

# Why Do Politicians Implement Central Bank Independence Reforms?\*

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## Abstract

It is something of a puzzle that politicians around the world have chosen to give up power to independent central banks, thereby reducing their possibilities to fine-tune the economy. In this paper the determinants of central bank independence (CBI) reforms are studied using a new data set on the possible event of such reforms in 119 countries. According to the data, as much as 81 countries had implemented CBI-reforms during the study period. The results indicate, moreover, that policymakers are more likely to delegate power to independent central banks when the foreign debt is relatively high. In non-OECD countries, the likelihood of a CBI-reform also seem to increase when policymakers face a high probability of getting replaced.

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# 1 Introduction

Over the two last decades a number of countries, ranging from New Zealand to Lesotho, England, Kazakhstan, Sweden and Chile, have implemented institutional reforms which grant their central banks more independence from the political process. It is, however, something of a puzzle that political policymakers choose to give up control over monetary policy when they know that monetary policy (at least in the short run) influence employment and production levels.

There exist a number of theoretical explanations. It has been suggested, for example, that central bank independence (CBI) reforms should occur in countries with high and persistent inflation (Rogoff, 1985), where price stability has already been achieved (Cukierman, 1994), where the government debt is relatively high (Maxfield, 1997), where the political system is characterized by a high degree of competition (Cukierman, 1994), where the financial sector is relatively influential (Posen, 1993), and so on.<sup>1</sup>

However, the question why political policymakers choose to delegate authority to central banks has (as far as we know) never been tested empirically. Previous empirical studies (de Haan and Van't Hag, 1995; Cukierman and Webb, 1995; de Haan and Siermann, 1996; Bagherei and Habib, 1998) have instead used various CBI-indices to investigate what determines a given level (i.e., not a change) of CBI. This means that these studies only can explain cross-country differences in CBI, while the more interesting ques-

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<sup>1</sup>A number of other explanations have also been suggested in the literature (for an overview, see e.g., chapter five in Eijffinger and de Haan, 1996). The possible determinants of central bank independence reforms are thoroughly discussed in the next section, while the empirical proxies that are used in this paper are presented in Section 3.

tion concerning why policymakers choose to implement CBI-reforms remain unanswered.

The purpose of this paper is to study the determinants of CBI-reforms using a new data set that contain the possible occurrence of CBI-reforms in 119 countries. According to the data, 81 of the 119 countries had implemented a CBI-reform during the period 1980-2005. Thus, the literature on the time-inconsistency of monetary policy (Kydland and Prescott, 1977; Barro and Gordon, 1983), together with Rogoff's (1985) suggestion that political policymakers should delegate power to a central bank with more inflation averse preferences, seem to be one of the most influential macro-economic findings in recent time.

The results presented in the paper indicate that countries with a high foreign debt ratio are more likely to implement CBI-reforms. In addition, in non-OECD countries, the likelihood of a CBI-reform seem to increase when policymakers face a high probability of getting replaced. Countries that are members of the European Union (EU) and the Latin American Free Trade Association (LAFTA) also seem more likely to delegate power to independent central banks if other countries in these organizations recently have implemented such institutional reforms. On the other hand, CBI-reforms seem unrelated to the level of inflation.

In the next section, possible determinants of CBI-reforms are discussed. The data used in this paper are described in Section 3. Section 4 then describes the econometric specification, while the results are presented in Section 5. Finally, section 6 summarizes and draws conclusions.

## **2 Determinants of central bank independence reforms**

It is commonly believed that CBI-reforms should reduce the inflationary bias of policy and make a low inflation rule credible. Kydland and Prescott's (1977) and Barro and Gordon's (1983) work on time inconsistency in monetary policy, together with Rogoff's (1985) suggestion that a central bank with more inflation averse preferences can make a low inflation policy credible, constitute the theoretical rationale for this belief.

Various empirical studies (e.g., Alesina, 1988; Grilli et al., 1991; Cukierman et al., 1992; Alesina and Summers, 1993; Jonsson, 1995; and Eijffinger et al., 1998) have also found a negative correlation between an index reflecting the degree of CBI and average inflation. Alesina and Summers (1993) could not find any correlation between CBI and unemployment, real economic growth, and real interest rates. As a result, there is a broad consensus that CBI improves the likelihood of achieving a low inflation goal at no real economic costs.

Note that achievement of price stability, according to the time inconsistency theory, cannot be explained by a pre-commitment to central bank autonomy. If announcement of a CBI-reform is sufficient for achieving a low-inflation goal, then it is optimal for the political policymakers to violate this promise when price stability is achieved (McCallum, 1997). Thus, the time-inconsistency theory and empirical work on the correlation between average inflation and CBI suggest that CBI-reforms are implemented because policymakers want to achieve low and stable inflation.

On the other hand, Cukierman (1994) have suggested that CBI-reforms may be implemented to maintain low inflation, i.e., as a committing device against future uncarefull policymakers. This implies that political policymakers implement CBI-reforms when they already have achieved a low and stable inflation. Daunfeldt and de Luna (2008) found, by comparing the implementation dates of central bank independence reform with the long term inflation trends for 29 OECD-countries, that price stability had been achieved in most countries before their central banks did become more independent. This constitute support for Cukierman's (1994) argument that CBI-reforms can be used as an instrument against future uncarefull policymakers.

According to the time-inconsistency model of monetary policy, the benefits of surprise inflation is directly related to the gap between the policymakers unemployment target and the natural rate of unemployment. This implies that an institutional reform that delegates authority to an independent central bank is more valuable for the policymakers when the natural rate of unemployment is relatively high (Cukierman, 1994; Eijffinger and Schaling, 1995).

It has, moreover, been suggested that CBI-reforms are implemented, especially in developing countries, to signal creditworthiness to foreign investors (Maxfield, 1997). Many developing countries have problems with high debt ratios. In this case, delegation of monetary policy to an independent central bank may signal creditworthiness to foreign investors. The International Monetary Fund (IMF) may also demand more central bank autonomy as a prerequisite for obtaining more funds. Maxfield (1997) presents

some descriptive results indicating that CBI-reforms are implemented in developing countries in order to signal creditworthiness.

Political factors may also influence the decision to delegate power to independent central banks. According to Cukierman (1994), countries that are characterized by a high degree of regime political instability are less likely to delegate authority to independent central banks. Irregular changes of government due to revolutions, coup d'état etc often occur in these countries, implying that policymakers mainly are concerned with its own survival. On the other hand, when the politicians in office fear that they might lose power in the next election, central bank independence reforms may be implemented to reduce the decision-power of the incoming government. Moser (1994) has presented some evidence indicating that countries characterized by extensive check and balances (i.e., multiple veto players) have more independent central banks.

Posen (1993) argued that the observed negative correlation between the degree of CBI and inflation is illusionary. The reason is that inflation and degree of CBI primarily is determined by financial opposition to inflation, suggesting that CBI-reforms are implemented in countries where the financial sector is relatively influential. Analogously, CBI-reforms are also more likely to be implemented in countries where public opposition to inflation is relatively strong. Posen (1993), Forder (1996) and Hayo (1998) have all argued that CBI and the commitment to a low inflation rule is jointly determined by social attitudes, i.e., CBI is an endogenously determined variable. This suggests that independent central banks are successful in implementing low and stable inflation merely because their independence reflects a social

attitude that supports low inflation.

### 3 Data

The dependent variable in our empirical analysis is a qualitative variable indicating whether a CBI-reform has been implemented in a particular year. Implementation years of CBI-reforms are, however, not readily available anywhere. Therefore, to obtain dates of CBI-reforms, all central banks listed in the Morgan Stanleys *Central Bank Directory 2004* were contacted by e-mail. The e-mail contained the following questions: (i) Has your country implemented any institutional reforms that grant your central bank more independence from elected policymakers? (ii) If yes, when? (iii) Where can we find more information about this?

This means that we consider legal reforms that decreases the influence of politicians on monetary policy making as CBI-reforms. The definition employed in this paper thus includes legal reforms that safe-guardes the low inflation goal in the legislation, decreaes the possibilities for the government to override the central bank's decision on its operating targets, put restrictions on the governments opportunities to use central bank credits in order to finance budget deficits, decreases the possibilities to dismiss a central bank governor, increases the terms in office and the number of members of the central bank's governing body for monetary policy, and so on. A statement that price stability is the only goal for the monetary policy is not regarded as sufficient. Note also that our study focus on a change towards more CBI, while the magnitude of the reform is undetermined.

In total, 164 central banks were contacted and 95 central banks finally answered the questionnaire, corresponding to a respondent rate of 58 percent. A formal analysis of the response rate (with a simple probit model) show that the probability of response is increasing in GDP and decreasing for countries belonging to the Asian, South-American and the African continent compared to those belonging to the Australian, European and the North-American continent (statistically significant results at conventional levels). The analysis further indicate that a country's inflation rate does not seem to affect the probability of response.<sup>2</sup>

Other means of information (e.g., central bank publications, central bank acts, and scientific articles) were used to validate the e-mail answers and to obtain the relevant dates of CBI-reforms for the countries that did not respond to the e-mail questionnaire. The final sample used in this paper consist of 119 central banks. This means that we have information about the occurrence of CBI-reforms in 73 percent of the countries that initially were contacted by e-mail.<sup>3</sup>

A list of all countries included in the final sample can be found in Table A1 in the Appendix. Note that 81 of the 119 countries studied in this paper have implemented institutional reforms which grant their central banks more independence from the political policymakers. This means that CBI-reforms have been one of the most significant trends in international politics during the last decades. It also illustrates the influence of the time-inconsistency

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<sup>2</sup>The response rate analysis is hampered by a lack of data, in particular for the countries failing to respond to the e-mail questionnaire.

<sup>3</sup>The various sources that were used to classify whether and when a particular country has implemented a CBI-reforms can be found at [www.hui.se](http://www.hui.se), choosing research and then HUI Working Papers. The paper is listed as HUI Working Paper No 13.



literature on policy outcomes around the world.

The time trend in the number of CBI-reforms around the world during the period 1980-2005 is displayed in Figure 1. New Zealand is often considered to be the first country that implemented a CBI-reform when they implemented the Reserve Bank Act in 1989<sup>4</sup>, thereby substantially reducing the politicians ability to produce surprise inflation. New Zealand was soon followed by others. CBI-reforms started to increase in 1991 when three countries (Belize, El Salvador and Hungary) delegated power from their elected policymakers to the central bank. An all-time high number was reached in 1998 when twelve countries launched institutional reforms that granted their central banks more independence from the political policymakers. As can be seen from Figure 1, CBI-reforms have continued to be implemented after 1998.

**- Figure 1 About Here -**

The frequencies of CBI-reforms over the sample period for OECD and non-OECD countries are shown in Figures 2 and 3, respectively. In the OECD-countries, CBI-reforms started in 1989 (New Zealand) and reached the highest number in 1998, when ten countries within Europe implemented such institutional reforms. For the members of the ESCB (European System of Central Banks), this increase may be explained by the outline of the Maastricht Treaty where their national central banks were required to be independent before the ESCB's establishment date. In recent years other prospective members of the European Monetary Union (e.g., Czech Republic

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<sup>4</sup>For more information on the regime shift in New Zealand and the Reserve Bank Act, see Evans et al. (1996), Silverstone et al. (1996), and Daunfeldt and de Luna (2001).

and Polen) have also granted their central banks more independence from the politicians.

**- Figure 2 About Here -**

In Figure 3, the number of CBI-reforms is displayed separately for countries within the more developing non-OECD countries. This figure reveals some interesting geographical patterns. Non-OECD countries were the first to implement CBI-reforms, explaining the increase in CBI in the beginning of the 1990s (Figure 1). Most of this increase in CBI happened in South-America. In 1995, seven non-OECD countries (five countries in South-America, one in Asia, and one in Africa) implemented institutional reforms to increase the independence of their central banks. The sum of CBI-reforms in the non-OECD countries declined after 1995, but a second-wave of CBI-reforms started in 2002. This increase can mostly be attributed to an increase in CBI in Asia and Africa.

**- Figure 3 About Here -**

In the empirical study the reform year is indicated by one and all previous years with zeros. This is done in order to avoid explaining the period after the CBI reforms. Hence, the individual series ends the same year as the CBI reform. The dependent variable contains a large amount of zeros. The frequency for the full, OECD and non-OECD samples are displayed in Table 1. The amount of zeros are 96.7, 95.5 and 97.2 percent for the full, OECD and non-OECD samples, respectively.

**-Table 1 About Here -**

In order to study why countries choose to implement CBI-reforms, we control for both economic characteristics, political factors, and spatial determinants.

Economic characteristics used in the empirical analysis are inflation measured by the annualized percentage change in consumer prices from *IMF Financial Statistics*, unemployment rates obtained from the *International Labor Organization (ILO)*, gross domestic product per capita (GDP) in US dollar and the foreign debt ratio from the World Bank's *World Development Indicators*. In addition, the strength of the financial sector is measured by liquid liabilities as percentage of GDP using data from the *World Bank* (Beck et al., 1999). All the economic variables are lagged one period to avoid endogeneity problems.<sup>5</sup>

Political variables that are used in the empirical analysis to capture political determinants of CBI-reforms are political fragmentation in the parliament, whether the country is federation or not, and the level and variation of political freedom in the country. These variables are obtained from Lundell and Karvonen's (2003) *Comparative Data Set on Political Institutions*.<sup>6</sup>

The use of implementation dates in the empirical analysis does not take into account that the degree of CBI differ from one country to another. It is, for example, possible that the CBI-reforms in some countries predate the study period. Therefore, the value of the CBI-index developed by Cukier-

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<sup>5</sup>We have also tried to lag all the economic variables two and three periods., respectively. All qualitative results remain the same. The results are available from the authors upon request.

<sup>6</sup>The purpose of the data set is to gather information on political institutions around the world since 1960. The data is compiled at the Department of Political Science, Åbo Akademi, in collaboration with Professor Torsten Persson at the Institute of International Economic Studies, Stockholm University.

man et al. (1992) is used to analyze whether the event of a CBI-reform depends on the initial level of CBI. Finally, the number of CBI-reforms in the European Union (EU), the African Economic Community (AEC), the Asian-Pacific Economic Cooperation (APEC), and the Latin American Free Trade Association (LAFTA) in the previous period is used to control for possible spatial effects (e.g. politicians in the same economic cooperation may be influenced by each other) concerning CBI-reforms.

A problem when working with macro-data for the large amount of countries considered in this paper concerns missing data. In Table 2 the number of missing observations in the full, OECD and non-OECD samples are displayed. As can be seen the problem is largest for the non-OECD sample. This in particular concerning the variables corresponding to unemployment, foreign debt, federation and political fragmentation. For the OECD (full) sample the problem is largest concerning the variables liquid assets and foreign debt (foreign debt and unemployment).

**-Table 2 About Here -**

Since missing data (if not missing at random) can obscure the results mean imputation with an EM-algorithm is used (see e.g. Little and Rubin, 1987). Means and standard deviations for the imputed samples are displayed in Table 3. The variables included are further discussed in Section 4.

**- Table 3 About Here -**

## 4 Empirical model

To investigate why policymakers choose to implement central bank independence reforms we define the unobserved latent reform pressure in country  $i = 1, 2, \dots, n$  in year  $t = 1, 2, \dots, T$  as

$$y_{it}^* = \boldsymbol{\theta}'_j \mathbf{X}_{it} + \boldsymbol{\lambda}'_k \mathbf{Z}_{it} + \varepsilon_{it}.$$

Here  $\mathbf{X}_{it}$  and  $\mathbf{Z}_{it}$  are vectors of economic respectively political variables that are assumed to affect the CBI-reform pressure, while  $\boldsymbol{\theta}'_j$  and  $\boldsymbol{\lambda}'_k$  are the corresponding parameter vectors. The error term is specified as  $\varepsilon_{it} = \mu_i + \eta_{it}$ , where  $\mu_i$  denotes country specific unobservable effects and  $\eta_{it}$  is a random error. In the specification of a probit random effects model it is assumed that  $\eta_{it} \sim IN(0, \sigma_\eta^2)$ .<sup>7</sup> The CBI-reform pressure can only be observed in dichotomous form, i.e.

$$y_{it} = \begin{cases} 1, & y_{it}^* \geq 0 \text{ (if reform)} \\ 0, & y_{it}^* < 0 \text{ (no reform)} \end{cases}$$

is the observed reform decision. The parameters of the model are estimated (Heckman, 1981) by noting that the distribution of  $y_{it}^*$  conditional on  $\mu_i$  are independent normal. Thus

$$\Pr(y_{it} = 1 | \mu_i, \mathbf{X}_{it}, \mathbf{Z}_{it}) = \Pr\left(\frac{\eta_{it}}{\sigma_\eta} > \frac{-\boldsymbol{\theta}'_j \mathbf{X}_{it} - \boldsymbol{\lambda}'_k \mathbf{Z}_{it} - \mu_i}{\sigma_\eta}\right) = \Phi(z_{it}),$$

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<sup>7</sup>Estimation results for random effects Logit as well as linear probability models with random effects gave similar results.

where

$$z_{it} = -(\boldsymbol{\theta}'_j \mathbf{X}_{it} + \boldsymbol{\lambda}'_k \mathbf{Z}_{it} + \mu_i) / \sigma_\eta,$$

and  $\Phi$  is the distribution function for a standard normal variate.

The vector of economic explanatory variables,  $\mathbf{X}_{it}$ , consist of proxies for economic factors that are assumed to influence the decision to delegate authority to an independent central bank. Inflation in country  $i$  is included to study whether CBI-reforms are more likely to be implemented in countries with high inflation or in countries that already have achieved a low and stable inflation. In the latter case we expect inflation to be negatively related with the event of a CBI-reform, while inflation should be positively associated with independence reforms if CBI mainly is implemented to make a low inflation policy rule credible and thereby reduce inflation.

The benefits of surprise inflation and the credibility of a low policy inflation rule is in the time-inconsistency model assumed to be determined by the gap between the policymakers unemployment target and the natural rate of unemployment. Therefore, unemployment is included to control whether a relatively high natural rate of unemployment makes surprise inflation more beneficial and thereby reduces the likelihood of a CBI-reform or whether it strenghten the need for an institutional reform that makes the central bank more independence from the political policymakers.<sup>8</sup>

The foreign debt as a percentage of GDP is also included as an explanatory variable. As discussed in Section 2, countries may voluntary or more or less involuntary be forced to implement CBI-reforms in order to signal

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<sup>8</sup>The actual unemployment rate tends to follow the natural rate of unemployment (see e.g., Elmeskov, 1994) and is, therefore, used as a proxy in the empirical analysis.

creditworthiness to foreign investors. Hence, the likelihood of a CBI-reform should be higher in countries with relatively high debt ratios.

$\mathbf{Z}_{it}$  include political factors that are assumed to influence the decision to make the central bank more independent. For example, regime political instability is assumed to reduce the probability that a CBI-reform is implemented. Regime political instability is approximated with the degree and variation of political freedom in country  $i$  based on the annual ratings of political rights and civil liberties reported by *Freedom House*. As discussed in the previous section, we use the data compiled by Lundell and Karvonen (2003) where the number 1 represent the highest degree of freedom and 3 the lowest. The level of political freedom is in the empirical analysis measured by two dummy variables. The first dummy variable takes the value one if country  $i$  is characterized by a high degree of political freedom (i.e., freedom index=1), and zero otherwise; while the second dummy is equal to one if the level of political freedom is low in country  $i$  (i.e., freedom index=3). A moving variance series for a window length of three years is used to capture movements in political freedom within the country. As political policymakers in countries with a low level and high variation of political freedom might be concerned with their own survival, it is expected that central bank independence reforms are less likely to be implemented in such countries.

On the other hand, countries with high party political instability are expected to be more eager to implement central bank independence reforms. When the government fear that they soon might be replaced, they have the opportunity to tie the hands of the next government by delegating power

to an independent central bank. Party political instability is measured by the degree of political fragmentation in the parliament using Rae's index of party system fractionalization. A value of zero indicate that one party has all the seats in the parliament, whereas a value of 10,000 indicate that each party only has one seat in the parliament. In the latter case, the country is characterized by a very high level of party political instability.

The degree of fiscal federalism is included as a dummy variable taking the value one if country  $i$  is a federation. Moser (1994) argues that countries with a high degree of federalism are more likely to have an independent central bank, suggesting that the likelihood of a CBI-reform should be positively related to the degree of fiscal federalism. As noted by Posen (1993) and Hayo (1998), CBI may also be determined by the degree of financial - and public opposition to inflation. Financial opposition to inflation is approximated with the liquid liabilities in country  $i$ <sup>9</sup> as percentage of GDP using the database on financial development and structure compiled by Beck et al. (1999). We expect that the financial sector is relatively influential in countries that have a large financial sector, creating a positive correlation between the likelihood of a CBI-reform and liquid liabilities in country  $i$ .

The decision to implement a CBI-reform may also be influenced by the initial level of CBI. It is, for example, possible that countries that already have established independent central banks (e.g., Germany) are less likely to implement CBI-reforms. The CBI-index developed by Cukierman et al. (1992) is, therefore, included as an explanatory variable in the estimated

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<sup>9</sup>Liquid liabilities includes currency, demand and interest-bearing liabilities of banks and other financial intermediaries.



model.

Finally, in order to control for spatial effects, we also include an interaction term measuring whether countries that are members of the European Union (EU), the African Economic Community (AEC), the Asian-Pacific Economic Cooperation (APEC), and the Latin American Free Trade Association (LAFTA) are more likely to launch CBI-reforms if many other member countries implemented such reforms in the previous period.

## 5 Results

The results from the estimation of the probit random effect model are presented in Table 4 below. As discussed previously, different factors may influence the decision to implement CBI-reforms in industrialized and developing countries. Results are, therefore, also presented separately for OECD and non-OECD countries.

An analysis of the generalized residuals (based on Gouriéroux et. al., 1987) for the random effects probit models show no residual autocorrelation. Further, a likelihood ratio test for the models estimated on each of the samples were used to assess the overall performance (against a constant only specification). The LR-statistic (with 15 d.f.) were 55.73, 31.95 and 38.55 for the full, OECD, and non-OECD sample, respectively. Thus, the LR-tests indicate that the estimated models are significant at conventional levels.

**Table 4 About Here**

As can be seen from Table 4, countries that are characterized by high foreign debt ratios seem more likely to implement CBI-reforms than countries with lower foreign debt ratios. This supports the descriptive results previously presented by Maxfield (1997), indicating that political policymakers choose to give up power to independent central banks in order to signal creditworthiness to foreign investors. Note that this effect is statistically significant at the 5% level for both OECD and non-OECD countries.

The time-inconsistency theory (Kydlund and Prescott, 1977; Barro and Gordon, 1983; Rogoff, 1985) implies that a CBI-reform must be implemented in order to improve the credibility of a low inflation goal, suggesting that CBI-reforms are implemented to reduce inflation. On the other hand, Cukierman (1994) and Daunfeldt and de Luna (2008) have argued that central bank autonomy may have been institutionalized at a time when the policymakers have a commitment to low inflation and used as a committing device against subsequent governments. In this case, we expect that CBI-reforms are implemented when inflation is low. The results presented in Table 4 do not support any of these hypotheses as the estimated inflation parameter is negative, but not statistically significantly determined. This suggests that the level of inflation has no influence on the decision whether to grant the central bank with more independence from the political policymakers.

In fact, no other economic determinant of CBI-reforms is statistically significantly determined at any conventional significance level for the full sample. The gross domestic product is negative and statistically significant at the 10%-level when estimations are performed for the sub-sample of OECD-countries, suggesting that OECD-countries with relatively low GDP

per capita are more likely to implement CBI-reforms. A possible explanation is that countries such as Hungary, Poland and Turkey, in recent years have implemented CBI-reforms to harmonize their legislation with the more industrialized OECD-countries. Thus, creating a negative relationship between GDP per capita and the likelihood of a CBI-reform. This explanation is supported by Cukierman et al. (2002), who noted that policymakers in former socialist countries chose to create central banks with a very high level of CBI when they transformed their legislation.

Turning to the political determinants of CBI-reforms, the results indicate that non-OECD countries characterized by a high degree of political fragmentation are more likely to implement CBI-reforms. This suggests that CBI-reforms are more common when policymakers fear that they soon will be replaced. Hence, CBI-reforms seem to be implemented in order to tie the hands of incoming governments.

Note, however, that this effect is not present among the more industrialized countries. In addition, in the non-OECD sample, the results indicate that CBI-reforms are more likely in countries that often change their political regime.

The number of CBI-reforms in period  $t - 1$  in the European Union (EU) and the Latin American Free Trade Association (LAFTA) also seem to influence the likelihood that policymakers in member countries delegate power to independent central banks. It thus seems to exist geographical clustering in time, i.e., countries in the same economic cooperation seem more likely to give up power to independent central banks if many other countries in the same cooperation recently have implemented CBI-reforms.

## 6 Conclusions

It is something of a puzzle that politicians in a large number of countries recently have chosen to delegate power to independent central banks, thereby reducing their ability to fine-tune the economy. This paper should be seen as a first attempt to empirically investigate why political policymakers choose to give up power to independent central banks.

The lack of compiled data on the occurrence of CBI-reforms can probably explain why no previous study has investigated why politicians choose to delegate power to independent central banks. Therefore, we have collected and analyzed dates on the possible occurrence of such institutional reforms in 119 countries during the period 1980-2005. The results presented in the paper showed that 81 of these countries (i.e., 68 percent) had implemented an institutional reform that granted the central bank more independence from the political policymakers during the study period. Hence, the launch of institutional reforms that formally increase CBI seem to be one of the most significant trends in international politics in recent time. It also illustrates the influence of the time-inconsistency literature on policy outcomes around the world.

To investigate why policymakers implement central bank independence reforms, a random-effects probit regression model was estimated. According to the results presented in the paper, policymakers are more likely to formally grant their central bank with more independence if the foreign debt is relatively high. This supports results previously presented by Maxfield (1997), indicating that policymakers choose to give up power to indepen-

dent central banks in order to signal creditworthiness to foreign investors. It is, moreover, found that non-OECD countries that are characterized by a high degree of political fragmentation and variation in political freedom are more likely to implement CBI-reforms. This probably indicates that the fear of loosing power induce policymakers in these countries to delegate power to independent central banks. Finally, the likelihood of a CBI-reform in the European Union (EU) and the Latin American Free Trade Association (LAFTA) increased when other countries in the same economic cooperation recently have granted the central bank more legal independence; implying that there also exist spatial determinants of CBI-reforms.

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Table 1: Frequencies of dependent variable

	Full sample	OECD	Non-OECD
0	2444	554	1890
1	81	26	55
Total	2525	580	1945

Table 2: Number of missing observations for independent variables

	Full sample		OECD sample		Non-OECD sample	
	Missing	Percent	Missing	Percent	Missing	Percent
Inflation	358	14%	43	7%	315	16%
GDP	302	12%	33	6%	269	14%
Unemployment	1400	55%	99	17%	1301	67%
Liquid assets	824	33%	261	45%	563	29%
Foreign debt	1552	61%	245	42%	1307	67%
Pol fragmentation	967	38%	50	9%	917	47%
Federation	992	39%	0	0%	992	51%
Freedom	851	34%	43	7%	808	41%
Total observations	2525		580		1945	

Table 3: Descriptive statistics

Variable	Full sample		OECD sample		Non-OECD	
	Mean	s.d.	Mean	s.d.	Mean	s.d.
Inflation	22.14	54.58	12.09	31.41	25.13	59.45
GDP	6086	8263	17687	9071	2626	3469
Unemployment	8.17	3.82	7.14	3.90	8.48	3.74
Liquid liabilities	0.47	0.29	0.66	0.33	0.41	0.24
Foreign debt	68899	142620	23703	62164	82377	156419
Pol fragmentation	5624	1753	6676	1252	5310	1759
Federation	0.09	0.29	0.26	0.44	0.04	0.19
Freedom	1.82	0.70	1.20	0.52	2.01	0.63
Var. Freedom	0.15	0.22	0.07	0.21	0.18	0.22
CBI-index	35.52	8.58	36.91	15.11	35.10	5.18
CBI EU	0.08	0.62	0.25	1.06	0.03	0.40
CBI AEC	0.08	0.36	0	0	0.11	0.41
CBI APEC	0.03	0.19	0.07	0.28	0.02	0.15
CBI LAFTA	0.02	0.20	0.01	0.14	0.02	0.21
Number of obs.	2525		580		1945	
Number of countries	118		30		88	

Table 4: Probit estimates regarding the determinants of CBI-reforms.

Variable	All countries		OECD		Non-OECD	
	Estimate	z-value	Estimate	z-value	Estimate	z-value
Constant	-2.76	-6.97	-2.01	-2.13	-3.35	-5.59
Inflation (L)	-0.011	-0.68	-0.089	-0.92	-0.012	-0.69
GDP (L)	0.007	0.78	-0.034	-1.80	0.017	0.83
Unemployment (L)	0.011	0.68	-0.018	-0.62	0.011	0.56
Liquid assets (L)	0.14	0.64	0.61	1.67	-0.11	-0.35
Foreign debt (L)	0.011	2.67	0.041	2.18	0.010	2.31
Pol fragmentation	0.072	1.92	0.051	0.47	0.079	1.86
Federation (D)	-0.29	-1.29	-0.19	-0.50	-0.26	-0.80
High freedom (D)	0.20	1.31	0.48	0.99	0.15	0.85
Low freedom (D)	0.23	1.40	0.61	0.98	0.22	0.17
Var. Freedom	0.41	1.93	0.18	0.30	0.48	2.04
CBI-index	0.001	0.17	-0.006	-0.67	0.019	1.43
CBI EU (L)	0.16	2.80	0.27	3.37	0.006	0.05
CBI AEC (L)	0.15	1.25	-	-	0.16	1.28
CBI APEC (L)	0.18	0.76	0.16	0.43	0.089	0.22
CBI LAFTA (L)	0.44	2.87	0.059	0.11	0.44	2.63
Log L	-314.82		-88.15		-219.34	
Number of obs.	2170		490		1680	
Number of countries	118		30		88	

Note: (L) = lagged one period, (D) = dummy variable.

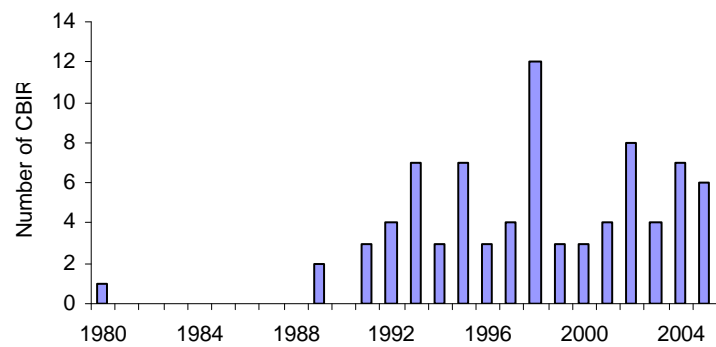


Figure 1: Number of central bank independence reforms for the full sample.

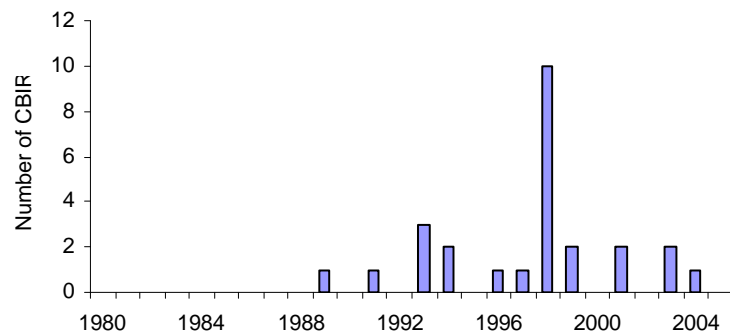


Figure 2: Number of central bank independence reforms in OECD countries.

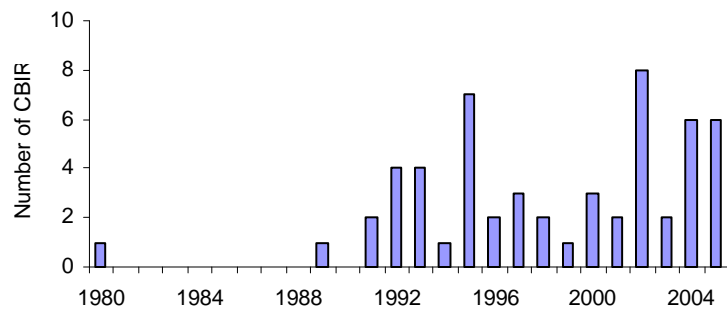


Figure 3: Number of central bank independence reforms in non-OECD countries.



## Appendix

Table A1: Year of possible CBI-reform in 119 countries

Country	Year	Country	Year	Country	Year
Afganisthan	2003	Cap Verde	None	Georgia	1995
Albania	1998	Cent. Af. States	None	Germany	None
Argentina	1992	Chad	None	Ghana	None
Australia	1996	Chile	1989	Greece	1997
Austria	1998	China	None	Guatemala	2002
Azerbaijan	2004	Colombia	1992	Guyana	1998
Bahamas	2000	Comoros	None	Honduras	1996
Bahrain	None	Costa Rica		Hungary	1991
Bangladesh	None	Croatia	2001	Iceland	2001
Barbados	None	Cyprus	2002	Iran	2005
Belarus	None	Czech Republic	1993	Ireland	1998
Belgium	1999	Denmark	None	Israel	None
Belize	None	Djibouti	2005	Italy	1998
Bhutan	None	Dominican Rep	2002	Jamaica	None
Bolivia	1995	Ecuador	1992	Japan	1998
Bosnia	1997	Egypt	None	Jordan	None
Botswana	None	El Salvador	1991	Kazakhstan	2005
Brazil	None	Estonia	2004	Kenya	None
Brunei	None	Ethiopia	None	Korea	2003
Bulgaria	2005	Fiji	None	Kuwait	None
Burundi	None	Finland	1998	Lao	None
Cambodia	None	France	1993	Latvia	2002
Canada	None	Gambia	2005	Lesotho	2000

Table A1 (continued): Year of possible CBI-reform in 119 countries

Country	Year	Country	Year	Country	Year
Lithuania	2001	Seychelles	2004	Venezuela	1995
Luxemburg	1998	Slovak Rep	1993	Vietnam	1997
Madagascar	1994	Slovenia	2002	Zambia	None
Maldives	None	Solomon Isl	None	Zimbabwe	None
Malta	2002	South Africa	1996		
Mauritius	2004	Spain	1994		
Mexico	1994	Sri Lanka	2002		
Namibia	2004	Suriname	2005		
Nepal	2002	Swaziland	None		
Netherlands	1998	Sweden	1999		
New Zealand	1989	Switzerland	2004		
Nicaragua	1992	Syrian	None		
Nigeria	1999	Tanzania	1995		
Norway	2003	Thailand	None		
Pakistan	1997	Trinidad	None		
New Guinea	2000	Tunisia	2006		
Paraguay	1995	Turkey	2001		
Peru	1993	Uganda	1993		
Philippines	1993	United Arab Em,	1980		
Poland	1998	United Kingdom	1998		
Portugal	1998	United States	None		
Romania	2004	Uruguay	1995		
Samoa	2003	Vanuatu	None		