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CHOICE OF AN EXCHANGE-RATE ARRANGEMENT, INSTITUTIONAL SETTING AND INFLATION: EMPIRICAL EVIDENCE FROM LATIN AMERICA

by

Andreas Freytag

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PREFACE

Virulent and contagious financial crises have hit diverse developing countries repeatedly over the past decade. The recurrence of crises has redefined policy choices and trade-offs in a world of intense capital mobility. “Corner Solutions”, either moves towards purely floating regimes or hard pegs such as dollarisation or currency boards, became the flavour of the day in prescriptions if not in practice. Moreover, the introduction of the euro may have led to a period of higher fluctuations between the key currencies, dollar, euro and yen, ensuring risks of destabilising trade-weighted exchange rates in many countries facing several different export markets. Hence the quest for regional monetary integration, as a means to earn credibility in world financial markets and therefore to promote a sustained convergence of living standards.

Andreas Freytag from the University of Cologne analyses hard pegs as a policy option for open economies conditional on a country’s institutional and regulatory prerequisites and on their degree of endogeneity with respect to the exchange-rate regime. While hard pegs can be viewed as a commitment device, tying the hands of monetary authorities, its credibility may be severely limited by underlying institutional and political weaknesses. The author produces an empirical analysis in which he specifies exchange-rate regimes and institutions in Latin America from 1975 to the late 1990s. The results show that the exchange-rate regime and the institutional setting have to be compatible to increase the exchange-rate regime’s credibility and to help with achieving stability.

The research is part of the OECD Development Centre 2001-02 programme “Governing Finance and Enterprises: Global, Regional and National”.

Jorge Braga de Macedo
President
OECD Development Centre
8 October 2002

RÉSUMÉ

La crise macro-économique en Argentine a rendu plus vif encore le débat sur le régime de change le plus approprié pour garantir la stabilité, à savoir les taux fixes ou le change flottant ? Ce Document technique développe l'idée selon laquelle évaluer les conditions préalables à la stabilité dans un environnement international uniquement à partir de la politique de change est source d'erreur. En effet, le cadre institutionnel doit être compatible avec le régime de change pour que ce dernier soit crédible et renforce la stabilité. Les pays d'Amérique latine sont autant de tests empiriques de cette hypothèse.

Le régime de change et le cadre institutionnel vont de pair pour constituer une approximation *ex ante* de la crédibilité de l'accord de change. Les auteurs commencent par rappeler les systèmes de change et les institutions en vigueur en Amérique latine de 1975 jusqu'à la fin des années 90. Ils proposent ensuite une évaluation empirique de leur hypothèse, puis examinent en détail le cas de l'Argentine et terminent par des conclusions opérationnelles.

SUMMARY

The debate about whether fixed or flexible exchange-rate regimes are better suited to guaranteeing stability has received added stimulus from the macroeconomic crisis in Argentina. This paper argues that it is misleading solely to concentrate on exchange-rate policy to assess the preconditions for stability in an international surrounding. Instead, the exchange-rate regime and the institutional setting have to be compatible to increase the former's credibility and to contribute to stability. This hypothesis is empirically tested for Latin American countries.

The exchange-rate regime and the institutional setting are linked to form an *ex ante* proxy for the credibility of the exchange-rate arrangement. We specify the exchange-rate regimes and institutions in Latin America from 1975 to the late 1990s prior to an empirical assessment of the hypothesis. Finally, the Argentine case is discussed specifically. Policy conclusions round off the paper.

I. INTRODUCTION

Exchange-rate[1] policy in Latin America has regularly been subject to change in the post-war era. The last countries to introduce a new regime were Ecuador that officially dollarised in 2000, Argentina doing just the opposite by abandoning the currency board arrangement in January 2002 and Venezuela planning to give up the peg in February 2002. As monetary policy is regularly subject to time consistency problems, the role of exchange-rate regimes as commitment mechanism has always been analysed and controversially discussed in the literature. Fischer (2001) argues that there is a tendency to extreme exchange-rate arrangements — either totally flexible or hard peg. On aggregate, this tendency cannot be denied: until the mid-1990s, fixed or pegged exchange rates were considered to be adequate in helping to solve monetary problems in developing countries. Under the shock of the currency crises in East Asia, Latin America and Russia respectively, an increasing number of observers began to argue in favour of more flexibility. Eichengreen *et al.* (1998) search for exit strategies from exchange-rate pegs. However, Calvo and Reinhart (2000) show empirically that true or textbook floating is hardly observable — managed floating seems to be the rule rather than the exception. This observation is analysed theoretically by Bofinger and Wollmershäuser (2001), and justified by Braga de Macedo, Cohen and Reisen (2001*a*), using the ERM as example. Kuttner and Posen (2001) depart from here and argue that the bipolar (fixed versus flexible) view is incorrect as it does not consider other aspects of monetary policy. Thus, they include monetary targets and central bank autonomy into the analysis.

This paper argues that even this is not sufficient and adds in institutional aspects to the analysis of the impact of exchange-rate arrangements on inflation. The view that institutions matter has been increasingly taken in the literature. Calvo (2000) shows that the inclusion of institutions supporting the exchange-rate mechanism such as the financial sector dramatically changes the choice of an optimal exchange-rate arrangement. Eichengreen *et al.* (1998) theoretically analyse the institutional setting that makes different exchange-rate arrangements an optimal choice. Keefer and Stasavage (2000 and 2001) give empirical evidence for the hypothesis that central bank independence (CBI) and exchange-rate policy respectively are prerequisites for low inflation only if an appropriate system of political checks and balances exists. This argument has already been implicitly put forward by McCallum (1997). Freytag (2002*b*) analyses monetary reforms in the 20th century and shows that beside the degree of monetary commitment institutions play a major role for success and failure of a monetary reform. In a second study, Freytag (2002*a*) gives evidence that the credibility of exchange-rate arrangements in Central and Eastern Europe is positively dependent on their compatibility with the institutional settings in these countries.

We follow a similar approach. Our starting point is the assignment problem in economic policy making (Tinbergen, 1952). For each policy target, governments need at least one instrument and one agency. In particular, macro policies such as monetary policy, fiscal policy, as well as labour market policy, require individual policy instruments. Otherwise, there are strong incentives for abusing monetary policy for other macroeconomic objectives. In other words, monetary policy (and exchange-rate arrangements) has to be compatible with other elements of the economic order. Only then, according to our hypothesis, the incentives for policy makers allow for low inflation. This hypothesis will be tested for Latin America since it not only offers a variety of different exchange-rate regimes, but also a number of very different institutional arrangements. We proceed as follows: in the second section the theoretical framework will be discussed. We introduce the basic model, before we analyse potential commitment mechanisms and ways to measure them. The third section is dedicated to the data. We use three different datasets to derive as much evidence for our hypothesis as possible. The first set focuses on monetary regimes and their success (Kuttner and Posen, 2001). The second dataset shows the exchange-rate regimes in Latin America on a quinquennial basis, which generates more data. The third dataset refers to the analysis of currency reforms (Freytag, 2002*b*) and is applied mainly to control the results of the former. The empirical results are discussed in section IV. In section V, we briefly discuss a case study, namely Argentina in the last two decades. Policy conclusions are drawn in the final section.

II. THE THEORETICAL FRAMEWORK: EXCHANGE-RATE ARRANGEMENTS AND INSTITUTIONS

II.1. The Basic Model

As inflation regularly stems from the fact that the economic policy assignment does not work, the problem at hand requires the standard framework of a utility maximising policy maker acting under political constraints (Barro, 1983). The reasons for high and/or volatile inflation rates are the government's need for revenues (Bernholz, 1995, pp. 263*f*) as well as problems in the labour market. Therefore, it seems attractive for the government to increase the money supply. It tries to issue enough money to either maximise the amount of seigniorage *S* or to increase employment above its natural level. Thus, the utility function of the government is as follows:

(1) $U = U(S, N, \pi ...)$,

where *S* represents seigniorage, N is employment and π stands for inflation. Utility depends positively on *S* and *N*, and negatively on inflation. The government takes the expected inflation rate as given.

Many Latin American countries have suffered from high inflation due to their reliance on seigniorage. Applying the general form (1) to the case of seigniorage being the main motive for inflation, leads to the following utility function: $U = \delta L(\pi^e) - \varphi(\pi) \rightarrow \max_{\pi}$, where $L(\pi^e)$ stands for money demand (with $dL/d\pi < 0$), $\pi L(\pi^e)$ represents seigniorage (Cagan, 1956) and $\varphi(\pi)$ reflects the costs of inflation (with $d\varphi/d\pi > 0$). The weight the government places on seigniorage is denoted by δ with $\delta \geq 0$. After replacing π^e by π, utility maximisation yields the following first-order condition:

(2) $\varphi'(\pi)/\delta = L(\pi) + \pi L'(\pi)$ with

(3) $\pi^* = \dfrac{\varphi'(\pi)/\delta - L(\pi)}{L'(\pi)} > 0$.

The optimal inflation rate π^* is not time consistent, since $dU/d\pi$, evaluated at π^*, is positive. Therefore, it makes sense to introduce a commitment mechanism to increase the costs of inflation $\varphi(\pi)$ and to reduce the politically optimal level of inflation. The commitment mechanism is defined as the choice of a set of rules (Brennan and Buchanan, 1981, p. 65, McCallum, 1997), in this particular case rules about exchange-rate policy.

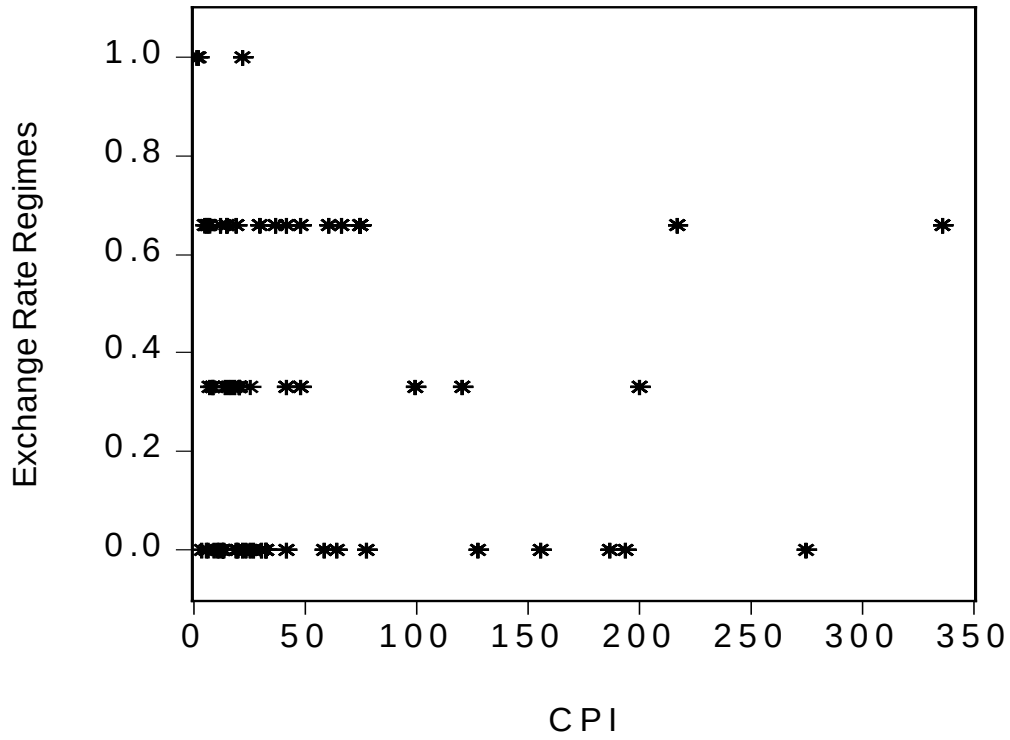
II.2. Commitment Mechanisms to Solve the Time Inconsistency Problem

By using the exchange rate as a nominal anchor, countries in Latin America have regularly tried to reduce inflation. An exchange-rate peg allows the raising of the costs of inflation and hence import stability. To measure exchange-rate policy and to assign a certain degree of commitment to it, one has to categorise exchange-rate regimes.

Following the IMF categorising, one can distinguish eight different types of exchange-rate arrangement, namely dollarisation, currency board, conventional pegged arrangement, pegged exchange rate within horizontal bands, crawling peg, crawling band, managed floating and independent floating. Kuttner and Posen (2001) distinguish four types of regimes: currency board arrangement, hard peg, target zones and free float. In Figure 1, they are assigned the codings 1, 0.66, 0.33 and 0.00 respectively (see also Table III.1). Nevertheless, there is no unambiguous empirical evidence showing that hard pegs are significantly positively correlated with low inflation. Other exchange-rate regimes are also correlated with both high and low rates of inflation.

The loose relationship between exchange-rate policy and inflation can be traced back to two explanations. First, exchange-rate arrangements do not define a commitment mechanism comprehensively. Instead the appropriate proxy for monetary commitment is the concept of central bank independence (CBI). However, conventional measures of CBI are not highly correlated with stability in developing countries[2]. This can be partly explained by the fact that these measures totally neglect external relations; neither the exchange rate nor convertibility restrictions are covered by these. Therefore, it makes sense to use a more comprehensive measure (see below).

Figure 1. **The Correlation of Exchange-Rate Regimes and Inflation in Latin America**
(62 observations)



Note: Exchange-rate regimes and CPI following Kuttner and Posen (2001). For codings see Table III.1.

A second explanation for the weak correlation between inflation and legal commitment in general and exchange-rate policy in particular is the neglect of other factors. There might be economic policy constraints, which do not allow the monetary commitment to become credible. To give an example: in a country with perfect unionisation and collective bilateral wage negotiations, the government introduces a currency board system (CBS) to reduce the annual inflation rate from 200 per cent close to zero inflation. Now presume that the negotiators do not consider the case of zero inflation while bargaining. This will cause unemployment to rise heavily unless the government inflates moderately, which is impossible under a CBS. It then has the choice to follow a sustainable monetary policy (with rising unemployment) or to give up the currency board (with declining credibility). Taking the labour market regime into account from the beginning, would certainly lead to the introduction of a different exchange-rate regime. To generalise, since commitment is always a *de jure* promise, it should not be confused with credibility. In other words, credibility cannot be imported via exchange-rate fix, but has to be earned in the context of economic order (Braga de Macedo, Cohen and Reisen, 2001*a*).

There is a growing concern for the role of institutions in monetary policy (e.g. Keefer and Stasavage, 2001). Consequently, a comprehensive analysis adds in the institutional setting in a country, consisting of formal and informal as well as politically created (economic order) and spontaneously evolved institutions. The theoretical argument for including institutions into the analysis is that they are constraints for governmental behaviour. International capital mobility and open markets, for instance, constitute competitive factors for the government as much as far the citizens, in particular domestic investors, have the alternative of investing at home or buying domestic goods. A lack of price stability will make these alternatives more attractive.

The difficulty is to model the institutional setting. In the econometric assessment, we use an adjusted version of a comprehensive index, the index of economic freedom (Gwartney *et al.*, 2001, p. 7). The theoretical argument for using this index as a constraint to inflation prone policy makers is that a high degree of (*de facto*) economic freedom increases the number of options for the public. The competitive pressure on domestic policy makers to provide stable money rises. On the same token, a lack of economic freedom weakens political constraints for governments and makes them prone to inflation, e.g. prior to general elections. Thus, the expected influence of economic freedom on inflation is negative. An alternative is to use the index of political freedom (Freedom House, 2001). However, this index is theoretically less correlated with economic policy making than the index of economic freedom. Both measures have certain disadvantages, as they have not been calculated explicitly for the study of exchange-rate policy and institutions. Alternatively, the institutional setting could be characterised by several institutional factors (Freytag, 2002*b*). However, as we distinguish a number of periods in Latin America, we are unable to generate the data for all potential observations in the sample (see below).

Finally, we model the *ex ante* relationship between *de jure* commitment and *de facto* institutions by calculating the costs of inflation as a function of the difference between the degree of commitment and the index of economic freedom. The result is an *ex ante* proxy for credibility (Freytag 2002*b*, Chapter 4). The economic intuition behind

this proxy is that the public — having rational expectations — judges the credibility of an exchange-rate regime. The political costs are the higher, the smaller the difference. In other words: a high degree of commitment is likely to stabilise expectations if it is accompanied by a high degree of economic freedom.

From the theoretical analysis we derive two hypotheses, which will be tested empirically in section IV:

1) Inflation in Latin America is lower, the more the government commits itself through an exchange-rate arrangement and central bank autonomy, and the higher economic freedom is in the country.

2) Inflation is lower, the more the exchange-rate mechanism and the degree of economic freedom are compatible. This makes the exchange-rate arrangement credible and creates high political costs of inflation.

III. CONSTRUCTION OF THE DATA

These hypotheses will be tested using three different datasets, two of which have already been used in the literature, whereas the third one (reference years, see sub-section III.2 below) is created exclusively for this study. The purpose of using three completely different sets is to assess the hypotheses as comprehensively as possible and thus to strengthen the general argument of the paper further. In this section, the data is introduced.

III.1. The Regime-Wise Dataset

This dataset constructed by Kuttner and Posen (2001) consists of 191 monetary regimes between 1973 and 1999 in 41 countries, of which 62 regimes are Latin American. Every regime shift creates a new observation. The minimum duration of a monetary regime is 12 months. A monetary regime has three legal features: exchange-rate regime (*ERR*), central bank autonomy (*CBA*) and policy targets (*Target*).

It is important to emphasise that these elements are publicly announced, i.e. *de jure* regimes, degrees of autonomy and targets. As mentioned above, Kuttner and Posen (2001) distinguish four types of exchange-rate regimes. They also separate five types of domestic policy targets, namely: currency board, inflation target, narrow money target, broad money target and none. The third feature is central bank autonomy, which they separate into full, partial and none. The decision to assign one of these is based on the question of whether the government is free to dismiss the central bank governor and whether the central bank is forced to monetise public debt. We arrange the variables numerically as shown in Table III.1. In addition to these variables, the duration of the regime (*Length*) is used as another exogenous variable. The longer the regime exists, the lower the expected average inflation[3].

Table III.1. **Exchange-Rate Regimes, Domestic Constraints and Central Bank Autonomy and Their Codings**

Variable	Symbol	Explanation	Numerical codings[a]
Pure Exchange Rate Arrangement	ERR	1. Currency board system	1.00
		2. Hard peg	0.66
		3. Target zones	0.33
		4. Free floating	0.00
Central Bank Autonomy	CBA	1. Full autonomy	1.00
		2. Partial autonomy	0.50
		5. No autonomy	0.00
Announced Domestic Targets	Target	1. Currency board system	1.00
		2. Inflation target	0.75
		3. Narrow money target	0.50
		4. Broad money target	0.25
		5. None	0.00

a) The symmetry of the difference between single outcomes is not justified by theoretical reasoning. It is used to avoid arbitrariness.

Source: Kuttner and Posen (2001), own changes.

We also add the index of economic freedom as introduced above (*EF*) and the index of political freedom (*FH*) as exogenous variables. As mentioned above, we focus on the variable *EF*, which is calculated as the weighted average of five out of seven groups of the 2001 index of economic freedom by Gwartney *et al.* (2001, p. 7), composed of 19 components:

1) Size of government, 2 components, 11 per cent.

2) Structure of the economy and the use of markets, 4 components, 14.2 per cent.

3) Monetary policy and price stability, 3 components, 9.2 per cent (omitted).

4) Freedom to use alternative currencies, 2 components, 14.6 per cent (omitted).

5) Legal structure and property rights, 2 components, 16.6 per cent.

6) International exchange: trade, 2 components, 17.1 per cent.

7) Freedom to exchange in capital and financial markets, 4 components, 17.2 per cent.

$$(4)\ EF = \frac{(G1*0.11 + G2*0.142 + G5*0.166 + G6*0.171 + G7*0.172)_{GL}}{0.762*10}$$

The omission of the monetary aspects of economic freedom is necessary to avoid statistical interference. The index of political freedom *FH* contains information about the political rights and civil liberties in reality in a society. Both indices are calculated as the average during the existence of a monetary regime. We expect a negative influence of economic and political freedom[4] on inflation.

We also add in a dummy taking the value of unity, if one of the following crises took place during the existence of the monetary regime: the oil shock in 1973, the Mexico crisis in late 1994 and the Brazilian crisis in early 1999. The expected influence of these shocks on inflation and depreciation is positive.

These variables are regressors of two endogenous variables, namely the average rate consumer price inflation (*CPI*) and the average annual nominal depreciation of the domestic currency towards the dollar per regime (*DEPR*). *CPI* is the best approximation given the goal to break inflationary expectations in the public, and it is an internationally comparable indicator. Moreover, the data is available for the whole sample. The average depreciation gives evidence about the quality of monetary policy as compared to the US.

III.2. A New Dataset Based on Reference Years

To generate more observations, we construct a new dataset consisting of five observations for 23 Latin American countries. To analyse the exchange-rate regime, we prefer a two-handed approach. For one, we categorise exchange-rate regimes in five groups. In addition, we consider convertibility restrictions and the question of whether or not multiple exchange rates are applied (see Table III.1). In the resulting variable *ERA*, the pure exchange-rate arrangement has a weight of 0.5, and convertibility restrictions as well as the number of exchange rates have a weight of 0.25 each. Hence, all aspects of the commitment associated with exchange-rate policy are included in this measure. We observe the exchange-rate regime (calculated as in Table III.2) in five reference years (1975, 1980, 1985, 1990, 1995).

Table III.2. **Exchange-Rate Regimes and Their Codings (ERA)**

Criterion	Component	Explanation	Numerical codings
Pure Exchange-rate Arrangement	Extern	1. Currency board system/dollarisation	1.00
		2. Conventional peg/peg with horizontal band	0.75
		3. Crawling peg/crawling band[a]	0.50
		4. Managed floating	0.25
		5. Free floating	0.00
Convertibility Restrictions	conv	1. Full convertibility	1.00
		2. Partial convertibility	0.75
		3. Convertibility for current Account transactions only	0.50
		4. Convertibility for capital Account transactions only	0.25
		5. No convertibility	0.00
Number of Exchange Rates	mult	1. One exchange rate	1.00
		2. Multiple exchange rates	0.00

a) If floating is combined with an inflation target, it may also be plausible to treat crawling peg as a lower degree of commitment than floating. However, we remain with this order. See also Bofinger and Wollmershäuser (2001).
Source: Freytag (2002*a*), own changes.

The second exogenous variable is the index of economic freedom (*EF*) for the reference years, which is available for the reference years only. We also use the index of political freedom (*FH*) for the reference years. In addition, we compute the *ex ante* proxy for credibility in absolute and quadratic form. The theoretically expected influence of these variables on inflation is negative. The exchange regime and the institutional setting are comprised into a credibility proxy which can be interpreted as representing the costs of inflation. It is specified as $(ERA-EF)^2$ (*Credqua*) or $|ERA-EF|$ (*Credabs*) respectively[5]. The higher this difference, the lower the credibility. The quadratic form implies that big differences will cause high costs. Both forms make sure that all summands are positive. As a result, the costs of inflation decrease as compared to its highest possible costs not only if the degree of commitment via the exchange-rate regime is too low, but also if it is too high. We expect a positive sign of this proxy, i.e. the higher the commitment's credibility, the lower the politically optimal inflation rate. The exogenous variables are completed by two control variables, namely seigniorage and unemployment:

— *Seigniorage:* In the theoretical framework, the success of the reform also hinges on the degree to which the government needs seigniorage (δ) and on the money demand. An actual attitude of the government towards seigniorage δ, naturally, cannot be observed[6]. The variable *SEIGN* is an approximation to *S* and δ; it is calculated as the average (e.g. 1976-1978 for 1975) of the annual increase in base money over the sum of public revenues and the annual increase in base money for the same year of three years after the reference year. Thus, it summarises the information about the demand for money and the dependence on seigniorage. The theoretically expected impact of this variable on inflation is positive.

— *Employment:* A second control variable is the level of unemployment. If available, the official rate of unemployment (*UNEM*) in the reference year is used as an exogenous variable to document whether or not the government considers the Phillips curve as policy relevant.

The only endogenous variable is inflation (CPI), computed as the average of three years after the reference year. Thereby, we take into account that the reaction of the price level on commitment and other variables takes time.

III.3. Monetary Reforms

The third dataset is a subset of the analysis in Freytag (2002*b*)[7]. There, a cross-sectional analysis of 29 monetary reforms, 16 of which took place in Latin America, is pursued. For this sample, an index of monetary commitment (Freytag, 2001) can be calculated as an exogenous variable. A comprehensive concept of monetary commitment includes domestic and external aspects of commitment and central bank autonomy. The resulting index *MC* is a composed variable, restricted between 0 and 1. It is built of the following 10 criteria:

— Various *objectives* of monetary policy can be thought of, e.g. price stability, employment, external equilibrium, etc. Commitment reaches its maximum, if price stability is the only goal.

— The monetary regime can be fixed on different *constitutional levels*, e.g. in the constitution, as central bank law or as a decree. The higher the constitutional level, the higher *MC*.

— The lower the *discretionary power* left to the government, the higher the degree of commitment.

— *External obligations*, such as an external anchor, also raise commitment.

— The *appointment and dismissal procedures* of monetary policy makers have influence on the degree of commitment. If it is rule bound, commitment is high.

— Limitations on *lending* to the government are important for the degree of commitment. If lending is allowed, commitment is low.

— *Convertibility* restrictions also diminish the degree of commitment.

— *Competitive elements*, e.g. the permit to use foreign currencies beside the domestic one, in the monetary regime indicate a high degree of commitment.

— *Regulatory issues* exert ambiguous influence of the degree of commitment

— The same holds for the *accountability* of the monetary authorities.

The components are described in detail in Freytag (2001). The calculation of the index is comparable to the index of central bank independence as calculated by Cukierman (1992, p. 381). In contrast to the latter, *MC* also contains external relations. Theoretically, it has a negative impact on inflation. It has to be emphasised that *MC* reflects legal commitment. It does not measure the *de facto* monetary regime.

In addition to the degree of legal monetary commitment, the institutional setting plays a major role for the success of a monetary reform. Therefore, economic freedom (*EF*) is used as an exogenous variable. In this dataset the institutional setting will also consist of (ideally) six institutional factors, which cover the economic order in a country rather comprehensively (and which are defined as follows below). The first two of them will be included in the estimation[8]:

— *Political stability* (*PS*) is important to assess whether or not the economic order is likely to be subject to sudden changes. This implies the stability of a political system rather than long-term survival of a party in government. The variable *PS* is composed of three elements: unsuccessful irregular executive transfers (*coup d'état*, *UIET*), successful irregular executive transfers (*SIET*) and political reprisals in the year of monetary reform (*REPRIS*). The latter is a dummy, its outcome being 0 or 1, depending on whether or not political reprisal exists. *UIET* and *SIET* are the numbers of *coups* in the 25 years before the monetary reform. The time span of 25 years has been chosen as this can be more or less defined as being one generation and is therefore memorable for the public. It is calculated as: $PS = 0{,}5(1 - 0{,}4UIET - 0{,}6SIET) + 0{,}5REPRIS$ (with $0 \le PS \le 1$).

— *Fiscal stability* (*FS*) gives evidence of the danger that the government deviates from macroeconomic stability including price stability. However, it does not show ways to finance any public budget deficit. An indicator of fiscal stability should meet two conditions. Ideally, it should not be based exclusively on historical performance, and it should also be possible to calculate it at the moment of the monetary reform. We choose a mix of past and future data; *s* stands for time and *t* denotes the year of the reform. The indicator is derived from the fiscal balance (*FB* = revenues minus expenditure) of the state, which is divided by the GDP:

$$FS = \frac{1/8 \sum_{s=t-2}^{t+5} FB_s / GDP_s + 1}{2}$$

, where *s* denotes time.

— *Openness* (*OP*) of the country gives evidence of the extent to which the government relies on the world market price structures. It is normally restricted to trade (exports plus imports) and calculated relative to GDP or GDP per capita.

— *Labour market flexibility* (*LM*) is ideally measured by an index giving evidence of the duration of unemployment and the speed, with which structural change is managed on the labour market.

— *Public attitude to inflation* (*POI*) shows to what extent the public is willing to accept price stability. In general, it is comprised of past experience and actual regulations. The former inflation record is especially relevant for a country after a hyperinflation. People are very sensitive as regards stability: since they know the cost of inflation on average they strongly oppose another hyperinflation[9].

The theoretical impact of the institutional factors on inflation is negative, i.e. the higher political stability, fiscal stability, labour market flexibility, openness and public opposition to inflation are, the lower is the optimal inflation rate for the policy maker. The institutional factors (IF_i) can also be modelled restricted to values between 0 and 1. We

also construct a proxy for credibility, with the average of IF_i replacing *EF* in the formula: $(MC - IF) = (MC - \sum_i IF_i)^2$ (*Credref*). It is exactly calculated as $1/(MC - IF)^2$. Thus, the expected sign is negative.

The endogenous variable is *CPI*. It can hardly be expected that the annual inflation rate drops down close to zero within a year or even a shorter period after the reform. Inflationary expectations are very resistant especially when the public has experienced a few unsuccessful reforms before. People are accustomed to rising prices. Moreover, many contracts may be indexed so that there is an inflationary pressure. Even if the monetary reform is credible (*MC-IF* close to zero), the stabilisation process will be time consuming. Thus, we assume a period of five years as being sufficient for the stabilisation process. It can be expected that a success of the reform will be visible within five years. Of course, disinflation can be achieved earlier with the inflation rate being low afterwards. Moreover, a failure can be identified easily within five years. Even if in the first few months or years after the reform a slight stabilisation is observed, this period is long enough to recognise a failure. Hence, we use the average inflation rate during this period (*CPI*).

III.4. Data Sources

The data are drawn from different sources. To begin with, the variables *ERA*, *CBA* and *Target* as well as the endogenous variables *CPI* and *DEPR* are directly drawn from Kuttner and Posen (2001). The index of economic freedom *EF* is a modified version of the index composed by Gwartney *et al.* (2001), *FH* is directly taken from Freedom House (2001). The exchange-rate regime variable *ERA* as well as the other independent variables, *SEIGN* and *UNEM*, are based on IMF (2002*a, b, c*) data. The same holds for the dependent variable *CPI* in the new dataset. The sources of the monetary reform data can be found in Freytag (2002*b*, Appendix 5).

IV. REPORT AND DISCUSSION OF THE EMPIRICAL RESULTS

IV.1. Methodical Remarks

To test the hypotheses derived in section II, three econometric methods are applied[10]; the first being a cross-sectional OLS estimation, the second being a pooled regression, the third being a logit estimation. The goodness of fit of an OLS estimation depends crucially on whether the model is well specified[11]. In some estimations heteroscedasticity occurres. White's heteroscedasticity test and if necessary White's correction for heteroscedasticity are applied. Even in the presence of heteroscedasticity the OLS method can produce consistent estimators (White 1980). A second problem may be serial correlation. We try to solve this problem as follows.

The regime-wise dataset can be computed with OLS as the regime shifts are significant and allow the sample to be treated as a cross-sectional one. Beside the OLS estimations we also use a completely different approach, namely a binary choice model. The outcome of monetary policy is not measured as rate of inflation but as a success (value 0) or a failure (value 1) of the monetary policy. However, this approach has methodical shortcomings: for one, the outcome is not directly observable. Whether the policy is successful or not has to be decided by the researcher on the base of the observed inflation rates. One way to overcome this problem is to use an index function (Greene, 1997, pp. 880*f*.). One has to choose a rate of inflation CPI* which distinguishes success from failure: y=1 if CPI>CPI*, and y=0 if CPI≤CPI*. We have chosen 1 (failure) for CPI>20 per cent and 0 (success) for CPI≤ 20 per cent. The second shortcoming is that the binary choice approach is based on the assumption that the outcome of y (0 or 1) is due to the choices of the acting individual. It would be unrealistic to assume a deliberate failure.

As the alternative dataset includes serial elements because of the symmetric differences between the reference years, a pooled regression is applied to it with a GLS-estimation. Thus, the serial correlation shall be reduced. The reform sample will be estimated with OLS and a binary choice model where we have chosen 1 (failure) for CPI>30 per cent and 0 (success) for CPI≤ 30 per cent. This rise in the threshold stems from the fact that the average inflation rate prior to the reform is higher in this sample than in the others.

Throughout the fourth section, the endogenous variables (*CPI* and *DEPR*) are calculated in logarithmic form, which reflects the dynamics of inflation and disinflation respectively.

IV.2. The Results

In general, the results of the empirical assessments can be regarded as being supportive for the hypotheses derived above. This holds for all datasets and all empirical methods. Thus, regardless of some weaknesses of the results, this is strong evidence that institutional constraints matter for the proper choice of an exchange-rate regime. A strong commitment via exchange-rate policy itself also reduces the probability of high inflation.

The OLS estimation of the regime-wise dataset with *lnCPI* as endogenous variable generates the expected sign for all variables, except for the shock variables. The results are summarised in Tables IV.1 and IV.2. The core variables of the theoretical analysis are *ERR*, *CBA*, *Target* and *Lengths*. They display the expected signs, albeit with different intensity. The duration of an exchange regime is very important for the average consumer price inflation of this period. The longer the regime lasts, the lower the average inflation rate. The low parameter value of *Lengths* reflects the fact that it is not restricted between 0 and 1. Estimated commonly with *Lengths*, *ERR* is insignificant (estimations 1, 4 and 6 in Table IV.1). The correlation between *Lengths* and *ERR* is rather high (0.4), which makes sense economically as a successful regime will be run for a longer period than a failure. The fears expressed in Kuttner and Posen (2001) as well as in note 3 with respect to a survivorship bias thereby are justified. The incorporation of *Lengths* in the estimations significantly raises the coefficient of determination R^2adj. It also reduces the danger of serial correlation as the duration of subsequent exchange-rate regimes does not necessarily depend on each other, whereas variables such as *CBA*, *Target* and *EF* well may.

Table IV.1. **Exchange-Rate Regimes, Economic Freedom and Inflation (lnCPI): the Regime-Wise Dataset (OLS)**

Estimations	1	2	3	4	5	6	7
C	6.73***	6.68***	6.98***	7.43***	7.01***	6.75	4.12***
ERR	-0.25	-1.0**	-1.14***	-0.44	-1.15***	-0.25	-0.60
CBA	-0.53	0.02	-0.03			-0.53	-1.34***
Target	-0.52	-0.58				-0.53	-1.13**
EF	-4.94***	-5.63***	-6.25	-6.6***	-6.31***	-4.98***	
FH							-0.04
Lengths	-0.006***			-0.006***		-0.006***	
Shock[a]						0.03	
R^2adj	0.64	0.42	0.42	0.63	0.43	0.63	0.277
DW	1.58	1.17	1.21	1.64	1.21	1.57	1.14
N	62	62	62	62	62	62	62

a) Mexico crisis.
*, **, ***: significant at the 10 per cent level, 5 per cent level and 1 per cent level respectively.
Source: see section III.4.

The weak performance of CBA (in particular in estimation 2) makes sense economically, as it is not a sophisticated variable[12]. In addition, there is a high correlation between *Target* and *ERR*: everything else held constant, the significance and parameter value of *ERR* increases when *Target* is left out (estimations 2 and 3). This can be

explained by a closer look at Table III.1, as both variables contain similar, if not the same information.

In addition, the degree of economic freedom is also highly significant, with a greater ß-value and a higher significance level than the exchange-rate regime. The more economic freedom the citizens have, the higher the pressure on the government to provide stable money. Thus, the degree of economic freedom indirectly incorporates a strong commitment to stability. The same logic does not hold with political freedom. Given the construction of the index, it should be positively correlated with inflation. The sign changes in different estimations and is not significant.

Instead of spurring inflation, the oil shock, the Mexico crisis and the Brazilian crisis obviously have caused the opposite as the example (estimation 6) shows. Governments may have felt to be obliged to care for a more stable price level.

Table IV.2. **Success of Exchange-Rate Regimes and Economic Freedom: The Regime-Wise Dataset (logit estimation)**

Estimations	1	2	3	4
C	7.97***	6.32***	9.22***	6.99
ERR	-1.36	-2.21**	-1.75	-2.35**
CBA	-1.33	-0.35		
Target	-1.42	-0.72		
EF	-9.7**	-9.07*	-12.98***	-10.56***
Lengths	-0.01***		-0.01***	
McFaddenR²	0.35	0.21	0.33	0.20
N	62	62	62	62

*, **, ***: significant at the 10 per cent level, 5 per cent level and 1 per cent level respectively.
Source: see section III.4.

The results of the OLS estimations are confirmed by the binary choice model. Again, *Lengths* is a very important exogenous variable as it is highly significant and increases R^2 (estimations 1 and 3 in Table IV.2). The difficulties of the binary choice model with respect to macroeconomic policy described above seem to be negligible, as long as one assumes that governments have the choice to select an inflation rate and the benchmark inflation rate of 20 per cent for a successful monetary policy is accepted.

These results are further confirmed by the OLS estimations with *DEPR* as endogenous variable. Again, *Lengths* plays a major role (with the same properties as above, see estimation 1 in Table IV.3), however this time even less surprisingly so, as one could *ceteris paribus* expect a lower average annual rate of depreciation in a more successful and thus more durable regime. The exchange-rate regime is important, as fixing the exchange rate to the dollar *ceteris paribus* reduces nominal depreciation. *CBA* shows the same weaknesses (estimation 2) as in Table IV.1, *ERR* and *Target* have common influence (estimations 3 and 4), *EF* is as important as in Tables IV.1 and IV.2, and *FH* even has a wrong sign (estimation 5). The existence of political rights does not affect the calculus of monetary policy makers much.

Table IV.3. **Exchange-Rate Regimes, Economic Freedom and Depreciation (lnDEPR): the Regime-Wise Dataset**

Estimations	1	2	3	4	5
C	8.32***	7.99***	4.29***	8.5***	4.38***
ERR	-1.18	-1.87***	-1.31*	-2.07***	-1.3*
CBA	-0.15	0.146	-1.73**		-1.75**
Target	-1.54**	-1.184	-1.78**		-1.79**
EF	-7.35***	-7.71***		-8.77***	
FH					-0.02
Lengths	-0.008***				
R^2adj	0.486	0.37	0.27	0.37	0.26
DW	1.477	1.30	1.18	1.36	1.18
N	60	60	60	60	60

*, **, ***: significant at the 10 per cent level, 5 per cent level and 1 per cent level respectively.
Source: see section III.4.

To summarise, the assessment of the first hypothesis derived in section II, cannot be rejected. Monetary commitment via exchange-rate policy and policy constraints via economic freedom for the citizens restrict the policy makers' incentives to increase the monetary base to meet other objectives than price stability. In Latin America, politicians regularly took recourse to the money press to solve their fiscal policy difficulties. The following Table IV.4 consequently confirms this knowledge as it shows that one very important reason for inflation in Latin America is the need for seigniorage.

The pooled regression of the new dataset, which is the biggest one, generally confirms the results obtained so far. Both a tight exchange-rate regime and a high degree of economic freedom give incentives for policy makers to deliver price stability. In contrast, the need for seigniorage counters these incentives and causes inflation *ceteris paribus* to rise. This does not hold for the rate of unemployment. The higher unemployment, the lower inflation (with high significance). One possible explanation of this puzzle is that a government that cares for price stability also cares for high employment. The low degree of serial correlation in the estimation incorporating *UNEM* may be explained by the fact that the data for subsequent years are only available for a few countries. Political freedom displays also the wrong (unexpected) sign. Again, one can argue the degree of political freedom does not have a meaningful influence on the policy makers' calculus. This evidence can be read from estimations 1 to 3 in Table IV.4.

Table IV.4. **Exchange-Rate Regimes, Economic Freedom and Inflation (lnCPI): A Pooled Regression (GLS) with the New Dataset**

Estimations	1	2	3	4	5
C	3.14***	9.11***	2.57***	2.15	
ERA	-0.43*	-0.13***	-0.27**		
EF	-1.48***	-8.21***			
FH			-0.88***		
SEIGN	5.04***		5.44***	4.71***	4.70***
UNEM		-0.13***			
Credabs				0.24	
Credqua					0.42
R^2adj	0.78	0.99	0.88	0.87	0.86
DW	1.29	1.70	1.30	1.25	1.25
N	99	45	99	99	99

*, **, ***: significant at the 10 per cent level, 5 per cent level and 1 per cent level respectively.
Source: see section III.4.

The following two estimations (4 and 5) test the second hypothesis, namely that a high compatibility of the exchange-rate regime with the degree of economic freedom makes a regime credible and leads to low inflation. The respective variables *Credqua* and *Credabs* indeed show the expected sign, but have a too high standard deviation. Therefore, the hypothesis cannot be regarded as being validated. Nevertheless, it can be seen as another step towards the construction of a meaningful *ex ante* proxy for credibility[13].

Finally, the analysis of 16 monetary reforms in Latin America confirms the results to a certain extent (Table IV.5). The low number of observations obviously reduces the fit of the estimation, as they produce rather volatile results. In particular, the binary choice model is not very reliable, which can be traced back to: *a)* the fact that only five observations obtain the value 0; and *b)* the methodical difficulties mentioned above. One can assume that monetary reformers regularly strive for success. The credibility proxy does not display the expected sign.

Table IV.5. **Monetary Reforms and Institutions: OLS (lnCPI) and Binary Choice (Success)**

Est.	1	2	3	4[a]	5[a]
C	13.4*	10.78***	7.89***	39.73	2.73
MC	-6.84**	-4.82***		-13.06**	
EF		-5.10**			
PS	-1.17			-2.53	
FS	-6.13			-59.4	
SEIGN	0.94***	0.49	1.71***	0.80	1.25
Credref			-0.000007		0.008
R^2adj	0.59	0.81	0.37		
McFaddenR²				0.42	0.27
N	16	16	16	16	16

a) Binary choice.
*, **, ***: significant at the 10 per cent level, 5 per cent level and 1 per cent level respectively.
Source: see section III.4.

Nevertheless, the poor results of Table IV.5 cannot weaken the overall findings of the analysis. Commitment via exchange-rate regimes as well as via domestic pledges of the government is important to generate price stability. If other institutional features of the economy also mirror a rule bound policy, the chances to have a relatively stable price level rise. The common positive correlation of inflation with the degree of commitment via the exchange-rate mechanism and the degree of economic freedom has an economic as well as political rationality, as a “correct” economic policy assignment will probably include both elements. The monetisation of public budget deficits also plays an important role to explain inflation processes, in particularly in Latin America. Consequently, a government with the correct assignment is aware of the benefit of price stability.

These interesting results should not distract attention from potential weaknesses of this type of analysis. First, the assumed endogeneity may be questioned. The exchange-rate regime as well as the institutional setting may well be and often are responses to past inflation experience as the history of monetary reform shows. However, neither are we interested in this sort of feedback process in this study, nor does this line of argument question the general observation that exchange-rate

arrangement as well as economic order are responsible for the degree of inflation. Second, there may be a common determinant of both a high degree of monetary commitment created via the exchange-rate regime and the institutional setting surrounding the monetary framework. In other words, governments opting for monetary stability may also have a focus on fiscal stability and high employment. In this case, the common explanatory power of the exogenous variable may be limited. This argument has been put forward by Adam Posen (1993) with respect to inflation and CBI. The search for a common determinant of a stability oriented macroeconomic policy also raises an important question regarding the political economy of policy reform as it shifts attention to the circumstances that cause governments to correct the economic policy assignment. This, however, is a positive question beyond the topic of this paper. In the final section we draw some normative policy conclusions. Prior to that we discuss a very interesting case of economic order and inflation in Latin America, namely Argentina.

V. ARGENTINA AS AN EXAMPLE: POLICY ASSIGNMENT AND THE FATE OF THE CURRENCY BOARD

The following example is given to show the relevance of the assignment problem and its appropriate solution. We discuss the Argentine history of monetary policy after 1985 until today against the background of our analysis. It turns out that the story told in the first parts of this paper applies very well to Argentina. In addition, one can find evidence that the correct policy assignment is very important for all fields of economic policy. In the Argentine case, the main cause of economic turmoils has always been fiscal policy, as a short overview illustrates.

The failure of the Argentine Plan Austral in 1985 led to a hyperinflation in 1989 and 1990. In 1989, a new, Peronist government was appointed and was not necessarily expected to carry out an orthodox stabilisation programme. The macroeconomic situation, however, did not improve, and in early 1991 after another two years, the Menem administration decided to make a comprehensive liberal economic reform, the core of which was the introduction of a currency board[14]. A new currency, the peso, was introduced on 1 April 1991, and the exchange rate towards the dollar as reserve currency was fixed after a two-month period of floating (Mastroberardino, 1994, p. 187), and full convertibility was maintained. The monetary base had to be backed with foreign exchange, however about one third of the backing could consist of BONEX, the dollar denominated governmental bond. There were no minimum reserve requirements for banks. The central bank was not allowed to give credit to the government and it was not expected to act as a lender of last resort for participants in the financial markets (Bennett 1994, pp. 15*f*). The Argentine peso was not the only currency to circulate, the dollar also became a legal tender. This certainly reflected a high dollarisation of the Argentine economy before the reform package was introduced. In short, the new monetary regime had a very high degree of commitment. Inflation was reduced rather quickly. In 1998 price stability was almost reached[15].

In addition, the new monetary regime induced an instant reversal of capital flows. Since 1992 net capital inflows could be observed. The currency board with its high degree of commitment was even strong enough to survive the Mexican peso crisis in late 1994/early 1995. There were only minor contagion effects (Hanke, 1996)[16]. Nevertheless, after the crisis, international investors transferred their capital into other investments. As a consequence, the – exogenously determined – monetary base decreased. Since wages and prices were not fully flexible, unemployment rose and Argentina suffered from a recession. However, the monetary regime proved sustainable. This dramatically changed in the Brazilian crisis in January 1999. The Argentine government reacted by thinking loudly about an even stronger commitment, namely dollarisation[17]. During the year 2001, the economic downturn in Argentina became dramatic[18]. In early 2002, the currency board was abandoned and a managed float was introduced.

The institutional setting was crucial for the positive development in Argentina until 1999 (Freytag, 1998). Before 1991, there had not been a consistent economic order in Argentina. Consequently, reform attempts prior to this year had failed. Therefore, to create stability and credibility, the convertibility plan had to be accompanied by an assortment of other reform efforts. First, political stability in Argentina has been on the rise. In 1991, the democracy had met its first contest. The change in government through elections took place peacefully. *Coups* had not happened since the end of the military regime in 1983. Beside the monetary reform, other steps to improve the economic order were taken. Argentina liberalised its foreign trade immensely. Import tariffs as well as quotas were reduced and domestic relative prices were adjusted to the world markets' relative prices. Apart from the positive effects on the price level, the resource allocation could be improved by the increased competition. As a good means to stabilise expectations, indexation was forbidden. By such a measure, the public opposition to inflation could be increased, which in the long run would make it more difficult to abuse monetary policy. Before 1991, wages, prices, taxes and debts had been indexed which had led to a perception that inflation was economically less harmful than it actually was. Nevertheless, there were weaknesses in the reform programme, which did not immediately turn out to be problematic, but caused difficulties in the medium run. The privatised enterprises were mostly former state monopolists. Without an appropriate regulation the transition from monopoly to increased competition is always difficult to handle. Argentina made no serious efforts to regulate the new private monopolies, especially utilities (Gerchunoff, 1993), which led to price increases. In addition, the labour market was not deregulated. Wage increases were decided politically, which caused unemployment to rise during the Mexican peso crisis and which could not be reduced significantly since then. To summarise, the institutional setting seemed almost, but not perfectly in line with the monetary regime.

A closer look at the fiscal policy regime, however, reveals that it is not in line with a sustainable monetary policy. In the convertibility law in 1991, the most urgent task was to provide a balanced budget or at least an orderly financing of fiscal deficits on the international capital markets. As a consequence, Argentina started a privatisation programme, which indeed led to a balanced budget in 1992 and — compared to the 1980s — to modest fiscal deficits thereafter. There were two potential sources of revenue: the privatisation turnover and the saved resources since the state no longer had to cover huge losses of the enterprises not in private property. After the privatisation revenue ran dry, the deficit increased again. This time, however, it was financed through the emission of bonds denominated in foreign currencies and bearing a market interest. Thus an important step was made as regards the abuse of monetary policy for fiscal needs. The weight that the government laid on seigniorage as a source of revenue obviously declined rapidly. Money growth as share of total revenues plus money growth, went down from 50 per cent in 1990 to 7 per cent in 1994 and even 1 per cent in 1995. It slightly increased again afterwards.

However, the government did not manage to run a sustainable fiscal policy. The real problem with respect to economic policy making is the lack of a fiscal constitution. The provinces obviously spent much more money than they should — they have huge public sectors, which indeed may be one (if not the) reason for the difficulties today. The federal government, additionally, generously bails out provinces, which again leads to

huge public deficits. In the first few years after the launch of the convertibility law, these problems were hidden behind the huge privatisation revenues. Nevertheless, they became manifest again in the mid-1990s. Thus, the government built up high and speedily growing foreign debt since the second half of the 1990s. In combination with the nominal devaluation of the Brazilian cruzeiro leading to a decrease in price competitiveness of Argentine firms, this has hit the Argentine economy dramatically. On the one hand, the government had no fiscal device to spur the economy, on the other hand, the low competitiveness of the Argentine industry in comparison to their Brazilian competitors decreased aggregate demand even further. In this situation, the currency board had to be given up[19]. The lesson of the Argentine experience is the same as drawn in the empirical section: a strong monetary commitment also demands for strong fiscal commitment – in other words an appropriate institutional setting.

VI. CONCLUSION

Regardless of the dataset used and the method applied, the main conclusion of the analysis is straightforward: it is not only the monetary regime – here mainly interpreted as exchange-rate regime — that matters for stability, but also other aspects of economic policy making. In the empirical assessments, we find that the index of economic freedom being the most important determinant of the rate of inflation. Other features of the monetary regime also matter. Finally, the use of the money press to finance the public budget increased average inflation in Latin America. The story told is not new so far. However, it gives additional empirical evidence that there is no one-size-fits-all solution in exchange-rate policy. The exchange-rate regime can enhance price stability if it is compatible with the institutional setting. The *ex ante* proxy for credibility is hinting at this result, which is commonplace among institutional economists or in the Ordo-approach (Vanberg, 1998).

The lessons for economic policy making are also clear. Monetary policy, including the exchange-rate regime, needs to be adjusted with institutional constraints to be successful. Those countries that reform their exchange-rate policy in accordance to such constraints or that reform both the exchange-rate regime and other parts of the economic order, will be more successful than others. This holds in Latin America as well as elsewhere. However, as governments in Latin America in the past regularly have been prone to inflation, it is very important to introduce an institutional setting that increases the political price of inflation.

One can even expect that the exchange-rate regime is less important for the success of monetary policy, i.e. for stability, than is the fiscal policy regime. Evidence in Argentina shows that the monetary regime lost its credibility after the fiscal problems became prevalent. Interestingly, most observers including the government itself did not focus on these fiscal policy shortcomings, but blamed the rigid currency board arrangement of preventing the government from a quick and sustainable response to the crisis. Consequently, the newly emerged debate on proper exchange-rate arrangements may not cover the main economic policy problems in many Latin American countries.

NOTES

1. See Schuler (1996) for a provocative contribution.
2. For a survey see Berger *et al.* (2001). See also Posen (1993) and Freytag (2002*b*, chapter 2).
3. In their own estimation, Kuttner and Posen (2001) only use regimes with a minimum length of 36 months. Here, this procedure would dramatically diminish the number of observations in Latin America and produce a survivorship bias.
4. As the index of political freedom is constructed in a way being the higher, the lower the freedom actually is, the expected sign is positive. As the index of political freedom is constructed in a way being the higher, the lower the freedom actually is, the expected sign is positive.
5. This expression is not restricted to C as the comprehensive measure of commitment. It can also be applied to the exchange-rate arrangements alone.
6. This holds regardless of whether or not the government has committed to a rule that abolishes direct loans received from the monetary authority.
7. The empirical results for the whole sample can be found there.
8. We also have included the other institutional factors in the analysis, which reduces the degrees of freedom without improving the fit of the estimations.
9. Hayo (1998) shows that the inflation culture is subject to a feedback process. Low inflation causes public opposition against inflation, which on the other hand is a cause for future stability. We follow the second part of the argument, but not the first, although it sounds plausible, in particular for industrial countries. Our argument is that the experience with very high and volatile inflation causes people to become more sensitive to inflation. See also Grüner (1998).
10. The computation is carried out with EViews 4.
11. For a general overview, see Kennedy (1992, in particular the synopsis on p. 45).
12. More comprehensive measures of central bank independence are much higher correlated with inflation. See Berger *et al.* (2001) for a survey.
13. To make the results robust, the proxy has to be further improved. The institutional factors should be designed more precisely. It seems to be an interesting field of research to improve the knowledge of the *ex ante* credibility of economic policy in general and monetary policy in particular.
14. Just to mention, Argentina is not the only example for a rather leftist government pursuing a liberal and stability oriented economic policy. For a theoretical explanation see Cukierman and Tommasi (1998).
15. This can be seen as an example for a feedback process. Past experience with hyperinflation caused the government to reform its monetary policy as well as other areas of economic policy.
16. The Argentine experience is in line with the result of the 1999 IMF study “International Financial Contagion” which appears in IMF (2002*a*). A proper set of institutions is likely to protect a country from contagion.

17. One argument put forward in favour of dollarisation is that the interest spread will be reduced, easing the fiscal pressure on the government (Hanke and Schuler, 1999, pp. 406-408). However, Grandes (2001) shows empirically for Argentina that strong monetary commitment without fiscal discipline (see below) is not likely to increase the grades given by rating agencies and thus to reduce the interest spread.

18. It remains an open question whether the government was serious when proposing this or whether the proposal was only made to reassure the public of its determination to adhere to rule based monetary policy at any rate.

19. The comments in the international press seem to indicate that the board itself was an inappropriate choice. This is incorrect. By this time, the CBS may have become inappropriate given the fiscal policy failure. The main cause of the economic problems was that the government did not use the privatisation period to reorganise fiscal policies of its own and of the provinces.

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