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Socio-political and economic determinants of *de facto* monetary institutions and inflationary outcomes

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Abstract

In this paper we estimate a model where inflation, a measure of *de facto* central bank independence and an index of *de facto* exchange rate regime are simultaneously determined by a set of economic, political and institutional variables. *De facto* central bank independence is hampered by socio-political turbulence and benefits from the balance of powers between the executive and the parliament. Inflation is explained by *de facto* central bank independence, by the level and volatility of public expenditure and by the *de facto* exchange rate regime. Openness (real and financial) affects inflation through the exchange rate regime channel. Success in controlling inflation, in turn is crucial to sustain central bank independence and exchange rate stability.

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Keywords: Inflation, central bank independence, exchange rate regime, system estimation

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1 Introduction and motivation

> A constitutional or institution design stage lays down some fundamental aspects of the rules of the game which cannot be easily changed. Once an independent central bank has been set up, an international agreement over the exchange rate has been signed, or an inflation target has been explicitly assigned to the central bank, it has some staying power, in the sense that change in institution ex post is costly or takes time. Persson and Tabellini (2001), p.435

Research in political macroeconomics sees actual policies as endogenous equilibrium outcomes. As the policy-making process depends on institutional arrangements, fixing institutions is therefore crucial to improve policy outcomes. This has well known consequences in monetary economics where the key implication of the Kydland and Prescott (1977) and Barro and Gordon (1983) time inconsistency approach, is that central bank independence or a fixed exchange rate are important tools to remove the inflation bias.

However, setting legal arrangements does not guarantee the desired policy outcomes. For instance, it is difficult to detect a robust negative correlation between indicators of *de jure* central bank independence and inflation beyond the restricted sample of high income economies. Cukierman et al. (1992) show instead that central bankers' turnover rates, an indicator of *de facto* central bank independence, explain cross-country inflation differentials. Similarly, the announcement of a fixed exchange rate is not sufficient to discipline domestic monetary policy as there are important differences between *de jure* and *de facto* exchange rate regimes (Reinhart and Rogoff, 2004; Alesina and Wagner, 2005; Carmignani et al., 2005).

We see two possible rationalisations for the apparent discrepancies between some *de jure* institutions and *de facto* policies. The first is that, in practice, isolating monetary institutions from political pressure may be a difficult task. For instance, empirical research supports the view that even in the US there are indirect ways for politicians to affect monetary policy outcomes, despite the independent status of the Fed (Alesina, 1987; Froyen et al., 1997; Havrilesky, 1994; McGregor, 1996). The second stems from a rigourous extension of the time inconsistency approach (Bartolini and Drazen, 1997; Drazen, 1997; Drazen and Masson, 1994; Velasco and Neut, 2004), showing that institutions *per se* are not enough. Typically a tough policy today may worsen the trade-off between credibility and flexibility tomorrow, possibly due to a persistent unemployment increase or to debt accumulation. In this case even an inflation averse policymaker may be induced to engage in expansionary policies.

Our work is based on the following premise: although well designed institutions are important to deliver low inflation, their *de facto* performance is endogenous to

the economic and socio-political environment. Thus we estimate a model where inflation, a measure of *de facto* central bank independence and an index of *de facto* exchange rate regime are simultaneously determined by a set of economic, socio-political and institutional variables.

To our knowledge this is the first attempt to consider the structural interrelations between the socio political environment, inflation and *de facto* policies. We provide several contributions to the literature. First we find that inflation is generally explained by three factors: the degree of central bank independence, the exchange rate regime and fiscal policy. Second, success in reducing inflation is crucial to support both central bank independence and exchange rate stability. Third, socio-political factors do not have a direct impact on inflation but affect the central bank turnover rate and, in turn, cause inflation. As one might expect political turbulence hampers central bank independence. The latter, instead, benefits from the balance of powers between the executive and the parliament: presidential systems are associated to lower central bank independence. Fourth, there are open-economy aspects that affect inflation beyond Romer's (1993) trade-openness celebrated result. However, they do not have a direct impact on inflation; instead they operate through the exchange rate regime channel. For instance, financial markets integration is associated with more stable exchange rates and, in turn, with lower inflation. By contrast, financial fragility is associated with more flexible exchange rate regimes, with adverse effects on inflation.

The remainder of the paper is organised as follows. Section 2 illustrates the major findings of the literature on the determinants of inflation, central bank independence and openness. Section 3 illustrates the data set and the methodology used. Section 4 presents the empirical results; section 5 concludes.

2 Inflation, central bank independence and the exchange rate regime

Empirical evidence on the determinants of inflation emphasises three key factors. The first is central bank *de facto* independence. Cukierman et al. (1992) show that the central bank governor's turnover rate affects the inflationary outcome.[1] However, they also suggest that "...high inflation may encourage processes that make it easier for the government to influence monetary policy", thus pointing to the joint endogeneity of inflation and independence. In fact Cukierman (1992) (page 429) finds that there is a two way Granger-causality between inflation and central bank independence as proxied by governor's turnover.

The second factor is openness. Romer (1993) suggests that the more the economy

[1] *De jure* independence (legal indicators) matters only for advanced economies.

is open, the more it will suffer from the real depreciation that high-inflation equilibria bring about. Alfaro (2005), however, points out that the commitment device role underlying Romer's intuition is probably played by the exchange rate regime rather than by trade openness *per sè*.[2] Again, there are reasons to believe that regime choice and inflation are jointly endogenous. On the one hand high inflation countries should self-impose monetary discipline by adopting fixed exchange rate regimes (see Calvo and Végh, 1999 and the vast literature on exchange rate stabilisation). On the other hand it is more difficult to sustain a peg in a high inflation environment (Driffill and Miller, 1993). Whichever of the two effects prevails, it would be difficult to argue that the regime choice is not influenced by inflationary outcomes. The third factor is fiscal policy (Campillo and Miron, 1997). Alesina and Tabellini (1987) point out that an inflation bias arises when distortionary taxation is necessary to finance public expenditures. More recently, Dixit and Lambertini (2003b) stress that the sole motivation of output and inflation stabilisation is sufficient for fiscal discretion to destroy central bank commitment to low inflation.

To account for endogeneity issues, we explicitly model the determinants of central bank independence and exchange rate regime choice, while instrumenting for fiscal policy variables. Our interpretation of *de facto* central bank independence is inspired by the theoretical work of Lohmann (1992) who characterises a regime of *partial* central bank independence, where the government always retains the option to override the central bank's decisions at a finite cost. She shows that in adverse circumstances the central bank inevitably bends towards an accomodative monetary stance. Thus *de facto* independence is determined by three clearly identifiable factors: i) changes in the "preferences" of the bank's principal, possibly due to government turnover and to socio-political instability;[3] ii) changes in economic conditions; iii) changes in institutional arrangements which shape the political system and determine the relative strength and internal cohesion of the executive. Cross-country empirical evidence on *de facto* central bank independence seems to confirm the significant role of political forces (see for instance Cukierman and Webb (1995) and Keefer and Stasavage, 2003).

With respect to the determinants of exchange rate regimes, we follow the pioneering work of Calvo and Reinhart (2002) and Reinhart and Rogoff (2004) who identify *de facto* exchange rate regimes. In a similar setting Levy-Yeyati et al. (2004) investigate the role of economic fundamentals, ranging from standard optimal currency area theories to the more recent financial fragility approach.

The system for the simultaneous determination of inflation, *de facto* central bank independence and *de facto* exchange rate regime can be written in compact form:

[2] A more radical criticism comes from Terra (1998) who argues that Romer's effect could be explained by the responses of severely indebted countries to the debt crises of the eighties.

[3] Lossani et al. (2000) have shown that under partial central bank independence, government turnover may generate monetary policy cycles when policymakers are ideologically motivated.

$$\mathbf{A}\mathbf{y}' = \mathbf{B}\mathbf{x}' + \mathbf{C}\mathbf{z}' + \boldsymbol{\epsilon}' \tag{1}$$

Where $\mathbf{y}$ denotes a (row) vector defining inflation, central bank independence and *de facto* exchange rate regime, $\mathbf{x}$ denotes a vector of economic controls, $\mathbf{z}$ a vector of political and institutional factors, including fiscal policy variables. Finally $\boldsymbol{\epsilon}$ is the vector of error terms. Matrix $\mathbf{A}$ captures the simultaneous interaction among inflation, central bank independence and exchange rate regime choice.

3 Data and methodology

Our data set covers economic political and institutional data for a large number of countries over the period 1970 - 2000. All variables are five year averages as we are not interested in short term effects. Economic data are drawn from standard sources (IMF and World Bank). Political data are taken mainly from the Database of Political Institutions (DPI), the Cross-National Time-Series Data Archive (CNTS), and Polity IV data set. The appendix provides a detailed description of data sources, variable construction and the list of countries included in our analysis.

3.1 Inflation and policy variables

Following Cukierman et al. (1992), to reduce heteroskedasticity problems we use the index:

$$Inflation = \frac{\pi}{1+\pi}$$

where π is the annual inflation rate.[4]

We proxy the degree of *de facto* central bank independence with the turnover rate of central bank governor (see Cukierman et al., 1992).

With regard to the *de facto* exchange rate regime variable, we use Reinhart and Rogoff's classification that infers the *de facto* regime from parallel market exchange rates.[5] A higher value of the variable (*defactoreg*) denotes a more flexible exchange rate regime.[6]

To identify the fiscal determinants of inflation we use both the level and the volatility of government-consumption/GDP ratio (*govfincon* and *volgovfincon* respectively). The first variable obviously identifies the Alesina and Tabellini (1987)

[4] *Inflation* (with the exception of cases of deflation) takes values between 0 and 1; a 100% inflation rate corresponds an index value of 0.5.

[5] Alternatively, Levy-Yeyati and Sturzenegger (2002) adopt a statistical approach based on cluster analysis of the volatility of exchange rate and reserves.

[6] The original classification groups exchange rate regimes into 5 classes, coded from 1 to 5. As we take five-years averages our variable *defactoreg* can take any value between 1 and 5.

channel. The second is meant to capture the spirit of the Dixit and Lambertini (2003b) fiscal policy effect on inflation. In addition, we consider the possibility that public debt affects inflation, as in Campillo and Miron (1997). In this regard, we experiment with two variables: a standard debt-to-GDP ratio and a dummy (*Ddebt*) taking value 1 for severely indebted countries (these are identified as in Terra (1998)).

3.2 Political and institutional variables

Lohmann's (1992) model provides a useful reference for the identification of politico-institutional mechanisms that affect *de facto* central bank independence. In her framework, the central bank is partially independent because its decisions can be overridden by a political principal (i.e. the government) at a finite political cost. Therefore, whenever the preferred policy outcomes of the principal are sufficiently different from those of the central bank, the *de facto* independence of the latter is curtailed. Building on this interpretation, *de facto* independence is crucially affected by those factors (or circumstances) that create a tension between the bank and her principal about preferred policies. In our view two factors are likely to affect *de facto* independence: political instability and institutional arrangements that shape the political system.

First, political instability shortens the time horizon of the incumbent and lowers economic efficiency. As a result, political pressures for an accomodative monetary stance increase and this should reduce *de facto* independence. Operationally, we consider two indicators of political instability. One is the expected duration in office of the incumbent, proxied by the frequency of head-of-the-executive changes (variable *govter*). The other is the degree of social unrest in a country (variable *sociopolrisk*), measured as the principal component of various disaggregate indicators (assassinations, general strikes, guerrilla warfare, purges, riots, revolutions and anti-government demonstrations). The expected coefficient on both these variables is positive, denoting that *de facto* central bank independence is lower in more unstable countries.

Second, political and institutional arrangements that determine the distribution of political power and the fragmentation of decision-making are also likely to affect *de facto* independence. In fact, the political cost of overriding central bank decisions is likely to increase when political power is more dispersed, i.e. when enforcing a political threat to the central bank becomes more difficult. In other words, we expect *de facto* independence to be higher (and therefore central bank turnover to be lower) when the relative position of the executive (the principal) is weaker. We will consider two indicators of relative weakness (or strength) of the executive. The Herfindal index in the government (*herfgov*)[7] measures the concentration of the rul-

[7]Foramlly defined as the sum of the squared seat shares of all parties in the government.

ing coalition and should therefore display a positive coefficient in the central bank turnover regression. The variable *system* identifies different institutional settings (presidential, assembly-elected, and parliamentary), with higher values corresponding to parliamentary regimes. Since parliamentary regimes imply a weaker position for the executive, our hypothesis is that the variable system should display a negative coefficient.

3.3 Other economic variables

An important explanatory variable in our analysis is openness. We use two complementary measures: the standard indicator of total trade volume to GDP (*open*), and an index of capital account openness (*kaopen*), taken from Chinn and Ito (2002). In both cases a higher value of the indicator denotes greater openness.

We also consider a measure of liability dollarisation proxied by the ratio of foreign liabilities over money (*forliab*).[8] This will appear in the equation explaining the choice of the exchange rate regime.

3.4 Methodology

Our choice of the estimation method is obviously driven by concern for the endogeneity issue. We use GMM estimators; it is well known in fact that standard 2SLS and 3SLS estimators can be derived as special cases of a GMM estimator, given an appropriate choice of the weighting matrix. Since the GMM estimator optimally chooses the weighting matrix, asymptotically it is never worse and generally strictly better than the traditional 3SLS estimator. However, given that 3SLS may have better finite sample properties under the assumption of heteroskedasticity (see Wooldridge, 2002), we also computed 3SLS estimates.

GMM estimates use White's heterosckedasticity-consistent matrix. As our estimates do not require particular computational complexity, in computing the GLS weighting matrix and coefficient vector, we allow for simultaneous updating of both coefficient and weighting matrix at each iteration.

The system of equations has been estimated as a pooled cross section. The reason is that several institutional and political variables vary much more across countries than over time, therefore panel data models that focus on within-country variability (i.e. fixed effects) do not seem appropriate. Moreover, we consider a large number of different institutional and political factors which explain a great deal of countries' heterogeneity.[9]

[8] We also experimented other other economic controls (i.e. GDP growth, level of development) without finding significant effects.

[9] The same approach is followed by, among others, Alesina and Wagner (2005) and Lundberg and Squire (2003).

3.5 Instrument choice

In addition to the dependent variables of the system, we treat as endogenous the variables defining the fiscal stance (both the level and the volatility of government final consumption) and the measure of liability dollarisation. In addition to the obvious theoretical reasons, the Hausman test always rejected the null of exogeneity for these variables.

The presence of endogenous variables raises the question of instrument validity. Finding good instruments is always difficult. A popular choice is to use lagged values of the endogenous variables. However these are at best weakly exogenous (see Lundberg and Squire (2003)).[10]

Therefore, in addition to the exogenous variables, we integrate the set of instruments with some variables that are clearly exogenous such as a country's distance from equator (see La Porta et al. (1999) for a discussion), time dummies and two variables that capture the number constraints to the executive (*xrreg* and *polcon*). Following Persson and Tabellini (2001) we instrument our measures of the fiscal stance using political and institutional variables. In addition we selected two measures of structural economic conditions (log GNP per capita averaged over the entire sample, terms of trade growth) and a measure (*cycle*) that captures the average cyclical position. This latter variable, being averaged over five years, has an extremely low correlation with the inflation rate (1.8%), but can be used as a good instrument for the volatility of the fiscal spending.

We are then left with two questions. First, is our choice of instruments good? Second, are there any other endogenous variables in the system? To answer these questions we rely on a few tests. We run an F-test on the regression of endogenous variables on instruments and we always reject the null hypothesis that the estimated coefficients are jointly insignificant. Then, we always run the Sargan test for instrument validity, and never reject the null that our overidentifying restrictions are correct. Finally, we apply the Hausman test to check for the endogeneity of other regressors, always rejecting the endogeneity hypothesis . While we reckon that none of these tests is the ultimate proof of instruments validity, we take this as a good diagnostics that supports our choices, given our theoretical priors.

4 Results

For expositional convenience we adopt a piecemeal approach in presenting our results. Thus we start with a single equation estimate for inflation, then we consider a two equation system explaining inflation and central bank independence, finally we turn to the fully-fledged three-equation system.

[10]The Sargan test often rejected the instrument validity when adding lagged values.

4.1 Inflation and central bank independence

The starting point in our analysis is a single-equation estimate of inflation in line with the existing literature.

$$\begin{aligned} Inflation_{i,t} =& \beta_0 + \beta_1 CBturn_{i,t} + \beta_2 Open_{i,t} + \beta_3 Govfincon_{i,t} \\ &+ \beta_4 Volgovfincon_{i,t} + \beta_5 Ddebt_{i,t} + \epsilon_{i,t} \end{aligned} \tag{2}$$

Consistently with the discussion in section 3.2, at this stage we assume that institutional and socio-political variables affect inflation through their influence on de facto central bank independence. Therefore we use them as instruments.[11] We will relax this assumption later in this section.

The results presented in table 2 are broadly in line with previous empirical evidence (Campillo and Miron, 1997; Romer, 1993). Inflation is positively related to central banker turnover and to both measures of the fiscal stance,[12] and is negatively affected by openness. Finally, in line with Terra (1998), we also find that, beyond a certain threshold, the level of debt affects inflation.[13]

The next step is to characterise the simultaneous interaction between central bank policies and inflation outcomes. In fact, as already noted by Cukierman et al. (1992), "less central bank independence contributes to higher inflation ... high inflation may encourage processes that make it easier for the government to influence monetary policy" resulting in a faster central banker turnover.

We therefore estimate a two-equation system based on equation 2 and:

$$\begin{aligned} CBturn_{i,t} =& \gamma_0 + \gamma_1 Inflation_{i,t} + \gamma_2 Govter_{i,t} \\ &+ \gamma_3 System_{i,t} + \gamma_2 Sociopolrisk_{i,t} + \gamma_5 Herfgov_{i,t} + \eta_{i,t} \end{aligned} \tag{3}$$

Table 3 presents the results. Our single-equation estimates for inflation are confirmed, with the exception of the debt variable. Turning to the second equation, we find that inflation does indeed affect the central banker turnover rate. Political and institutional variables also matter, and the results confirm our priors. Political and socio political instability (variables *govter* and *sociopolrisk*) induce a higher turnover rate. The negative sign associated with *system* suggests that the central bank is *de facto* less independent when the executive is stronger vis à vis the parliament. In

[11] See see table 2 for the detailed list of instruments. The Hausman test confirms the endogeneity of the instrumented variables. The same test also confirms that openness is exogenous, supporting our modeling choice.

[12] We checked for multicollinearity between the two measures of fiscal policy. Results of this and the next paragraphs appear to be immune from this problem.

[13] We could not find evidence of a systematic relation between the debt-to-GDP ratio and inflation.

this regard, our findings integrate an established view about the economic efficiency of political systems. In fact Persson and Tabellini (2001) argue that in presidential systems, where governments are more accountable to the electorate, the level of public expenditure and distortionary taxation is lower. This in turn should limit inflationary pressures. Our estimates, instead, highlight that presidential systems are associated to lower central bank independence with adverse effects on inflation.

Finally, the variable *herfgov* has a positive and significant sign: when the composition of the executive is relatively more homogeneous, government's ability to put pressure on the central bank increases, and central bank independence *de facto* falls.

So far we have implicitly assumed that political and institutional variables affect the inflation rate only through the degree of central bank independence. To check whether these variables also have a direct effect on inflation, we have estimated the system by adding political variables directly to the inflation equation. As shown by columns 2, 3, 4 and 5 in table 3 these variables are never significant.

Similarly we also added the fiscal variables to equation 3, in order to detect any additional fiscal policy effect on central bank independence. The estimated coefficients were never significant whereas previous findings were confirmed (results available upon request).

Summing up, the estimate of the two-equation system confirms the hypothesis of a simultaneous determination of *de facto* central bank independence and inflation. Moreover, institutional and political factors affect inflation through their influence on de facto central bank independence:

- Socio political instability reduces the governor's turnover rate.
- More stable governments are associated to greater central bank independence.
- Stronger concentration of the decision-making power in the hands of the government reduces *de facto* central bank independence.

4.2 Openness and the exchange rate regime

We now address the role of openness in determining inflation. From the inflation equation, we have so far omitted the exchange rate regime variable, that could in principle interact with both inflation and the degree of openness. Including the *de facto* exchange rate regime variable (*defactoreg*) in the inflation equation - column 6 in table 3 - we see that *open* looses significance.

These results confirm Alfaro's (2005) finding that the role of commitment device is primarily played by the exchange rate regime and not by openness. Moreover we now reject Terra's (1998) criticism as the debt dummy is never significant.

Theoretical priors and empirical evidence (Husain et al., 2005) suggest that the exchange rate regime should in fact be treated as endogenous to the inflationary outcome. To account for this, we estimate a 3-equation system, including (2),[14] (3) and a third equation estimating the determinants of the exchange rate regime choice:

$$Defactoreg_{i,t} = \delta_0 + \delta_1 Inflation_{i,t} + \delta_2 Open_{i,t} + \delta_3 Forliab_{i,t} + \delta_1 Kaopen_{i,t} + u_{i,t} \quad (4)$$

Following the literature,[15] we assume that the exchange rate regime is related to some economic controls (capturing optimum currency area and financial fragility theories), and to inflation. We treat the currency mismatch indicator (*forliab*) as potentially endogenous[16] while the index of capital controls (*kaopen*) is assumed exogenous to the *de facto* regime, as in Levy-Yeyati et al. (2004). In our specification *cbturn* affects *defactoreg* through the rate of inflation. However we also checked for an additional direct effect of *de facto* central bank independence on the exchange rate regime, but the *cbturn* coefficient into the exchange rate regime equation was not significant (results available upon request).[17]

Table 4 presents the result of the 3 equation system.

After the introduction of the exchange rate regime equation, inflation is now determined by *de facto* central bank independence, by the fiscal variables (*govfincon* and *volgovfincon*), and by *defactoreg*. Our previous findings on the determinants of central bank independence are confirmed, with the exception of *herfgov* that now looses significance. Turning to the exchange rate regime equation, we obtain the following results:

- High inflation calls for *de facto* flexibility.
- More open economies are associated with more fixed exchange rate regimes. Thus we confirm an indirect link between trade openness and inflation.
- In contrast with conventional wisdom (i.e. the impossible trinity theorem), the capital account openness indicator (*kaopen*) is positively related to the propensity to peg. This result, which is akin to Levy-Yeyati et al. (2004),

[14] After controlling for the exchange rate regime, openness is never significant in any of our specification of the inflation equation. Therefore we dropped it from equation (2), along with the debt dummy.

[15] See Alesina and Wagner (2005); Levy-Yeyati et al. (2004); Carmignani et al. (2005)

[16] The Hausman test confirmed our prior.

[17] Berger et al. (2000), in a single equation framework find a positive effect of *cbturn* on the probability of observing a peg. However their emphasis is on *de jure* exchange rate regimes and they do not explicitly model the link between central bank independence, inflation and the exchange rate regime.

could be explained by the attempt of many countries to attract capital flows by integrating in the international financial markets and using the peg to stabilise expectations, with beneficial effects on inflation.

- Unlike Alesina and Wagner (2005), we find that liability dollarisation calls for greater *de facto* flexibility. Recent contributions (Eichengreen and Hausmann, 2005; Hausmann et al., 2001) suggest that countries facing high risks of adverse balance sheet effects are more reluctant to float. However, a natural extension of this argument would be that, over the medium term, economies who cannot escape financial fragility are less likely to sustain a stable exchange rate. As variables are five-year averages, this could be the driving factor behind our results.

Summing up, we find that open economy aspects affect inflation through the *de facto* exchange rate regime choice. It seems that the traditional trade openness channel is only part of the story: financial markets integration and financial fragility also play a significant role.

4.3 Robustness checks

As mentioned in section 3, 3SLS may have better finite sample properties than GMM estimates under the assumption of heteroskedasticity. We have therefore re-estimated the 3-equation system using 3SLS. Column 2 in table Table 4 shows that the results are confirmed with the exception of coefficients on *govfincon* in the inflation equation.

Within the variable *defactoreg*, freely floating exchange rate regimes are treated as distinct from "freely falling", the latter identifying countries with flexible exchange rates and high inflation. This "artificial distinction" among flexible exchange rate regimes could affect some of our results. We therefore recoded *defactoreg*, grouping freely floating and freely falling regimes into a single category. The results (column 3 in table 4) show no significant change with respect to the benchmark equation, with the exception of *kaopen* in the exchange rate equation.

We also checked whether the effect of *cbturn* on inflation might be driven by high inflation countries, as suggested by de Haan and Kooi (2000). In column 4 in table 4 we show the results for the 3-equation system where we have excluded high-inflation countries.[18] All variables remain significant with the exception of *govfincon* in the inflation equation that becomes marginally insignificant.

Although *defactoreg* can take any value between 1 and 5, persistency in exchange rate regime choices, could generate clustering around the originally coded values. In

[18]This is equivalent to estimate the system of equations without freely falling regimes in *defactoreg* variable.

principle this could induce a distortion similar to the introduction of a categorical dependent variable. A similar argument can be applied to *cbturn*. To check for this we estimated an ordered logit single equation for *defactoreg* and for *cbturn* obtaining results (available upon request) that are identical to those in column 1 of table 4.

Finally we tested whether *Cbturn* has a differential effect on inflation in industrialised countries. We carried out the analysis in two steps. First, in the inflation equation, we interacted *Cbturn* with two dummies for industrialised (*Dind*) and non industrialised countries (*Dnonind*). Table 5 shows that while $Cbturn_{nonind}$ remains positive and significant, $Cbturn_{ind}$ is non-significant, while all other results are broadly confirmed. In the second step we checked the global effect of the distinction between industrialised and non-industrialised countries. In the second column of table 5 we re-estimated the baseline model by adding a dummy for non-industrialised countries in every equation. The results broadly confirm our original findings. Note that the country dummy is significant only in the inflation equation. These results are open to two different interpretations: on the one hand in industrialised countries *Cbturn* could be a poor proxy for *de facto* independence.[19] On the other hand industrialised countries might be characterised by intrinsic preferences for low inflation (Posen, 1993). We leave this issue for future research.

5 Conclusions

Previous empirical research has pointed out that *de jure* monetary institutions may fail to deliver the expected outcomes. This could be explained by the endogeneity of monetary institutions to the economic environment. We find that inflation and *de facto* monetary institutions are simultaneously determined by a set of "fundamentals", i.e. fiscal policy, socio-political stability, the underlying institutional arrangements and open economy aspects.

Such "fundamentals" operate through distinct and clearly identified channels. We broadly confirm the Dixit and Lambertini (2003a) argument that fiscal discretion may destroy monetary commitment through its direct effect on inflation. Socio-political and institutional factors affect inflation through their influence on *de facto* central bank independence. We also find that, in addition to trade openness, financial institutions matter. In fact, integration with international capital markets has double-edged effects on inflation. On the one hand, it induces monetary policy to stabilise the exchange rate. On the other hand, when things go wrong, financial fragility makes stable exchange rates unsustainable and triggers adverse inflation equilibria. After the Argentinean disaster this might not come as a surprise.

[19] We are grateful to Alex Cukierman for raising this point.

References

Alesina, Alberto (1987) 'Macroeconomic policy in a two-party system as a repeated game.' *Quarterly Journal of Economics* 102, 651–678

Alesina, Alberto, and Alexander Wagner (2005) 'Choosing (and reneging on) exchange rate regimes.' mimeo, Harvard University

Alesina, Alberto, and Guido Tabellini (1987) 'Rules and discretion with non-coordinated monetary and fiscal policy.' *Economic Inquiry* 25, 619– 630

Alfaro, Laura (2005) 'Inflation, openness, and exchange-rate regimes: The quest for short-term commitment.' *Journal of Development Economics* 77(1), 229–249

Barro, Robert, and David Gordon (1983) 'Rules, discretion and reputation in a model of monetary policy.' *Journal of Monetary Economics* 12(1), 101–122

Bartolini, Leonardo, and Allan Drazen (1997) 'Capital account liberalization as a signal.' *American Economic Review* 87(1), 138–54

Berger, Helge, Jan-Egbert Sturm, and Jakob de Haan (2000) 'An empirical investigation into exchange rate regime choice and exchange rate volatility.' Working Paper N. 263, CESIFO

Calvo, Guillermo, and Carlos Végh (1999) 'Inflation stabilization and balance of payment crises in developing countries.' In *Handbook of Macroeconomics,* ed. John Taylor and Michael Woodford, vol. 1C (North-Holland) chapter 24

Calvo, Guillermo, and Carmen Reinhart (2002) 'Fear of floating.' *Quarterly Journal of Economics* 117(2), 379–408

Campillo, Marta, and Jeffrey Miron (1997) 'Why does inflation differ across countries?' In *Reducing Inflation: Motivation and Strategy,* ed. Cristina Romer and David Romer (University of Chicago Press)

Carmignani, Fabrizio, Emilio Colombo, and Patrizio Tirelli (2005) 'Consistency versus credibility: How do countries choose their exchange rate regime?' mimeo, University of Milano Bicocca

Chinn, Menzie, and Hiro Ito (2002) 'Capital account liberalization, institutions and financial development cross country evidence.' mimeo UC Santa Cruz and NBER

Cukierman, Alex (1992) *Central Bank Strategy, Credibility and Independence* (MIT Press)

Cukierman, Alex, and Steven Webb (1995) 'Political influence on the central bank: International evidence.' *World Bank Economic Review* 9(3), 397–423

Cukierman, Alex, Stephen Webb, and Bilin Neyapti (1992) 'Measuring the independence of central banks and its effect on policy outcomes.' *World Bank Economic Review* 6, 353–398

de Haan, Jakob, and Willem Kooi (2000) 'Does central bank independence really matter?: New evidence for developing countries using a new indicator.' *Journal of Banking and Finance* 24(4), 643–664

Dixit, Avinash, and Luisa Lambertini (2003a) 'Interactions of commitment and discretion in monetary and fiscal policies.' *American Economic Review* 93(5), 1522–1542

_ (2003b) 'Symbiosis of monetary and fiscal policies in a monetary union.' *Journal of International Economics* 60(2), Pages 235–247. mimeo

Drazen, Allan (1997) 'Policy signalling in the open economy: A re-examination.' In *Contemporary Economic Development Reviewed, vol. 5, Macroeconomic Policy and Financial Systems,* ed. H. Wolf (McMillan)

Drazen, Allan, and Paul Masson (1994) 'Credibility of policies versus credibility of policymakers.' *Quarterly Journal of Economics* 109(3), 735–54

Driffill, John, and Marcus Miller (1993) 'Learning and inflation convergence in the ERM.' *Economic Journal* 103(417), 369–378

Eichengreen, Barry, and Ricardo Hausmann (2005) *Other People's Money. Debt Denomination and Financial Instability in Emerging Market Economies* (University of Chicago Press)

Froyen, Richard, Thomas Havrilesky, and Roger Waud (1997) 'The asymmetric effects of political pressures on u.s. monetary policy.' *Journal of Macroeconomics* 19(3), 471–493

Hausmann, Ricardo, Ugo Panizza, and Ernesto Stein (2001) 'Why do countries float the way they float?' *Journal of Development Economics* Vol. 66, 387–414

Havrilesky, Thomas (1994) 'The political economy of monetary policy.' *European Journal of Political Economy* 10(1), 111–134

Husain, Aasim, Ashoka Mody, and Kenneth Rogoff (2005) 'Exchange rate durability and performance in developing versus advanced economies.' *Journal of Monetary Economics* 52(1), 35–64

Keefer, Philip, and David Stasavage (2003) 'The limits of delegation: Veto players, central bank independence, and the credibility of monetary policy.' *American Political Science Review* 97(3), 407–423

Kydland, Finn, and Edward Prescott (1977) 'Rules rather than discretion: the incostistency of optimal plans.' *Journal of Political Economy* 85(3), 473–492

La Porta, Rafael, Florencio Lopez de Silanes, Andrei Shleifer, and Robert Vishny (1999) 'The quality of government.' *Journal of Law Economics and Organisation* 15(1), 222–279

Levy-Yeyati, Eduardo, and Federico Sturzenegger (2002) 'Classifying exchange rate regimes: Deeds vs. words.' *European Economic Review.* mimeo Business School

Levy-Yeyati, Eduardo, Federico Sturzenegger, and Iliana Reggio (2004) 'On the endogeneity of exchange rate regimes.' mimeo Universitsd Torcuato di Tella

Lohmann, Susan (1992) 'Optimal commitment in monetary policy: Credibility versus flexibility.' *American Economic Review* 82(1), 273–286

Lossani, Marco, Piergiovanna Natale, and Patrizio Tirelli (2000) 'Macroeconomics and politics revisited: Do central banks matter?' *Economics and Politics* 12(1), 53–67

Lundberg, Mattias, and Lyn Squire (2003) 'The simultaneous evolution of growth and inequality.' *Economic Journal* (113), 326–344.

McGregor, Rob (1996) 'FOMC voting behavior and electoral cycles: Partisan ideology and partisan loyalty.' *Economics and Politics* 8(1), 17–32

Persson, Torsten, and Guido Tabellini (2001) *Political Economics* (MIT Press)

Posen, Adam (1993) 'Why central bank independence does not cause low inflation: There is no institutional fix for politics.' In *Finance and the international economy. Volume 7. The Amex Bank Review prize essays,* ed. Richard O'Brien (Oxford University Press)

Reinhart, Carmen, and Kenneth Rogoff (2004) 'The modern history of exchange rate arrangements: A reinterpretation.' *Quarterly Journal of Economics* 119(1), 1–48.

Romer, David (1993) 'Openness and inflation: Theory and evidence.' *Quarterly Journal of Economics* 108, 869–903.

Terra, Cristina (1998) 'Openness and inflation: A new assessment.' *Quarterly Journal of Economics* 113(2), 641–648

Velasco, Andrès, and Alejandro Neut (2004) 'Tough policies, incredible policies?' Technical Report, Mimeo, Harvard University

Wooldridge, Jeffrey (2002) *Econometric Analysis of Cross Section and Panel Data* (MIT Press)

Table 1: Descriptive stats: all countries

Var.	Mean	SD. Dev	Min	25	50	75	Max	N.Obs.
CBturn	0.24	0.26	0.00	0.00	0.20	0.40	1.40	633
Inflation	0.12	0.14	−0.05	0.04	0.08	0.14	0.92	979
Cycle	0.50	0.20	0.00	0.40	0.60	0.60	1.00	980
Defactoreg	2.31	1.23	1.00	1.00	2.00	3.00	5.00	717
Forliab	0.88	1.05	0.02	0.23	0.51	1.06	7.00	710
Govter	0.16	0.20	0.00	0.00	0.20	0.20	1.00	947
Herfgov	0.83	0.27	0.00	0.67	1.0	1.0	1.0	814
Kaopen	−0.04	1.46	−1.79	−1.09	−0.47	0.99	2.66	773
Lat	0.28	0.19	0.01	0.13	0.24	0.44	0.72	978
Open	0.39	0.23	0.06	0.22	0.32	0.52	1.35	860
Polity	−0.43	7.49	−10.00	−7.00	−3.80	8.00	10.00	866
Sociopolrisk	0.02	1.14	−0.72	−0.72	−0.44	0.26	9.96	881
System	0.81	0.86	0.00	0.00	0.60	2.00	2.00	789
Ttg	0.01	0.08	−0.17	−0.02	0.00	0.03	1.06	971
Volgovfincon	0.13	0.08	0.02	0.06	0.10	0.17	0.45	789
Govfincon	0.15	0.06	0.06	0.11	0.15	0.19	0.31	795
Polcon	0.26	0.32	0.00	0.00	0.00	0.59	0.89	870
Loggnppc	7.23	1.35	4.64	6.14	7.14	8.18	9.95	954
Xrreg	2.34	0.59	1.00	2.00	2.00	3.00	3.00	866

Table 2: Inflation equation

Variable	Coeff.	Std. Err.
Constant	−0.218	(0.013)
CBturn	0.553***	(0.149)
Open	−0.169**	(0.082)
Volgovfincon	0.735*	(0.408)
Govfincon	0.176*	(0.616)
Ddebt	0.051**	(0.025)
N. Obs	419	
J. Statistic	1.276	

Dep. var.: Volgovfincon Govfincon

Endogenous vars.: dep. var., Volgovfincon, Govfincon

Instruments: exogenous vars, cycle, sociopolrisk, govter, average log gnp pro capite, latitude, time dummies

GMM White's heterosckedasticity consistent estimates.

Time dummies included but not reported

Table 3: Two equation system: inflation, central banker turnover rate

Variable	Col1	Col2	Col3	Col4	Col5	Col6
Dep Var: Inflation						
Constant	-0.155^{*}	-0.174^{*}	-0.149^{*}	-0.131	-0.204^{**}	-0.209^{***}
	(0.082)	(0.089)	(0.088)	(0.084)	(0.102)	(0.055)
CBturn	0.504^{***}	0.669^{***}	0.527^{***}	0.469^{***}	0.509^{***}	0.364^{***}
	(0.112)	(0.143)	(0.117)	(0.112)	(0.119)	(0.094)
Volgovfincon	0.910^{***}	0.830^{**}	0.851^{**}	0.810^{***}	0.992^{***}	0.852^{***}
	(0.291)	(0.344)	(0.363)	(0.303)	(0.313)	(0.243)
Govfincon	0.797^{**}	0.933^{**}	0.760^{*}	0.797^{**}	0.930^{**}	0.362^{*}
	(0.360)	(0.391)	(0.401)	(0.345)	(0.406)	(0.216)
Defactoreg						0.055^{***}
						(0.009)
Open	-0.163^{***}	-0.171^{***}	-0.157^{**}	-0.157^{***}	-0.175^{***}	-0.051
	(0.060)	(0.065)	(0.066)	(0.058)	(0.065)	(0.056)
Ddebt	0.023	0.012	0.023	0.021	0.024	0.006
	(0.022)	(0.023)	(0.022)	(0.022)	(0.023)	(0.018)
Pol. Control		-0.096	-0.003	-0.009	0.027	
		(0.074)	(0.008)	(0.011)	(0.031)	
Dep Var: Cbturn						
Constant	0.062	0.055	0.061	0.050	0.076^{*}	0.071^{*}
	(0.042)	(0.040)	(0.041)	(0.044)	(0.045)	(0.039)
Inflation	0.534^{**}	0.538^{**}	0.553^{**}	0.590^{**}	0.491^{*}	0.538^{***}
	(0.272)	(0.263)	(0.278)	(0.279)	(0.278)	(0.120)
Govter	0.260^{***}	0.283^{***}	0.247^{***}	0.256^{***}	0.272^{***}	0.290^{***}
	(0.089)	(0.090)	(0.091)	(0.089)	(0.091)	(0.074)
System	-0.039^{**}	-0.036^{**}	-0.038^{**}	-0.033^{*}	-0.041^{**}	-0.035^{***}
	(0.018)	(0.017)	(0.018)	(0.020)	(0.019)	(0.013)
Sociopolrisk	0.023^{***}	0.019^{***}	0.025^{***}	0.023^{***}	0.024^{***}	0.030^{***}
	(0.008)	(0.007)	(0.009)	(0.008)	(0.008)	(0.008)
Herfgov	0.058^{*}	0.054^{*}	0.057^{*}	0.057^{*}	0.044	0.023
	(0.034)	(0.032)	(0.034)	(0.034)	(0.037)	(0.034)
System obs	412	412	412	412	412	379
N. obs eq1	364	364	364	364	364	340

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Variable	Col1	Col2	Col3	Col4	Col5	Col6
N. obs eq2	412	412	412	412	412	379
J statistic	15.043	13.786	15.147	14.583	13.957	13.514

Pol. Control: Col 2 = Govter, Col 3 = Sociopolrisk, Col 4 = System, Col 5 = Herfgov

GMM White's heterosckedasticity consistent estimates. Time dummies included but not reported

Endogenous variables: dependent variables, Volgovfincon Govfincon.

Instruments: exogenous regressors, time dummies, latitude, cycle, average log gnp pro capite, polcon, xrreg, terms of trade growth.

Table 4: Three equation system: inflation, central banker turnover rate, *de facto* exchange rate regime

Variable	Eq1	Eq2	Eq3	Eq4
Dep Var: Inflation				
Constant	-0.235^{***}	-0.231^{***}	-0.290^{***}	-0.098^{*}
	(0.051)	(0.055)	(0.069)	(0.053)
CBturn	0.324^{***}	0.315^{***}	0.366^{***}	0.295^{***}
	(0.079)	(0.075)	(0.094)	(0.085)
Volgovfincon	0.716^{***}	0.826^{***}	0.847^{***}	0.570^{***}
	(0.159)	(0.181)	(0.191)	(0.147)
Govfincon	0.325^{*}	0.127	0.468^{**}	0.034
	(0.192)	(0.197)	(0.233)	(0.168)
Defactoreg	0.074^{***}	0.079^{***}	0.082^{***}	0.041^{***}
	(0.011)	(0.012)	(0.016)	(0.012)
Dep Var: Cbturn				
Constant	0.086^{**}	0.101^{**}	0.091^{**}	0.074^{*}
	(0.038)	(0.044)	(0.038)	(0.038)
Inflation	0.509^{***}	0.539^{***}	0.555^{***}	0.538^{***}
	(0.171)	(0.192)	(0.169)	(0.175)
Govter	0.279^{***}	0.238^{***}	0.235^{***}	0.238^{***}
	(0.078)	(0.075)	(0.077)	(0.079)
System	-0.042^{***}	-0.040^{***}	-0.036^{**}	-0.040^{**}
	(0.015)	(0.015)	(0.015)	(0.016)
Sociopolrisk	0.027^{***}	0.022^{***}	0.025^{***}	0.025^{***}
	(0.008)	(0.008)	(0.008)	(0.008)
Herfgov	0.029	0.042	0.016	$0.061 *$
	(0.035)	(0.037)	(0.035)	(0.035)
Dep Var: Defactoreg				
Constant	1.888^{***}	1.855^{***}	2.059^{***}	1.537^{***}
	(0.165)	(0.191)	(0.176)	(0.227)
Open	-1.733^{***}	-1.636^{***}	-1.736^{***}	-1.312^{***}
	(0.362)	(0.363)	(0.343)	(0.319)
Forliab	0.566^{***}	0.513^{***}	0.333^{**}	0.446^{***}
	(0.151)	(0.150)	(0.149)	(0.134)

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Variable	Eq1	Eq2	Eq3	Eq4
Kaopen	-0.191^{***}	-0.094^{*}	-0.091	-0.171^{***}
	(0.059)	(0.055)	(0.069)	(0.058)
Inflation	4.760^{***}	5.117^{***}	4.190^{***}	5.793^{***}
	(0.866)	(0.871)	(1.087)	(1.965)
System obs	475	475	472	471
N. obs eq1	330	330	330	292
N. obs eq2	388	388	388	390
N. obs eq3	400	400	397	349
J Statistic	25.81	NA	29.44	29.91

Eq1: baseline, Eq2 baseline 3SLS, Eq3 baseline with new definition of Defactoreg,

Eq4: baseline excluding high inflation.

GMM White's heterosckedasticity consistent estimates.

Time dummies included but not reported

Endogenous variables: dependent variables, Volgovfincon Govfincon, Forliab.

Instruments: exogenous regressors, time dummies, latitude, cycle, average log gnp pro capite, Ddebt, polcon, xrreg (excluded in eq 4), terms of trade growth.

Table 5: Central bank independence: the role of industrialised countries

Variable	Eq1	Variable	Eq2
Dep Var: Inflation			
Constant	-0.241^{***}	Constant	-0.326^{***}
	(0.046)		(0.061)
CBturn_{nonind}	0.288^{***}	CBturn	0.295^{***}
	(0.063)		(0.065)
CBturn_{ind}	-0.067		
	(0.181)		
	(0.158)		
Volgovfincon	0.152	Volgovfincon	-0.005
	(0.281)		(0.311)
Govfincon	0.631^{**}	Govfincon	0.837^{***}
	(0.253)		(0.282)
Defactoreg	0.091^{***}	Defactoreg	0.091^{***}
	(0.012)		(0.013)
		Dnonind	0.076^{**}
			(0.030)
Dep Var: Cbturn			
Constant	0.052	Constant	0.030
	(0.036)		(0.041)
Inflation	0.798^{***}	Inflation	0.704^{***}
	(0.135)		(0.166)
Govter	0.224^{***}	Govter	0.263^{***}
	(0.073)		(0.081)
System	-0.021	System	-0.020
	(0.014)		(0.013)
Sociopolrisk	0.023^{***}	Sociopolrisk	0.021^{***}
	(0.008)		(0.008)
Herfgov	0.005	Herfgov	0.021
	(0.035)		(0.034)
		Dnonind	0.025
			(0.030)
Dep Var: Defactoreg			

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Variable	Eq1	Variable	Eq2
Constant	1.780***	Constant	1.769***
	(0.155)		(0.202)
Open	−1.492***	Open	−1.585***
	(0.329)		(0.367)
Forliab	0.419***	Forliab	0.449**
	(0.117)		(0.184)
Kaopen	−0.130***	Kaopen	−0.119**
	(0.047)		(0.048)
Inflation	5.855***	Inflation	5.688***
	(0.700)		(0.757)
		Dnonind	0.053
			(0.184)
System obs	475		475
N. obs eq1	330		330
N. obs eq2	388		388
N. obs eq3	400		400
J Statistic	33.32		33.68

GMM White's heterosckedasticity consistent estimates.

Time dummies included but not reported

Endogenous variables: dependent variables, Volgovfincon Govfincon, Forliab.

Instruments: exogenous regressors, time dummies, latitude, cycle, average log gnp pro capite, Ddebt, polcon, xrreg, terms of trade growth.

Table 6: List of countries

Algeria	Estonia	Korea	Romania
Argentina	Finland	Kyrgyz Rep.	Russia
Armenia	France	Latvia	Slovak Rep.
Australia	Gambia	Lesotho	Slovenia
Austria	Ghana	Libya	South Africa
Azerbaijan	Greece	Lithuania	Spain
Belarus	Guatemala	Malawi	Sri Lanka
Belgium	Haiti	Malaysia	Swaziland
Bolivia	Honduras	Mauritius	Syria
Brazil	Hungary	Mexico	Tanzania
Chile	Iceland	Moldova	Thailand
China	Indonesia	Morocco	Turkey
Colombia	Iran	Nepal	Uganda
Costa Rica	Ireland	Netherlands	United Kingdom
Cyprus	Israel	New Zealand	United States
Czech Rep.	Italy	Nigeria	Uruguay
Denmark	Jamaica	Pakistan	Venezuela
Dominican Rep	Jordan	Peru	Zambia
Ecuador	Kazakhstan	Philippines	Zimbabwe
Egypt	Kenya	Portugal	

Data source

Economic Variables

Variable	Description	Source
Corrinf	Inflation (scaled)	IFS line 64
CBturn	Central bank turnover rate	Ghosh et. al 2002
Defactoreg	Index of de facto exchange rate regime	Reinhart and Rogoff (2004)
Forliab	Foreign liabilities over money (lagged)	IFS line 16c + line 26c
Kaopen	Capital account openness index	Authors' calculation based on Chinn and Ito (2002)
Open	Openess , imports + exports/2gdp	WDI
Gdpg	Gdp growth	WDI
Govfincon	Government final consumption over GDP	WDI
Volgovfincon	Volatility of government final consumption over GDP, 5 years moving standard deviation	WDI
Cycle	Log deviations from HP trend	Authors' calculations from WDI data
Ttg	Terms of trade growth	WDI
Lat	Latitude	La Porta et. al. (1999)
Loggnppc	Log GNP per capita	WDI

Political Variables

Variable	Description	Source
System	Typology of political system	DPI
Ass	Assassinations	CNTS archive
Genstr	General Strikes	CNTS archive
Guerwar	Guerrilla Warfare	CNTS archive
Purg	Purges	CNTS archive
Riots	Riots	CNTS archive
Revol	Revolutions	CNTS archive
Agdem	Anti-Government Demonstrations	CNTS archive
Sociopolrisk	index of socio political risk, first principal component of: Ass, Genstr, Guerwar, Purg, Riots, Revol, Agdem	Authors' calculation
Govter	measure of political change. Records the change in either the executive or in the institutional system or in the ideological orientation of the executive	Authors' calculations
Herfgov	Herfindal Index for government	DPI
xrreg	Regulation of executive recruitment	POLITY IV
Polcon	Political constraint index	Witold Henisz

Dataset References

Chinn and Ito financial openness measure: Cinn M., Ito I., "What Matters for Financial Development? Capital Controls, Institutions, and Interactions," Journal of Development Economics, forthcoming.
http://www.ssc.wisc.edu/∼mchinn/research.html

CNTS Dataset: Banks, A., "Cross-National Time Series Database".
http://www.databanks.sitehosting.net

DPI 2000: Beck T., Keefer P., and Clarke G., "Database of Political Institutions".
http://www.worldbank.org

Ghosh et. al. Dataset: Ghosh A., Gulde A.M., Wolf H. "Exchange Rate Regimes, Choices and Consequences", MIT Press, 2002.

IFS: International Monetary Fund, International Financial Statistics, 2004, CD Rom.
http://www.imf.org/external/pubind.htm

La Porta et. al. dataset: La Porta R., Lopez-de-Silanes F., Shleifer A., Vishny R., "The Quality of Government", Journal of Law, Economics and Organization, 1999.
http://www.andrei-shleifer.com/data.html

Polity IV Project: Monty G. Marshall M. and Jaggers K. "Political Regime Characteristics and Transitions, 1800-2003".
http://www.cidcm.umd.edu/inscr/polity/

Political Constraint Index: Henisz W. "The Institutional Environment for Economic Growth", Economics and Politics 2000.
http://www.management.wharton.upenn.edu/henisz/POLCON

Reinhart and Rogoff exchange rate regime classification: Reinhart C., Rogoff K. "The Modern History of Exchange Rate Arrangements: A Reinterpretation", Quarterly Journal of Economics, 2004.
http://www.wam.umd.edu/∼creinhar/Links.html

WDI: World Bank, World Development Indicators 2004, Washington, DC: The World Bank.
http://publications.worldbank.org/WDI/