under left-wing governments, Frieden’s (1999) results suggest that left governments are associated with more stable currency, a result consistent –albeit contrary to our theoretical considerations- with Leblang’s (2000) conclusion that right governments have a higher propensity to abandon a peg. Eichengreen and Leblang (2003) eventually find like Bernhard and Leblang (1999) no effect of the partisanship on the chosen exchange rate policy.

⁴ Even tough there is a wide controversy regarding the effects of fixed exchange rates on the income distribution and poverty.

A third approach to include political variables stems from the feasibility of government to enforce its political aims. In political sciences, veto player approaches have come to a central role in comparative politics, see e.g. Tsebelis (1999). A veto player is a political actor or institution that has an at least implicit power to veto federal political decisions. It is assumed that the higher the number of veto player, the higher the degree of political stability and the lower the political innovations. In the context of currency crises, we would therefore expect a negative impact on the probability of crises. Accordingly, Freeman et al. (2000) find some weak evidence confirming this assumption. MacIntyre (2001), on the other hand, argues that there might be a U-shaped relationship indicating that both too many and too few veto players increase the political risk for investors.

Another effect of the number of veto players is outlined in Keefer (2001). He finds that fiscal transfers in the cases of financial crises are lower, the higher the number of veto players. He states that the absence of multiple veto players often means that some groups in the society are not represented. Therefore, a government is more likely to grant “special interest favors” to specific actors. In the context of the choice of the exchange rate regime one could analogously conclude that fewer veto players are more likely to prefer a floating exchange rate given a) that they are able to invest in foreign currency thus excluding them personally from the exchange rate risk and b) that the country’s exporters constitute a strong lobby. Admittedly, this explanation appears to be somewhat *ad hoc*; nevertheless, it will be tested in the empirical part while the theoretical analysis will still be needed.

Besides, the level of democracy or autocracy is also put into analysis to test the argument that democracy rather than autocracy ensures better property rights and therefore leads to lower financial instability (as stated for instance in Kim (2003)).

4 The empirical model

4.1 The probit model

To find some empirical evidence for our theses stated above, we need to exercise an estimation of currency crises including the political variables discussed above. In order to distinguish between the reactions of governments on currency crises and the occurrence of market-driven speculative attacks, we use two dependent variables: the monetary regime and the occurrence of speculative attacks. To define these two variables, various approaches have been developed. In the case of the monetary regime, a discrete variable coded for each of the nine in Frankel (1999) proposed regime-types, could be an appropriate measure. However, in this particular context of currency crises, the decision of government to concede to the market

forces or to commit on a more fixed regime is the crucial point being probably determined through political variables. Hence, we define a binary variable taking the value of one for periods of the currency board in the case of Argentina, the “crawling peg” in the case of turkey and Mexico, and the fixed peg of the “Plano real” in Brazil. Even though a crawling peg is highly different from e.g. the currency board in Argentina, all these periods share the commitment of the government to sustain a chosen exchange rate (band) and to defend it.

On the other hand, defining a currency crisis is even more problematic. The widely used exchange market pressure index (EMP), as proposed by Eichengreen et al. (1995) can be seen as a proxy to detect currency crises being defended or not. It is calculated from the change in interest rates (relative to them of the U.S.), assuming that an increase in the interest rate could be used to defend one’s currency, the shift in reserves and the nominal exchange rate. The EMP is then calculated as a weighted average using the standard deviation as weight for each component to prevent one variable to swamp the others:

$$EMP = \frac{\Delta E}{\sigma_E} + \frac{\Delta(i - i_{US})}{\sigma_{(i-i_{US})}} + \frac{\Delta R}{\sigma_R} \quad (1)$$

Hence, a Currency crisis is detected if the EMP exceeds its mean by more than k standard deviations. The choice of k, however, is somewhat arbitrary. Meanwhile Kaminsky and Reinhart (1999) choose k=3⁵, various authors including Eichengreen et al. (1995) prefer k=2. In this paper we choose k=2 arbitrarily since the results do not vary when k=3 is used.

Therefore we have the 2 dependent variables *pegged* and *crisis*, which are both dichotomous. Hence, models for binary variables like probit or logit are suitable.

Due to a probable dependence of the two events I first adapted a bivariate probit model. In this model, both error terms are assumed to be bivariate normally distributed with the coefficient of correlation ρ allowing for interdependence of both events. However, the estimated coefficient of correlation between the two residuals was $-0,376$, but statistically not different from zero⁶. Therefore I concluded that the two events are not correlated⁷ and hence two separate probit-models can be estimated.

To develop the model to be estimated, we start from a simple linear model explaining the occurrence of a currency crisis and the pegged regime being in effect respectively.

⁵ Specifically, they omit the interest rate differences. In the data here explored, however, this does not change the dichotomous crisis-variable.

⁶ The LR-Test on the null that $\rho=0$ exhibits a p-value of 0.147, thus the independence of the two events is assumed.

⁷ Accordingly, the results of the bivariate Estimation differ only slightly from those of the separate probit estimations (see table 2 in the appendix)

The underlying model can be described as follows:

$$y = \beta'x + \delta'z + \varepsilon, \quad (2)$$

where x represents the economic explanatory variables and z the political ones. The dependent variable y takes the value one for a currency crisis/a pegged regime and zero otherwise. The crucial point of this study is the influence of the political variables and hence the vector δ . Its explanatory power and significance are therefore to be tested.

At first, however, the estimation technique has to be considered. Due to the dichotomous dependent variables the linear model as in (2) is not suitable in the case. Hence a logit or probit model has to be used. Here we chose the probit, even though the differences to the logit model are sparse.

In the probit model, we assume that the latent variable y^* be normally distributed with μ and σ^2 . The mean of y^* is specified as $E[y^*] = \beta'x + \delta'z$. The observed dependent variable y is then defined as

$$y_i = \begin{cases} 1, & \text{if } y_i^* > 0 \\ 0, & \text{if } y_i^* < 0 \end{cases}$$

With $p_i = P(y_i = 1 | x, z)$ as the probability of a crisis we get straightforward

$$E[y_i | x, z] = 1 \times p_i + 0 \times (1 - p_i) = p_i. \quad (3)$$

That is, we can take the fitted values \hat{y} as probabilities for the case that $y=1$ i.e. that a currency crisis occurs.

Combining (3) with the assumption of normal distribution we get

$$E[y_i | x, z] = P(y_i = 1) = \int_{-\infty}^{\beta'x_i + \delta'z_i} \varphi(t) dt = \Phi(\beta'x_i + \delta'z_i). \quad (4)$$

This model can be estimated using standard maximum likelihood estimation technique. The Log-Likelihood of the model described above is straightforward

$$\log L = \sum_{i=1}^n [y_i \cdot \log \Phi(\beta'x_i + \delta'z_i) + (1 - y_i) \log(1 - \Phi(\beta'x_i + \delta'z_i))] \quad (5)$$

and globally concave. Maximizing therefore leads directly to consistent and efficient estimates of the parameters. Different from the linear model, the estimated coefficients β and δ in this probit model can not be interpreted directly due to the non-linearity of the model. Therefore marginal effects are preferred to interpret the effects of the explanatory variables on the probability of the event. The marginal effects are calculated as the derivatives of $P(y=1)$ with respect to the corresponding independent variable x :

$$\frac{\partial E[y]}{\partial x} = \varphi(\beta'x + \delta'z)\beta \quad (6)$$

In general, they are calculated on the mean of the independent variables as so we do it here. If the exogenous variable is a dummy, marginal effects are obviously not suitable to catch its effect. Therefore the differences between $P(y=1|dummy=1)$ and $P(y=1|dummy=0)$ are calculated. They can be easily interpreted as the change in the probability of a crisis if the dummy switches from 0 to 1, that is e.g. that an election is held.

One problem especially for the analysis of the currency crisis occurrence is that there are only few months marked as "crisis" in the data. Of the 576 observations used only 19 are coded as "crisis"(3.3%) while in 45% of all observation a peg was in effect. As King and Zeng (1999) have shown, the standard logit model is biased in an unbalanced sample if its size is small. They propose a rare events logit model to correct for these shortcomings. However, several problems remain critical: First, this correction is only available in the logit model and the marginal effects can not be interpreted as described above. Second, many tests can not be exercised as in the standard model. Nevertheless I estimate the crisis model using the RE logit approach to check the signs and significances of the estimated parameters. The results are shown in table 1 in the appendix; however, the differences in terms of significance are not noteworthy. Henceforward, I will concentrate on the results of standard probit model.

4.2 Data used

Our sample includes monthly data of all four countries from January 1991 to September 2001. Due to data availability of the economic control variables, I had to exclude the years 1991-1993 in the case of Argentina. Therefore we have a totaling number of 572 observations.

The dependent variables are those described above. The variable *pegged* takes the value of one for the months 1:1994-12:2001 for Argentina, 7:1994-12:1998 for Brazil, 1:1991-11:1994 for Mexico and 11:1995-1:2001 for Turkey⁸, zero otherwise.

To control for the economic determinants, various economic variables are considered. Initially, I included the 16 variables used in Kaminsky and Reinhart (1999) accounting for internal and external fundamentals. Thereafter all variables that were significant in at least one equation were excluded so that a totaling 8 variables are used.

All data is taken from the 2004 International Financial Statistics and the national Central Banks' websites. The real exchange rate is JP Morgan's trade weighted index on against 16

⁸ The Turkish Lira was pegged to a currency basket consisting of 1\$ and 1.5 Deutsche Mark in November 1995 allowing the Bank of Republic of Turkey to devalue in line with the wholesale price index (WPI). On January 1st of 2000, however, it moved to a pre-announced crawling peg implying an annual devaluation of 20%. Both regimes are here coded as one to distinguish them from the prior and afterward floating regime.

major currencies⁹. All data are monthly reported except the GDP. To obtain monthly values, I used the quarterly data available (IFS line 99B.P). However, they are not available seasonally adjusted for the emerging countries studied here, so I first adjusted them by the X11-Census method. Then, monthly values are computed as quadratic-sum interpolated values. All variables except GDP are calculated as monthly changes in order to make them comparable among the 4 countries¹⁰. In the equation for the occurrence of currency crises, all variables are lagged for one month to avoid problems of simultaneity. In every model estimated, there were additional country dummy variables and an intercept included that are not reported here.

The political variables considered are all taken from two databases: The Database of Political Institutions (DPI) that is assembled by the World Bank and the Polity IV Project database housed at the Center for International Development and Conflict Management at the University of Maryland. Both data sources include a large set of countries and periods covered (Polity IV includes all independent countries with more than 500.000 inhabitants spanning from 1800 to 2002 meanwhile the DPI contains more than 100 variables of 150 countries spanning from 1975 until 2000). They are therefore appropriate particularly for large multi-country samples. However, they comprise several shortcomings: First, there are only yearly data available, that is, changes during one specific year can not be accounted easily to the month the variation took place. A second though less severe problem lies in the restriction of data availability as far as the year 2000 by now.

To manage the problems mentioned, I first sought the recent election dates using various sources accounting for the different political systems (using the timing of the presidential elections in the presidential systems of the Latin American countries meanwhile in the case of turkey the legislative elections were considered as decisive). In order to obtain monthly data, I identified elections, presidential or federal ones, as the points in time where the variables switch between this and next year's values. To solve the second problem, I tried to calculate the values for the period 2001-2003 using the manuals of the databases¹¹.

The particular variables that are included are the following

⁹ available from www2.jpmorgan.com/MarketDataInd/Forex/currIndex.html

¹⁰ Due to the small sample of only countries, advanced panel estimation methods are not suitable. Therefore, I am unable to include country specific fixed effects. Another reason for using the monthly changes (i.e. first differences) stems from the fact that I did not check the data for probable cointegration relations. A natural extension of this study could therefore be larger multi-country sample permitting more sophisticated panel and time series estimation methods to be used.

¹¹ Nevertheless, there remain several uncertainties due to the complex definitions of especially the *checks* variable. To see whether this may cause concern, I restricted the sample to 12:2000 and excluded Argentina (where the crisis occurred afterwards) and compared the results with those of the full sample. Since the signs of the coefficients are identical, I proceed in using the full sample.

checks: This variable is reported in the DPI labeled checks2. It counts the number of independent veto players in one country, as determined by the level of electoral competitiveness in a system and the electoral outcomes.

left: This dichotomous variable equally comes from the DPI, taking the value of one for a leftist government and zero for centrist or right-wing governments.¹²

before_el: Coded as one in the month of an election and the prior 6 months, zero otherwise¹³

after_el: coded as one in the six months after an election, zero otherwise

polity: This is the main variable in the Polity IV database. It measures the degree of democracy and autocracy. It takes values between -10 and +10 with a +10 indicating the strongest democracy.

Table 1 exhibits the descriptive statistics of all variables included.

Table 1: Descriptive Statistics (N=572)					
Variable	Description	Mean	Std. Dev.	Min	Max
crisis	see text	0,033	0,79	0	1
pegged	see text	0,451	0,98	0	1
rer	Real Exchange Rate, monthly change[%]	0,13	4,43	-24,36	39,53
infl	Inflation, 12 month change of CPI	122,22	402,76	-2,30	3742,25
m2_res	M2/non-gold Reserves, monthly change[%]	0,11	9,69	-53,32	52,77
deficit	Public overall balance as % of GDP	-0,86	1,12	-8,12	4,66
NE	Balance of trade (Ex-Im) as % of GDP	-1,47	2,45	-7,18	6,02
GDP	12 months' change of real GDP	0,24	0,96	-7,63	4,84
ToT	Terms of Trade, monthly change[%]	0,79	13,48	-66,74	157,70
domcred	domestic credit as % of GDP	16,05	14,57	1,25	57,39
polity	taken from Polity IV	6,79	2,27	0	9
before_el	0-6 months before election	0,15	0,35	0	1
after_el	1-6 months after election	0,13	0,37	0	1
left	left=1, 0 otherwise; taken from DPI	0,41	0,43	0	1
checks	taken from DPI	3,43	1,11	2	6

¹² The difficulties arising from the location of a specific cabinet or president on the political spectrum and the methods used to obtain the left variable is in-depth discussed in Beck et.al. (2001).

¹³ Other studies like Leblang (2000) choose as the Election Campaign and Post-electoral period only 3 months. I also tried this shorter period and found that the results do not vary substantially.

4.3 Results

The estimated marginal effects for the model of the currency crisis are shown in table 2:

Table 2: Currency Crisis occurred (1/0)				
	marg. effects	Prob.	marg. effects	Prob.
rer ₋₁	-0,000179***	0,000	-0,000841***	0,000
infl ₋₁	0,000001***	0,000	0,000006***	0,005
m2_res ₋₁	0,000010	0,409	0,000042	0,459
deficit ₋₁	0,000489**	0,014	0,001891***	0,010
NE ₋₁	-0,000220	0,344	-0,000115	0,891
GDP ₋₁	-0,000162	0,217	-0,001106*	0,075
ToT ₋₁	0,000022**	0,026	0,0001***	0,008
domcred ₋₁	0,000231*	0,085	0,000443	0,347
polity	0,000569***	0,000		
before_el	-0,000278	0,296		
after_el	-0,000576**	0,022		
left	-0,003333	0,227		
checks	-0,00029**	0,032		
McFadden's R ²	0,481		0,429	
log L	-43,20		-47,54	
LR-test	8,68	0,123		
Theil's U index	0,53		0,59	
Standard Errors are White/Huber/sandwich corrected, N=568 obs.				

Concentrating firstly on the currency crisis equation, the signs of the economic variables mainly behave as expected. Interestingly, both an improvement of the terms of trade and correspondingly a real devaluation raise the probability of a crisis to occur. I associate this surprising result with the fact that a financial crises as defined by the EMP codes three or four consecutive months as “crisis” so that the nominal devaluation itself “explains” the crisis even a month after. As expected, higher inflation has a significant effect on the occurrence of crises as has the domestic credit. The explanation behind the latter is that the rising level of domestic credit augments the domestic money possibly being converted into foreign currencies and thus accelerating the collapse of the exchange market. Another surprising result is the positive and strong significant effect of the public deficit. The interpretation of the marginal effect would be that an increase in the public deficit by 1% of the GDP augments the probability of a financial crisis in the next month by 0.05%. This result arises also from the consecutive crises in the data leading to simultaneous interrelationships¹⁴. Thus, if I include 6 lags of the *deficit* variable, all lags from the second on bear negative signs as expected.

¹⁴ The simultaneity problem stems from a) the frequency of the data (the month of crisis comprises both before crisis characteristics and also the effect of the devaluation) and b) the facts that crises are determined using th

Regarding the political variables, the results are quiet mixed: Currency crises appear to be less likely both before and after elections¹⁵. This result contradicts most of the previously cited literature in confirming my conjecture of the crises probability being the lowest after an election given that in this certain period the stability of the government should be the highest. Due to the particular situation in turkey where government's identity has not been mainly determined by elections, I excluded it from the estimation. Nevertheless, the results do not differ significantly from those presented above.

The partisanship variable appears to be not significant, while being negative and relatively large, thus rejecting the hypothesis that left government are more likely to be confronted with speculative attacks. If Mexico is dropped out (given the hegemony of the leftist PRI that controlled the elections until 2000), the value increases to -0.07 being significant at the 1% level thus indicating that contrariwise left governments are less likely to face a crisis.

Furthermore, we find that the number of veto players has a negative impact confirming that political stability through more political influential actors reduces the probability of a currency crisis. Additionally, the data implies that better democracies are more probable to be exposed to financial turmoil, a result militating against our presumption. Considering the countries included suggests that it might be the result of the recent democratization process that led to the evolvement of formally well democratic regimes. These young emerging democracies are highly vulnerable and could therefore be over-proportionally affected by currency crises (a result in line with Faust (2003)).

Generally, the size of the marginal effects appears exceptionally small, a fact that stems from the unbalanced dependent variable and therefore is as expected. Comparing both the full model and the model without political determinants, we find an improvement on the basis of several measures: First, the Pseudo- R^2 increases from 0.43 to 0.48. Second, Theil's index of inequality U , that measures the power of prediction of the model, decreases from 0.59 to 0.53¹⁶. To test the improvement formally, a likelihood ratio test is performed. The

EMP allowing several succeeding months being coded as crisis. However, in the previous studies, there has been put little attention on this issue as so I do it here.

¹⁵ Even though the coefficient of *before_el* is not significant in the base line model, it is so in the bivariate probit estimation at the 5% level. This result seems remarkable in contradicting intuition and earlier studies, however, in this small sample it might be contributed to the data. On the other hand, the coefficient of *after_el* is not significant in the rare events logit model, thus indicating the importance of the econometric specification used. I therefore draw not that much attention on these results.

¹⁶ Theils U compares the dependent variable y and the predicted outcomes \hat{y} –I assumed 0.5 to be the treshold

value for \hat{y} to be coded as one- and is computed as
$$U = \sqrt{\frac{1}{n} \sum (y_i - \hat{y}_i)^2} / \left(\sqrt{\frac{1}{n} \sum y_i^2} + \sqrt{\frac{1}{n} \sum \hat{y}_i^2} \right),$$

taking values between 0 and 1 with 0 meaning „perfect prediction“ and 1 as the highest degree of inequality between both time series.

corresponding probability of the Chi-squared distribution of 0.123 indicates that the inclusion of the political variables does not improve the model significantly. However, when I exclude the variables that are not significant at the 10% level, the probability of the LR-test is only 0.089 thus indicating an explanatory power of the political variables considered.

Table 3 exhibits the estimated results for the second dependent variable, *pegged*.

Table 3: Pegged Regime in effect (1/0)				
	marg. effects	Prob.	marg. effects	Prob.
rer ₁	0,007884**	0,027	0,014835*	0,100
infl	0,000253***	0,000	0,000166***	0,005
m2_res	0,0064***	0,004	0,005867**	0,041
deficit	-0,013651	0,444	0,021755	0,368
NE	-0,140384***	0,002	-0,103786	0,123
NE ₁	-0,077514**	0,042	-0,130785*	0,064
GDP	0,009540	0,565	0,026465	0,386
ToT	-0,000399	0,595	-0,000424	0,815
domcred	0,025474***	0,000	0,040022***	0,000
polity	-0,346769***	0,000		
before_el	-0,002725	0,959		
after_el	0,180046**	0,030		
left	-0,484412**	0,049		
checks	0,527993***	0,000		
McFadden's R ²	0,845		0,340	
log L	-60,67		-258,10	
LR-test	394,86	0,000		
Theil's U index	0,16		0,39	
Standard Errors are White/Huber/sandwich corrected, N=568 obs.				

The coefficients of the economic variables are as expected except for the inflation rate. Meanwhile the inflation rate is supposed to be lower under a pegged regime, its marginal effect is positive. This fact may be contributed to two effects: On the one hand, Turkey devalued the Lira during the crawling peg in line with the WPI leading to inflation rates up to 90%, meanwhile in the Latin-American countries the inflation came down not until few years after the implementation of the system. On the other hand, there have been great efforts in all four countries on stabilization issues during the last years hence guaranteeing price stability even with a floating exchange rate regime.

The remaining variables are as expected: pegged regimes are more likely when a real appreciation occurs, the foreign exchange reserves are lower and the trade balance is worse than normal.

Looking on the political variables, there seems to be a very strong influence in terms of both magnitude and significance: Firstly, pegged exchange rate regimes are more probable in the period after an election than normal or before it. Hence, the political business cycle theory seems to hold in this context as well. As stated above, this effect could nevertheless also come from the credibility a government is trying to obtain after being elected. However, these results are somewhat contrary to the previous studies in this field, which argue that devaluations are more likely after elections. One reason for this discrepancy may result from the different variables used in the analysis and the different country samples¹⁷.

Regarding the partisanship variable we find that left governments reduce the probability of having a pegged regime by 48%! Consistently with Hibbs (1977) theory we conclude that left governments are more concerned with lowering unemployment than fighting inflation.

Likewise, the *checks* coefficient turns out to be highly significant and positive. The more veto players there are, the likelier is an exchange rate peg to be in effect. This finding complies with our stated hypothesis that lobby groups such as exporters can easier influence politics favoring special interests when there are fewer powerful political actors. Nevertheless, there might be several different explanations to this stylized fact to be analyzed theoretically. An additional interesting finding lies in the *polity* variable. More democratic regimes seem to be more inclined to floating exchange rate regimes than their more autocratic counterparts. From a political economic view, this could stand for the median voter's (and hence the majority's) preference for flexible exchange rates and its consequences.

In the case of the pegged regime equation, the weight of the political determinants is even more striking than in the *crisis* case: The LR-statistic takes the value of 394.86 (Prob. 0.000), thus rejecting the null that the political variables have no explanatory power at any given level. McFadden's R^2 increases from 0.34 to 0.85 while Theil's U decreases by 0.23 when these variables are taken into account. Hence, the decision of a government to peg its currency appears to be largely determined by the political and institutional environment.

5 Concluding remarks

This paper argues that political factors play a crucial role in explaining the occurrence of currency crises and the chosen exchange rate policy. We confirm the assumption that left

¹⁷ Additionally, I tried to capture the effect of elections in combination with electoral dates. The only significant effect was that of the *after_el* variable only coded as one when a left government had won the election. In this case, the probability of a peg was estimated to be 18,7% lower than normal (p-value: 0.000). Hence, the positive coefficient of *after_el* could also be caused by difference in the balance of the elections analyzed (In my sample there is only a slight overweight of right-won elections of 57% to 43%).

governments are more concerned about unemployment while the findings on the impact of the electoral timing are somewhat contrary to the previous work in this field: Currency crises in our data occur less likely after an election while the propensity to peg is significantly higher in the selected period. Furthermore, we discover that the higher the number of veto players, the lower is the probability of currency crises while the pegged regime becomes more probable. In this context, however, some theoretical considerations have to be done in order to explain this relationship more detailed.

Summarizing the previous work on this topics, there are several well supported findings on the one hand and many remaining shortcomings on the other. One weakness is the measurement of political variables: On the one hand, we have easily observable ones like the partisanship variable, the ones of the political system (*polity* and *checks*) and others, used in various cross-sectional studies (like the distinction between presidential and parliamentary systems, voter information, and majoritarian/proportional electoral system). On the other hand there are ‘soft’ variables like electoral expectations, political uncertainty, government approval rates¹⁸ or the probability of cabinet dissolution that are likely to come to the knowledge of the incumbent government as well as to investors’.

Among the previous studies in this field are Buscaglia (2003) who described the situation that preceded the 2001 crisis in Argentina being highly influenced by a declining image of the then president. Freeman et al. (2000) rely on an ‘electoral-option’ model taken from Alesina, Roubini and Cohen (1997) and a time-hazard model of cabinet dissolution to integrate those factors. They also include a measure for the “political entropy” – a concept used to capture the inherent political uncertainty¹⁹. These variables should capture the expectations on future governments’ decisions better than does just the electoral clock and the actual partisanship. Hence, I expect them to be of clearly better explanatory power albeit the difficulties in data collection.

A further natural extension of this study would be to include a larger sample of countries. Additionally, more sophisticated econometric methods could be applied comprising the integration of the political variables into the more recently developed switching models based on second generation models. Given the evidence found on the influence of political factors, it

¹⁸ some empirical intuition might be drawn from Figure 1 in the appendix

¹⁹ To include these variables, outcomes of public opinion polls have to be available. Even though there is no worldwide database combining them, they could be obtained from several sources: One main provider of this data is Gallup, others include national Newspapers like La Nación for the case of Argentina, or independent institutes like NuevaMayoría.com for Latin America, from where periodical data is available. A compilation of various resources is provided by the University of Miami Libraries (www.library.miami.edu/netguides/socopin.html).

seems promising to analyze this relationship both theoretically and empirically on a broader basis.

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<http://cdp.binghamton.edu/era/>

<http://encyclopedia.thefreedictionary.com>

<http://psephos.adam-carr.net>

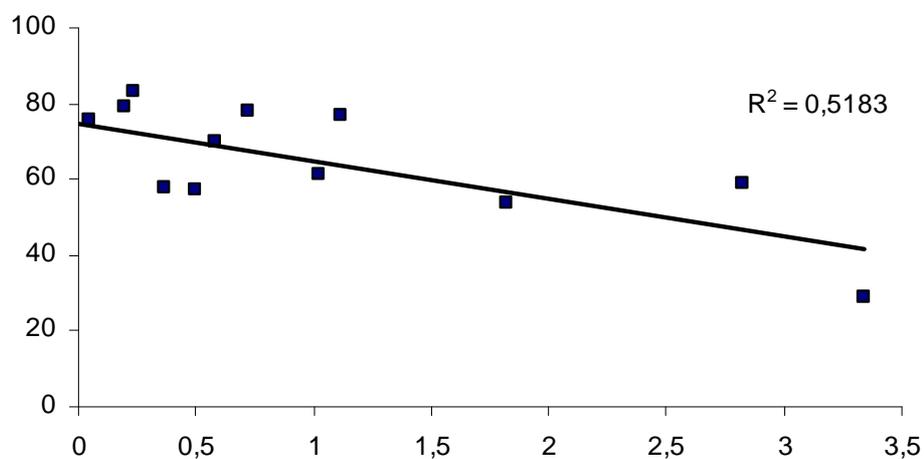
<http://www.electionresources.org>

<http://www.parties-and-elections.de>

7 Appendix

App. Table 1: Rare Events Logit: Currency Crisis(1/0)				
	coefficient	p-value	coefficient	p-value
rer ₋₁	-0,201**	0,045	-0,234***	0,008
infl ₋₁	0,001***	0,003	0,0020	0,124
m2_res ₋₁	0,0120	0,498	0,0130	0,502
deficit ₋₁	0,6960	0,171	0,664**	0,033
NE ₋₁	-0,2430	0,773	-0,0920	0,825
GDP ₋₁	-0,35*	0,087	-0,489**	0,028
ToT ₋₁	0,03*	0,090	0,039*	0,063
domcred ₋₁	0,2960	0,657	0,2030	0,577
polity	0,615**	0,014		
before_el	-0,2700	0,714		
after_el	-1,4380	0,171		
left	-3,0490	0,705		
checks	-0,2990	0,457		

App. Figure 1: Presidential approval rates and the EMP



source: The approval rates are from NuevaMayoría.com, included are the years 2002 and 2003 for Brazil and Mexico (only those months are plotted where opinion poll data were available). The EMP is the exchange market pressure index computed as described in chapter 4.

App. Table 2: The bivariate probit model

expl. Variable	Pegged Regime (1/0)				Currency Crisis occurred (1/0)			
	coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value
rer ⁻¹	0,064**	0,020	0,075***	0,003	-0,274***	0,000	-0,266***	0,000
infl	-0,011*	0,060	-0,006***	0,002	0,0030	0,776	-0,0010	0,393
infl ₋₁	0,015**	0,027	0,007***	0,001	-0,0020	0,847	0,0020	0,143
m2_res	0,052***	0,000	0,0090	0,199	-0,08***	0,000	-0,077***	0,000
m2_res ₋₁	0,022**	0,050	0,0010	0,895	0,0140	0,252	0,0140	0,232
deficit	-0,2230	0,135	0,0090	0,894	-0,0690	0,683	-0,0600	0,666
deficit ₋₁	0,532***	0,006	0,0590	0,467	0,525**	0,014	0,484**	0,019
NE1	-1,246***	0,001	-0,344*	0,067	0,3170	0,269	0,448*	0,098
NE ₋₁	-0,658**	0,038	-0,503***	0,010	-0,1080	0,701	-0,1480	0,549
gdp	-0,0630	0,686	0,0950	0,335	-0,2490	0,123	-0,267*	0,084
gdp ₋₁	0,2410	0,115	0,0540	0,492	0,1390	0,434	0,0700	0,703
tot	0,0010	0,839	0,0050	0,400	0,0150	0,279	0,0140	0,222
tot ₋₁	-0,0040	0,575	0,0060	0,240	0,027*	0,082	0,027***	0,007
domcred	0,491*	0,070	0,98***	0,000	-1,262***	0,001	-1,237***	0,000
domcred ₋₁	-0,2550	0,313	-0,858***	0,000	1,38***	0,000	1,295***	0,000
polity	-2,783***	0,000			0,1290	0,394		
checks	4,321***	0,000			-0,496**	0,027		
left	-1,177	0,204			-1,900	0,106		
before_el	-0,0720	0,848			-0,661**	0,045		
after_el	0,961**	0,023			-0,5120	0,184		
Rho ρ	-0,365	0,371	-0,157	0,548				