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**IS THERE ANY LINK BETWEEN LEGAL CENTRAL BANK INDEPENDENCE AND
INFLATION?**

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Luis I. Jácome H. and Franciso Vázquez

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Luis I. Jácome H. and Francisco Vázquez*

Abstract

This paper reviews central bank legislation in 24 countries in Latin America and the Caribbean during the 1990s. Using panel regressions, the paper finds a negative relationship between legal central bank independence (CBI) and inflation. This result holds for three alternative measures of CBI, and after controlling for international inflation, banking crises, and exchange regimes. The result is also robust to the inclusion of a broader indicator of structural reforms that usually go along with changes in central bank legislation, illustrating the complementary nature of various aspects of economic reform. However, the paper fails to find a causal relationship running from CBI to inflation.

JEL Classification Numbers: E42, E58

Keywords: Central bank independence, inflation, structural reform, Latin America

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I. INTRODUCTION

The 1990s was a decade of deep changes to central bank legislation worldwide. The common denominator was the increased autonomy and accountability granted to central banks in the design and execution of monetary policy, with the objective of attaining and preserving price stability.² These legal reforms were considered particularly promising in countries with a previous history of inflation and excessive government interference in monetary policy for short-term political purposes (i.e., to finance fiscal expenditure, or to stimulate economic activity).

Latin America also strengthened the institutional foundations of monetary policy. After decades of persistent inflation and macroeconomic instability, the central bank reform was extensively adopted by all Latin American countries (LAC), except Brazil, starting with Chile in 1989. In contrast, changes to central bank legislation were largely absent among the Caribbean countries (CAR). The reform of central banks was part of a far-reaching structural reform agenda that aimed at defeating inflation and laying the ground for faster economic growth.

On theoretical grounds, the central bank reform was motivated by the insights of the early time-inconsistency models of Kydland and Prescott (1977), and Barro and Gordon (1983), which showed that governments facing a trade-off between inflation and unemployment would rather choose higher-than-optimal inflation rates. Latter work pioneered by Rogoff (1985) proved that this inflationary bias could be reduced by delegating monetary policy to an independent and conservative central banker. This class of models implied that the institutional underpinnings of central banks could have important effects on inflationary outcomes, providing the basis for a subsequent wave of central banks' reform.

The notion of assigning independence to central banks with the aim of defeating inflation found empirical support, but mainly in industrial countries. Increased central bank independence (CBI), usually proxied by the provisions contained in central bank laws, or by the turnover rate of central bank governors, was found negatively associated with inflation (see a survey by Berger et al., 2000).³ But the possibility of reverse causality running from CBI to inflation has not been ruled out as recognized in the literature (Posen, 1993, 1995).

² In this paper, the terms "autonomy" and "independence" are used interchangeably, as is usual in the literature. However, as pointed by Lybek (1998), their interpretation may be different since autonomy implies operational freedom, while independence may be interpreted as the absence of political or institutional interference.

³ However, these findings have been contested on several grounds. Some authors have argued that the relationship between CBI and inflation originates from a third (latent) variable such as the "opposition to inflation" (Posen, 1995) or the national "culture" toward inequality (De Jong, 2002). More importantly, Campillo and Miron (1997) showed that the negative relationship between CBI and inflation obtained in Cukierman et al. (1992) disappeared after including additional controls, suggesting that the result was driven by an omitted variable bias. Building on this critique, a more recent study by Brumm (2000) was able to recover the negative relationship between CBI and inflation after making a correction in the estimation method, to account for the possibility of measurement error in the CBI index.

The evidence from developing countries is both scarcer and less conclusive. An early study by Cukierman et al. (1992) reported a negative relationship between legal CBI and inflation for industrial countries, but failed to obtain similar results for developing countries. This asymmetry was attributed to a larger gap between legal and effective CBI in developing countries, possibly eroding the usefulness of the legal indicator as a measure of effective CBI. However, a study by De Haan and Kooi (2000), using the turnover of central bank governors as a more direct measure of effective CBI for a sample of 82 countries in the 1980s, also failed to find a robust relationship between CBI and inflation.⁴ These two studies, however, are subject to some caveats. First, as usual in this literature, they fail to control for potential determinants of inflation, opening the possibility for an omitted variable bias. Second, the conclusions are based on a cross-country approach, and thus fail to capture the temporal dimension of central bank reform—an issue particularly relevant for the case of developing countries. Third, the results do not take into account the possible endogeneity of central bank reform. Some of these shortcomings have been addressed in other papers. The possibility of omitted variable bias was tackled by Loungani and Sheets (1997), who used a sample of transition economies and reported a negative relationship between CBI and inflation, even after controlling for other measures of economic policy such as fiscal performance and economic reforms. A step forward was taken by Cukierman et al. (2002), who extended the Cukierman (1992) index to 26 transition economies during the 1990s, keeping track of CBI both during pre-and post-reform periods. After controlling for price liberalization, they concluded that increased CBI was unable to contain the initial inflationary effects of price decontrols, but showed that higher CBI became effective against inflation after the reform process acquired momentum.

This paper is related to Cukierman et al. (2002) in two aspects. First, it measures CBI and applies it to a (regional) sample of developing countries, keeping track of CBI during the pre-and post-reform periods, and exploiting both the cross-sectional and the time dimensions of the data. In fact, the sample of Latin American and Caribbean countries provides a rich experiment for the hypothesis being tested, given the widespread adoption of central bank reform and the extraordinary reduction in inflation attained during the last 15 years.⁵ Second, it takes into account the effects of broader structural reform policies that usually go along with changes in central bank legislation. Since these typically include trade liberalization, labor market reform, privatizations, and other structural policies with potential effects on inflation, the results obtained are less vulnerable to the possibility of omitted variable bias.

⁴ In their study, the (negative) correlation between the turnover rate of central bank governors and inflation disappeared after the exclusion of a few high inflation countries from the sample.

⁵ The evidence from Latin America and the Caribbean is scant and inconclusive. Jácome (2001) failed to find a clear relationship between increased CBI and inflation for a sample of Latin American countries. Gutiérrez (2003) reported a negative correlation using a sample of Latin American and the Caribbean countries and focusing on constitutional provisions on CBI.

At the same time, this paper departs from Cukierman et al. (2002)—and other studies—in several ways. First, it builds a new measure of central bank independence that adds several dimensions to the Cukierman index. These include the rules for the appointment and removal of central banks' board of directors (not only of central banks' governors), legal provisions governing lender-of-last-resort (LOLR) facilities, rules for central banks' financial autonomy, and legal requirements on accountability.⁶ Second, this paper exploits both the cross-sectional and time series dimensions of the data by using panel regressions. In contrast, the paper by Cukierman et al. (2002) and most other studies work with the averaged values of the series during the pre- and post-reform periods, treating them implicitly as independent observations. Third, this paper tests for a causal relationship running from CBI to inflation by taking into account the likely endogeneity of the central bank reform.

The results obtained in this paper show a strong negative relationship between increased CBI and inflation, after controlling for international inflation, banking crises, and exchange regimes in the sampled countries. This conclusion is robust to the inclusion of an index of broader structural reforms, suggesting that the findings are not driven by an omitted variable bias. Furthermore, structural reforms are shown to have a beneficial effect on inflation, which illustrates the complementary nature of various dimensions of economic policies. The qualitative results are robust to two alternative measures of central bank independence (Cukierman, 1992 and Grilli, Masciandaro, and Tabellini, 1991). On the other hand, after taking into account the possible endogeneity of central bank reform, the paper can not establish a casual relationship running from CBI to inflation. Taken at face value, these results suggest that the extraordinary disinflation achieved in Latin America and the Caribbean during the 1990s cannot be attributed to the increased legal CBI, as the decline in inflation in some countries started before the institutional reform of monetary policy was adopted. These findings, however, are subject to an important caveat, since the legal measures of CBI used in this paper may be poor indicators of the effective central bank autonomy in the conduct of monetary policy.

The rest of the paper is as follows. Section II describes the index of CBI used in this paper and discusses the main differences between this and the Cukierman index and provides a map of the central bank reform in Latin America and the Caribbean using cluster analysis and the information contained in the indexes of CBI. Section III performs an empirical exercise to assess whether increased legal CBI is related with inflation, and explores causality. Section IV presents the main conclusions.

⁶ Lybek (1999) also develops an index of CBI—following a somewhat different approach—that incorporates some of these criteria for a group of transition countries.

II. MEASURING LEGAL CENTRAL BANK INDEPENDENCE

This section describes the index of *de jure* central bank independence used in this paper. It also gives a flavor of how the institutional reform of monetary policy has been applied in the region, both across countries and overtime.

Our index is built on the structure of the Cukierman (1992) index, which is the best known and mostly widely accepted index of central bank independence. According to Cukierman's index, a central bank is considered more politically independent the longer the governor's term in office, and the less dependent from the government are the procedures for his appointment and dismissal. On the other hand, a central bank enjoys higher economic independence the more restrictive are the provisions for central bank monetization of the fiscal deficit. The index also rewards the autonomy of central banks from the government in the formulation of monetary policy, and the focus of central bank's legal mandate on price stability. The index of central bank independence used in this paper adds several dimensions to capture key features of recent central bank legislation in Latin America and elsewhere, and hence, from now on we refer to our index as the Modified Cukierman Index (MCI).

It is worth stressing that the assessment of CBI in this paper is based exclusively on legal provisions (constitutions and central bank laws), which may not be consistent with *de facto* independence. In practice, some central banks are more independent than what is envisaged in their charter (the Caribbean countries and Brazil since the late-1990s are good examples), while others (such as Ecuador—before the dollarization in 2000—and Venezuela) are effectively less independent. The main discrepancies between *de jure* and *de facto* independence of central banks emerge in political independence, although some differences also arise in terms of operational independence and transparency.

A. The Modified Cukierman Index

The MCI is not only an index of central banks' independence but also of accountability. It is based on the methodology proposed in the Cukierman's index but makes important innovations to the former by incorporating key criteria, which nowadays are considered best practices of central banks' autonomy and accountability.⁷

Specifically, the MCI assesses the fulfillment of a modified version of Cukierman's four criteria of central banks' independence—regarding their government structure, mandate, policy formulation, and lending provisions—plus one criterion of accountability. These five criteria are in turn broken down into 18 sub-criteria. The five criteria are assigned different weights, with the highest, 40 percent, assigned to the legal provisions on central bank lending to the government, which is considered the main source of inflation. The overall value of the

⁷ See Jácome (200x) for a summary of these policies, which have been extensively adopted in modern central bank legislation.

index fluctuates on a continuous scale from zero to one, such that higher values indicate greater legal CBI. The exact structure and scores of the MCI are spelled out in Annex I and compared to Cukierman's index. An explanation of the rationale behind the main innovations with respect to the Cukierman index is provided below.

The first departure relates to the political autonomy of the central bank. The MCI assesses the rules for the appointment and dismissal of the entire central bank's board of directors, instead of focusing exclusively on the central bank governor—like the Cukierman index does. This innovation is relevant because the legal powers of central bank governors generally represent only a minority fraction within the central bank board. Furthermore, the legal provisions for the appointment and term of office for the central bank governor differ from those that apply to the rest of the board members in most countries in the region (see for example, Bolivia, Costa Rica, Guatemala, Uruguay, Venezuela). The criterion to evaluate the term of office of the central bank governor—and other members of the board of directors—is also different, since, unlike Cukierman's index, the MCI considers not only the absolute length of the central bank board appointment but its tenure relative to the presidential period. Thus, the MCI rewards those provisions that appoint members of the central bank board, either exceeding or overlapping its tenure with the presidential term as a way of stressing central banks' independence from the political cycle. An additional innovation emphasizes the restrictions on the executive branch to remove members of the board of directors—and not only the central bank governor. The criteria for the appointment and dismissal of central bank authorities also receive a different weight in the MCI index. In particular, the procedures for dismissal of the members of the central bank board, including the central bank governor, receive extra weight, since these are more critical than the appointment procedures for enhancing the political autonomy of central banks.

The MCI also features a couple of innovations referred to the legal provisions for policy formulation. First, it includes an assessment of CBI in the formulation of exchange rate policy. In particular, it penalizes the participation of the executive or the legislative in exchange rate policy formulation (like in Mexico and Venezuela, for example) as a potential limitation in the conduct of monetary policy in small open economies. In addition, Cukierman's criterion that evaluates the central bank's role in the formulation of the government's budget is shifted to consider the central banks' role in approving public sector debt. While no central bank in the region plays any role in the elaboration or approval of the government budget, a number of them are required to approve public debt issuance, which provides an additional instrument to help enforcing fiscal discipline.

The third group of departures from the Cukierman index relates to central banks' operational autonomy. The MCI simplifies the evaluation of the legal provisions on central bank lending to the government and includes two additional criteria, namely, the central bank powers as LOLR and provisions safeguarding central bank financial autonomy. The MCI rewards legal provisions that limit central banks involvement in banking crises, and those requiring the government to preserve the integrity of central bank capital. The relevance of LOLR provisions stems from the recent upsurge of banking crises in LAC, which in a number of cases involved intensive central bank participation in systemic and idiosyncratic episodes

alike, with adverse effects on the conduct of monetary policy and the achievement of inflation objectives (Argentina, the Dominican Republic, Ecuador, Guatemala, and Venezuela, just to mention a few).⁸ Moreover, central banks' involvement in banking crises, beyond LOLR assistance, can be viewed as a form of government financing, since the resources for banking resolution should typically come from the fiscal side. On the other hand, legal provisions requiring governments to preserve the integrity of central bank capital are also rewarded, as they facilitate the conduct of open market operations and, in general, the management of systemic liquidity without financial restrictions.⁹ Central bank losses, if sufficiently large and not covered with fiscal resources, may limit central bank's capacity to raise interest rates, as they become an undesirable source of monetization that requires subsequent sterilization efforts and generate additional costs—which central banks may seek to avoid. Thus, persistent large losses are, to some extent, limiting the operating independence of central banks and eventually curtailing the effectiveness of monetary policy.

The fourth innovation of the MCI is the addition of criteria for accountability, which is an integral component of central banks' independence. Holding central banks accountable strengthens institutional credibility and hence underpins monetary policy effectiveness. Thus, the MCI rewards legal provisions that require central banks to report on a regular basis on their policy targets and achievements. Since transparency is an instrumental component of accountability, the MCI also gives—a small—credit to the mandatory publication of central bank financial statements on a regular basis, following international accounting standards and certified by an independent auditor.¹⁰

B. A Map of Central Bank Reform in Latin America and the Caribbean

Since the late 1980s Latin America and the Caribbean went through major structural reforms. These reforms were intended to consolidate stabilization efforts and pave the way to sustained economic growth.¹¹ As part of the policy agenda, from 1989 onward, most countries introduced changes to central bank legislation with the objective of increasing

⁸ In a number of countries in the region, central banks can potentially provide resources to troubled financial institutions in a number of ways, including extended LOLR to support solvency problems, financing bank resolution and restructuring, and financing or directly paying deposit insurance schemes and government's deposit guarantees.

⁹ For example, in most Central American countries, central bank losses exceed 1 percent of GDP every year.

¹⁰ Ideally, the MCI should also include criteria that reward the timely disclosure and explanation of policy decisions adopted by central banks as a key feature of enhanced transparency. However, this is a recent practice in many central banks in the region, which, however, has not been incorporated as a provision in central bank laws.

¹¹ A number of studies have assessed the costs of inflation in terms of economic growth. Empirical evidence suggests a negative correlation between inflation and growth, which becomes stronger at higher levels of inflation. See for example Fischer (1993), Sarel (1996), and De Gregorio (1992) in relation to Latin American countries.

CBI.¹² This section briefly describes progress in CBI in the region and depicts a map of central bank autonomy using information drawn from central bank laws and constitutions as of 2002. The main features of central bank legislation are organized under the following five categories: (i) definition of the primary policy objective, (ii) political independence in the design and execution of monetary policy, (iii) economic independence, (iv) financial autonomy, and (v) accountability and transparency provisions.

Overall, central bank reform was widespread in LAC but almost absent in CAR countries, with most central banks enjoying higher independence under the new regimes. The most prominent features of central bank reform in the region comprised a more focused mandate on price stability and the formalization of restrictions on central bank lending to the government. After the reforms, central banks also enjoyed increased autonomy in the conduct of monetary policy, including interest rate policy. On the other hand, there are some dimensions where central bank reform was insufficient, and hence, CBI could be further improved. Political independence in some countries could still be enhanced by restricting government's capacity for unilaterally appointing and, in particular, removing central bank governors and directors. Operational independence could be also improved by limiting excessive central bank discretion in the LOLR function, including the size and the financial conditions of LOLR facilities and the circumstances under which LOLR is triggered.¹³ In a number of countries, there is also room for improving central bank financial independence and transparency, including the disclosure of financial statements.¹⁴

The comparison of legal CBI across countries is relatively complex given the large number of aspects involved. A convenient approach to circumvent this complexity and to depict a map of central bank reform in the region is to use cluster analysis. This methodology creates groups of countries based on their relative similarities along various dimensions of CBI, which requires an index of central bank independence, and a metric for comparison purposes.¹⁵ Three groups of countries emerge from this analysis as shown in Table 1. Post-reform countries fall together under Groups 1 and 2, while Group 3 includes pre- and non-reform countries, most of them in the CAR region. To facilitate the comparison across

¹² Countries with central bank reform include: Chile (1989), El Salvador (1991), Argentina (1992 and 2002), Colombia (1992), Nicaragua (1992 and 1999), Venezuela (1992 and 2001), Ecuador (1992 and 1998), Peru (1993), Mexico (1993), Bolivia (1995), Costa Rica (1995), Uruguay (1995), Paraguay (1995), Honduras (1996 and 2004), Guyana (1998), and more recently Guatemala (2001) and the Dominican Republic (2002).

¹³ While the notion of “constructive ambiguity” (see Enoch, Kamis, and Stella, 1997) is in general a valid recommendation in the design of the role of the central bank as LOLR, it may expose countries featuring institutional weaknesses—like many LAC—to undue exogenous pressures when dealing with banking crises and resolution.

¹⁴ Jácome (2001) provides a summary of the main features of the central bank legislation in Latin America as of end-1990s.

¹⁵ A detailed description of the cluster analysis is found in Jácome and Vázquez (2005)

groups, Table 2 presents the averages of the MCI and its subcomponents for each group, together with the averages of the fiscal deficit, inflation, and the index of structural reforms. The results indicate that the legal independence of central banks in Groups 1 and 2 is stronger along most of the dimensions considered. In particular, countries in these two groups tend to have a more focused mandate on price stability and greater economic independence. On the other hand, no differences arise between groups in the LOLR function, while Group 2 tends to display a relative low degree of political independence, comparable with pre-reform countries. Interestingly, countries in Groups 1 and 2 have lower average inflation combined with higher fiscal deficits, but they are also more advanced in the implementation of structural reforms.

Table 1. List of Country Groups Based on Cluster Analysis

Group 1			Group 3		
Arg-1	Argentina	1993-2002	Arg-0	Argentina	1990-1992
Bol-1	Bolivia	1996-2002	Bah	Bahamas	1990-2002
Chi	Chile	1990-2002	Bar	Barbados	1990-2002
Col-1	Colombia	1993-2002	Bel	Belize	1990-2002
Mex-1	Mexico	1994-2002	Bol-0	Bolivia	1990-1995
Per-1	Peru	1994-2002	Bra	Brazil	1990-2002
Group 2			Col-0	Colombia	1990-1992
CR-1	Costa Rica	1996-2002	CR-0	Costa Rica	1990-1995
Ecu-1	Ecuador	1993-2002	Ecu-0	Ecuador	1990-1992
ES-1	El Salvador	1992-2002	ES-0	El Salvador	1990-1991
Guy-1	Guyana	1999-2002	Gua	Guatemala	1990-2002
Hon-1	Honduras	1997-2002	Guy-0	Guyana	1990-1998
Nic-1	Nicaragua	2000-2002	Hon-0	Honduras	1990-1996
Par-1	Paraguay	1996-2002	Jam	Jamaica	1990-2002
Uru-1	Uruguay	1996-2002	Mex-0	Mexico	1990-1993
Ven-1	Venezuela	1993-2002	Nic-0	Nicaragua	1990-1999
			Par-0	Paraguay	1990-1995
			Per-0	Peru	1990-1993
			DR	Republica Dominicana	1990-2002
			Sur	Suriname	1990-2002
			T&T	Trinidad y Tobago	1990-2002
			Uru-0	Uruguay	1990-1995
			Ven-0	Venezuela	1990-1992

This table lists the groups of countries resulting from the cluster analysis. Reform countries are indicated with a “-0” (pre-reform sub-period) or a “-1” (post-reform sub-period).

Table 2. Summary Statistics across Country Groups

	Group 1	Group 2	Group 3
Modified Cukierman Index (average by group)	0.82	0.70	0.43
Government of the Central Bank	0.88	0.45	0.31
Term of office Governor	0.67	0.37	0.46
Who appoints the Governor	1.00	0.33	0.17
Appointment and term of Board	0.83	0.58	0.20
Dismissal of Governor and Board	0.92	0.33	0.24
CEO Allowed to hold another office in government	1.00	0.89	0.70
Central Bank primary objective	0.96	0.69	0.23
Price stability	0.96	0.69	0.23
Policy formulation	0.75	0.81	0.70
Who formulates monetary policy	0.89	0.85	0.83
Conflict resolution	1.00	0.93	0.78
Central Bank and public debt	0.00	0.50	0.28
Central Bank lending	0.78	0.77	0.45
Advances to government	0.84	0.85	0.60
Loans to government	0.71	0.78	0.41
Beneficiaries of financing	1.00	0.86	0.39
Who decides terms of lending	0.93	0.81	0.55
Interest rates	0.90	1.00	0.45
LOLR	0.50	0.50	0.50
Financial autonomy Central Bank	0.72	0.63	0.35
Accountability	0.93	0.73	0.54
Accountability norms	0.96	0.78	0.50
Transparency	0.83	0.58	0.66
Selected Macroeconomic Variables			
Fiscal Deficit	2.60	2.31	1.08
Inflation	9.83	15.81	35.65
Structural Reform Index	0.60	0.53	0.49
Number of countries 1/	6	9	23

This table presents average values for the components of Modified Cukierman Index, using the groups of countries produced by the cluster analysis exercise. Countries with central bank reform are split in two sub-periods (pre- and post-reform).

1/ Countries with central bank reform are treated as two cases, corresponding to the pre- and post-reform periods.

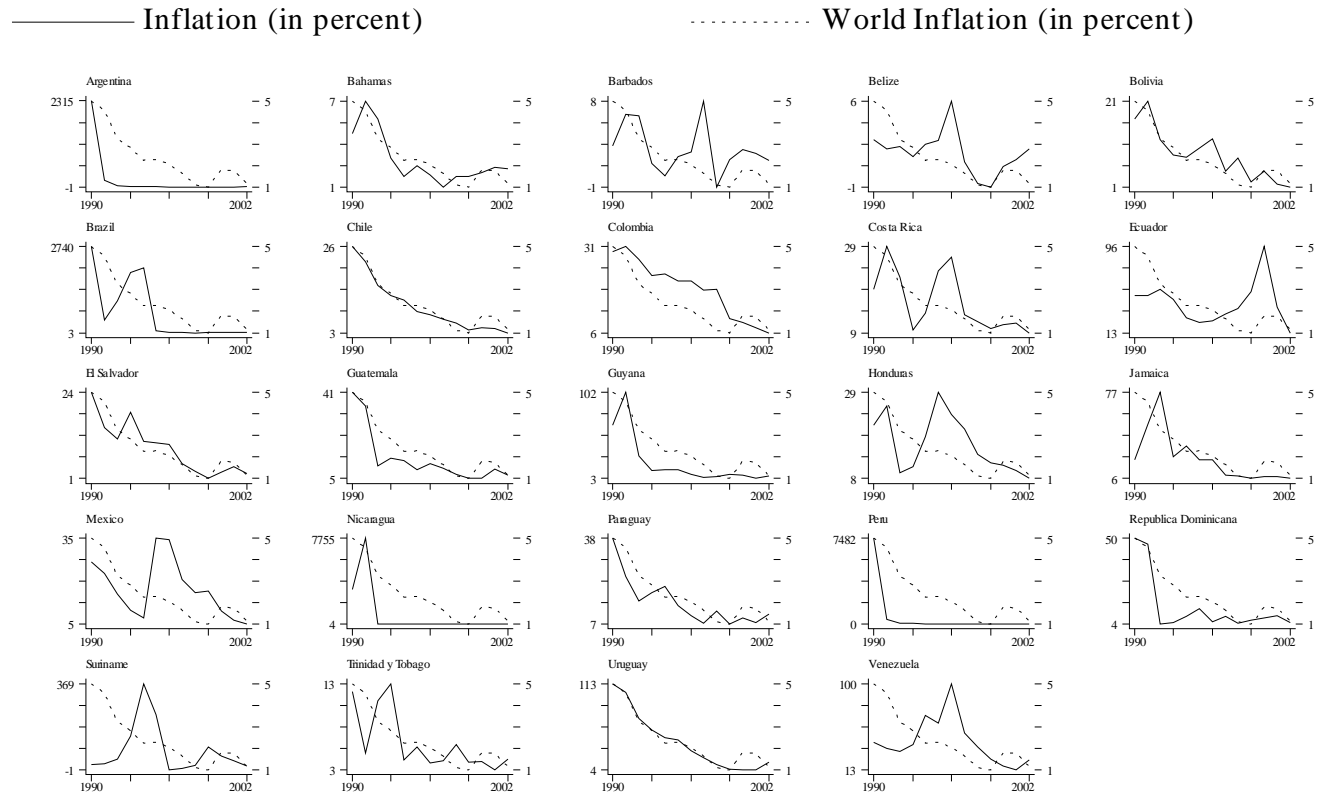
III. LEGAL CENTRAL BANK INDEPENDENCE AND INFLATION IN LATIN AMERICA AND THE CARIBBEAN, IS THERE A LINK?

During the 1990s, the decline of inflation in Latin America and the Caribbean was remarkable, from an average of about 500 percent at the beginning of the decade to 7 percent in 2002. Interestingly, disinflation in the region was coincident with—and probably supported by—a general trend worldwide (Figure 2). The magnitude of disinflation achieved in Latin America and the Caribbean, however, suggests that its main driving forces are attributable to the economic policies and institutional reform implemented by individual countries. This section tests for a negative relationship between increasing CBI and inflation.¹⁶

To provide a first look at the data used in the regressions, Table 3 presents summary statistics for selected variables and Table 4 their pair-wise correlations together with the significance levels for the null of zero correlation. The sample was split into two groups, separating LAC countries (lower triangle) from CAR countries (upper triangle). Several regularities emerge. First and foremost, inflation is negatively correlated with the indexes of legal CBI in both sub-samples. Second, there is a high positive correlation between the index of structural reforms and the indexes of legal CBI, especially in the LAC sub-sample, which implies that changes to central bank legislation were coincident with a broader agenda of structural reforms. Third, there is weak evidence that lower fiscal deficits are associated with higher central bank independence. Fourth, as expected, the three indexes of legal CBI are highly correlated in both sub-samples. In fact, the information content of the three indexes and their main components (i.e., economic and political independence) is similar, especially for the LAC sub-sample, as apparent from their correlations (Table 5).

¹⁶ Despite the dramatic reduction in inflation achieved in Latin America and the Caribbean, opposition to increased CBI has gained some ground in recent years, as new legislation has been passed undermining previous improvements in central bank autonomy. Examples include changes to the central bank charter in Argentina to allow central bank financing of the fiscal deficit in 2002, the decision by the Colombian Constitutional Court in 1999 to cap mortgage interest rates, and the reform of the central bank charter in Venezuela in 2001 to validate the previous transfer of exchange rate devaluation gains to the government. It is also relevant to mention the approval of laws in Honduras and Paraguay, requiring central banks to transfer money—rather than providing credit—to finance government expenditure.

Figure 2. International Inflation and Inflation in Sampled Countries, 1990-2002



This figure compares the evolution of inflation in the sampled countries with international inflation, measured by the average of industrial countries.

Table 3. Summary Statistics by Regions, 1990-2002

		Mean	Std. Dev.	Min	Max	Observations	
Caribbean countries							
Inflation	overall	18.84	50.17	-1.30	368.50	N =	88.00
	between		29.15	1.84	82.83	n =	7.00
	within		41.90	-64.69	304.51	T-bar =	12.57
Fiscal Deficit	overall	-3.19	6.53	-23.52	11.10	N =	70.00
	between		5.07	-10.49	4.39	n =	6.00
	within		4.75	-16.22	6.81	T-bar =	11.67
Structural Reform Index	overall	0.60	0.05	0.54	0.67	N =	19.00
	between		0.00	0.59	0.60	n =	2.00
	within		0.05	0.54	0.67	T-bar =	9.50
GMT total	overall	7.23	0.89	6.00	9.00	N =	88.00
	between		0.95	6.00	8.31	n =	7.00
	within		0.18	6.92	7.92	T-bar =	12.57
Cukierman	overall	0.50	0.06	0.41	0.69	N =	88.00
	between		0.06	0.41	0.58	n =	7.00
	within		0.03	0.45	0.61	T-bar =	12.57
Modified Cukierman	overall	0.50	0.06	0.38	0.63	N =	88.00
	between		0.06	0.38	0.55	n =	7.00
	within						
Latin American countries							
Inflation	overall	19.43	33.36	-1.20	413.30	N =	198.00
	between		15.21	4.15	59.14	n =	17.00
	within		30.35	-36.51	373.59	T-bar =	11.65
Fiscal Deficit	overall	2.88	4.26	-10.73	23.26	N =	193.00
	between		2.93	-0.30	11.65	n =	17.00
	within		3.23	-18.76	18.09	T-bar =	11.35
Structural Reform Index	overall	0.53	0.07	0.37	0.71	N =	168.00
	between		0.05	0.44	0.62	n =	17.00
	within		0.05	0.40	0.66	T-bar =	9.88
GMT total	overall	10.20	2.23	6.00	14.00	N =	198.00
	between		1.69	8.00	14.00	n =	17.00
	within		1.48	3.90	12.97	T-bar =	11.65
Cukierman	overall	0.66	0.16	0.36	0.86	N =	198.00
	between		0.13	0.43	0.84	n =	17.00
	within		0.10	0.31	0.82	T-bar =	11.65
Modified Cukierman	overall	0.64	0.17	0.29	0.86	N =	198.00
	between		0.12	0.43	0.85	n =	17.00
	within		0.13	0.15	0.87	T-bar =	11.65

The sample excludes eight years with inflationary episodes above 1,000 percent per year.

Table 4. Pair-wise correlations between selected variables, by Regions, 1990–2002

	Inflation	Fiscal Deficit	Structural Reforms Index	GMT Total	Cukierman	Modified Cukierman
Inflation		-0.037 (0.761)	-0.688 (0.001)	-0.308 (0.004)	-0.314 (0.003)	-0.462 (0.000)
Fiscal Deficit	0.228 (0.001)		0.410 (0.081)	-0.262 (0.028)	-0.342 (0.004)	-0.077 (0.527)
Structural Reforms Index	-0.360 (0.000)	-0.052 (0.510)		0.075 (0.761)	0.075 (0.761)	0.075 (0.761)
GMT Total	-0.137 (0.055)	-0.046 (0.524)	0.561 (0.000)		0.820 (0.000)	0.863 (0.000)
Cukierman	-0.167 (0.019)	-0.130 (0.072)	0.441 (0.000)	0.819 (0.000)		0.849 (0.000)
Modified Cukierman	-0.205 (0.004)	0.003 (0.962)	0.557 (0.000)	0.892 (0.000)	0.903 (0.000)	

This table presents pair-wise correlations between selected variables. *Correlations in the upper triangle correspond to Caribbean countries.* Correlations in the lower triangle are for Latin American countries. Significance levels for the null of zero correlation are in parenthesis.

Table 5. Correlations between Indexes of Legal Central Bank Independence, by Regions

	Economic Independence	Political Independence	Total Index
Latin American countries			
GMT, Cukierman	0.730	0.615	0.811
GMT, Modified Cukierman	0.761	0.796	0.891
Cukierman, Modified Cukierman	0.929	0.869	0.896
Caribbean countries			
GMT, Cukierman	0.295	0.550	0.830
GMT, Modified Cukierman	0.434	0.312	0.859
Cukierman, Modified Cukierman	0.782	0.452	0.845

This table presents the pair-wise correlations between the three indexes of legal central bank independence and their main sub-components, by regions. All coefficients are statistically significant at the 5 percent level. The sub-indexes of economic and political independence of the Modified Cukierman index do not include accountability (which is, however, included in the total Modified Cukierman). Political independence covers the rules for appointment and dismissal of the Central Bank governor and board, as well as the Central Bank objectives (see Annex I). In turn, economic independence covers the characteristics of policy formulation and various restrictions on central bank lending.

A. Baseline Results

Baseline results on the relationship between legal CBI and inflation were computed using a set of bivariate regressions of *Inflation* on the three indexes of legal *CBI* (one at a time to avoid multicollinearity). The regressions covered the whole sample, with the exception of a few observations corresponding to countries adopting official dollarization (Ecuador 2000–2002 and El Salvador 2002), and years with hyperinflation.¹⁷ Following the literature (Cukierman et al., 1992, De Haan and Kooi, 2000), *Inflation* was computed as the yearly change in the average consumer price index taken from IFS (series 64), and rescaled using $\pi/(1+\pi)$ to ameliorate potential heteroscedasticity. However, since this treatment has the undesirable effect of bounding the dependent variable in the interval [0, 1], affecting the normality assumption, an alternative measure, $\log(1+\pi)$ was also applied, with similar results. The regressions were computed using OLS with fixed effects at the country level and robust standard errors (White, 1980). In all cases, the results (not reported) showed a strong negative relationship between increased legal CBI and inflation, with significant coefficients at the one-percent level.

A somewhat more rigorous test was conducted adding several control variables. As before, *Inflation* was treated as endogenous, with the target variables being the three indexes of *Central Bank Independence*, taken one at a time. The set of control variables included the following: a *Banking Crisis Dummy*, to isolate the inflationary effects associated with systemic banking problems, a *Fixed Exchange Regime Dummy* to account for the effects of exchange rate anchoring on inflation, and *International Inflation*, to control for the contribution of the external disinflation trend. The inclusion of the *Banking Crises Dummy* is important, since banking crises were more common after central bank reform, with 7 episodes against 1 in the pre-reform period.¹⁸ Therefore, ignoring this effect would introduce a bias against the hypothesis tested. The inclusion of the *Exchange Regime Dummy* follows previous studies (Cukierman et al., 2002, De Haan and Kooi, 2000). It was constructed from the IMF database on *de facto* exchange regimes, using a one for regimes classified as: “another currency as legal tender”, “currency board”, or “conventional peg against a single currency”, and zero otherwise. The first year after the introduction of a fixed regime, and the last year before switching to a floating regime, were also given a value of zero to account for lags in the effects of exchange rate anchoring on prices, and the fact that the abandonment of

¹⁷ A filter was applied, excluding eight cases with yearly inflation above 1,000 percent per year: Argentina 1990 (2,315 percent); Brazil 1990 (2,740 percent); Brazil 1992 (1,023 percent); Brazil 1993 (1,927 percent); Brazil 1994 (2,076 percent); Nicaragua 1990 (3,128 percent); Nicaragua 1991 (7,755 percent); Peru 1990 (7,482 percent). Applying more restrictive filters (i.e. filtering out cases below the 1,000 threshold) would produce no significant changes in the sample. The next high inflation episode is Brazil 1991 (413 percent), and there are four additional cases with inflation between 150 and 400 percent per year.

¹⁸ The list of systemic banking crises in the sampled countries is: Argentina (2002), Colombia (1998), Colombia (1999), Republica Dominicana (2002-2003), Ecuador (1998-1999), México (1995), Nicaragua (2000-2001), Uruguay (2002), Venezuela (1994-1995).

a hard peg tends to coincide with rising inflationary pressures. The *International Inflation* was proxied by the average inflation rate of industrial countries, computed from IFS (series 110).

An initial estimation was performed using OLS and with fixed effects at the country level. However, taking into account both the cross-sectional and a time-series dimensions of the data, the errors were checked for heteroscedasticity across panels (countries) and for autocorrelation. As for heteroscedasticity, a likelihood-ratio test was implemented comparing the results of the unrestricted model (i.e., allowing for a heteroscedastic error structure) with those obtained from the restricted (homoscedastic) model. The test supported the presence of heteroscedasticity across panels. As for autocorrelation, a test in panel-data models proposed by Wooldridge (2002) also indicated the presence of serial correlation. Based on these results, the estimation was computed again using Feasible Generalized Least Squares (FGLS), allowing for heteroscedasticity across countries and a common AR(1) error process.

Table 6. Panel Regressions of Inflation on Contemporaneous Central Bank Independence

	[1] FGLS	[2] FGLS	[3] FGLS	[4] FGLS	[5] FGLS	[6] FGLS
Dummy Banking Crises	0.023 [0.016]	0.023 [0.015]	0.026* [0.016]	0.036** [0.015]	0.037** [0.015]	0.038** [0.015]
Dummy Exch. Regime	-0.082*** [0.012]	-0.080*** [0.013]	-0.081*** [0.012]	-0.079*** [0.012]	-0.079*** [0.012]	-0.076*** [0.012]
World Inflation (in percent)				0.035*** [0.004]	0.035*** [0.004]	0.033*** [0.004]
GMT Total	-0.009*** [0.002]			-0.005** [0.002]		
Cukierman Weighted		-0.129*** [0.031]			-0.066** [0.030]	
Total Modified Cukierman			-0.137*** [0.026]			-0.079*** [0.025]
Observations	297	297	297	297	297	297
Number of countries	24	24	24	24	24	24
Rho	0.74	0.74	0.72	0.67	0.66	0.67

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

This table presents the results of panel regressions for the whole sample of countries during 1990-2002, excluding (eight) hyperinflation episodes. The dependent variable is inflation (π), scaled as $\pi/(1+\pi)$. The coefficients were estimated using Feasible Generalized Least Squares (FGLS), allowing for heteroscedasticity across countries and an AR(1) autocorrelation structure within countries, with a (Rho) coefficient common to all countries. The target variables are the three indexes of legal CBI. Control variables include a Dummy Banking Crises, which equals one during years with banking crises and zero elsewhere, A Dummy Regime, which equals one during periods of fixed exchange regimes and zero elsewhere, and World Inflation, measured by the average inflation of industrial countries.

The results are presented in Table 6. Columns [1]-[3] indicate that, after controlling for banking crises and the degree of exchange rate rigidity, higher central bank independence, as

measured by any of the three indexes, is related to lower inflation. The coefficient associated with the Cukierman index is comparable in magnitude to the MCI, reflecting the close relationship between the two series. As expected, fixed exchange regimes are associated with lower inflation rates. These results are qualitatively robust to the addition of world inflation, as indicated by the regressions presented in columns [4]-[6]. The new variable enters positively and significantly at conventional levels, in line with the observed co-movement described earlier. As an alternative specification, the regressions were computed again, after adding the *Fiscal Deficit* in percent of GDP to control for underlying inflationary causes, with similar results.¹⁹ This specification, however, was rejected since the *Fiscal Deficit* entered not significantly in the regressions, which is in line with previous work (see for example Click, 1998, and Fisher et al., 2002), although a recent study suggests otherwise (Catao and Terrones, 2003).

B. An Alternative Specification: The Role of Structural Reforms

While suggestive, these results are subject to two main challenges. First, they may be influenced by an omitted variable bias, since central bank reforms are usually part of broader policy packages that include privatizations, trade reform, and other structural policies that affect macroeconomic performance, including inflation. Equally important, broader economic reforms may entail changes in the behavior of market participants, affecting money demand, the direction of capital flows, and the alternatives to finance a given fiscal position, all of which may also have an effect on inflation. A second caveat is the possibility of reverse causality. The argument here is that the decision of implementing central bank reform may depend itself on inflation. For example, central bank reform may be easier to implement—and actually implemented—in the wake of a disinflation period.

To take into account a possible omitted variable bias, the regressions were computed again after adding an index of *Structural Reforms* as an additional control. This index, constructed by the Inter-American Development Bank, captures the evolution of economic reform in several sectors, including labor markets, financial markets, tax, trade, and privatizations. Besides, as the index does not incorporate changes in central bank legislation, it is a good complement to the indexes of CBI considered here.

The inclusion of the additional control rendered the coefficients of legal CBI statistically non-significant in all regressions (columns [1]-[3] in Table 7). On the other hand, the coefficients of the *Structural Reforms* entered negative and statistically significant at the one-percent level. It is worth noticing the change in the sample size after the inclusion of the new variable, which is mainly due to lack of data on structural reforms for years 2001-2002, as well as for some Caribbean countries (Bahamas, Barbados, Belize, Guyana and Suriname). However, the results are not attributable to differences in the samples, since they remained

¹⁹ This variable was measured by the nominal deficit of the central government on a cash basis, as reported in the IFS (series 80), and scaled by nominal GDP, also taken from IFS (series 99b).

after the samples were matched. At first glance, this outcome suggests that the effects of central bank reform on inflation can be better understood in the context of broader economic reform packages, and that the negative relationship between legal CBI and inflation reported previously may be driven by an omitted variable bias. However, this conclusion merits further check. In particular, the effects of central bank reform on inflation may not be immediate, since the implementation of a new institutional environment usually requires the enactment of more specific regulations, and the build-up of central bank reputation, which is the main factor from the perspective of market participants.

Table 7. Panel Regressions of Inflation on CBI (Including Structural Reforms)

	[1]	[2]	[3]	[4]	[5]	[6]
	FGLS	FGLS	FGLS	FGLS Lagged CBI	FGLS Lagged CBI	FGLS Lagged CBI
Dummy Banking Crises	0.044** [0.019]	0.045** [0.019]	0.045** [0.019]	0.044** [0.020]	0.048** [0.020]	0.048** [0.020]
Dummy Exch. Regime	-0.043*** [0.016]	-0.042*** [0.016]	-0.042*** [0.016]	-0.053*** [0.010]	-0.050*** [0.010]	-0.051*** [0.009]
World Inflation (in percent)	0.030*** [0.005]	0.030*** [0.005]	0.030*** [0.005]	0.022*** [0.008]	0.022*** [0.008]	0.021*** [0.007]
Index Structural Reform	-0.421*** [0.105]	-0.428*** [0.100]	-0.412*** [0.102]	-0.399*** [0.090]	-0.416*** [0.090]	-0.408*** [0.087]
GMT Total	-0.002 [0.002]			-0.005*** [0.002]		
Cukierman Weighted		-0.039 [0.033]			-0.068*** [0.023]	
Total Modified Cukierman			-0.043 [0.029]			-0.071*** [0.021]
Observations	198	198	198	149	149	149
Number of countries	19	19	19	19	19	19
Rho	0.6	0.6	0.6	0.44	0.44	0.44

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

This table presents the results of panel regressions for the whole sample of countries during 1990-2002, excluding (eight) hyperinflation episodes. The dependent variable is inflation (π), scaled as $\pi/(1+\pi)$. The coefficients were estimated using Feasible Generalized Least Squares, allowing for heteroscedasticity across countries and an AR(1) autocorrelation structure within countries, with a (Rho) coefficient common to all countries. The target variables are the three indexes of CBI. Columns [1] to [3] use the contemporaneous indexes of CBI. Columns [4] to [6] use the (three-lag) indexes of CBI. Control variables include a Dummy Banking Crises, which equals one during years with banking crises and zero elsewhere, A Dummy Regime, which equals one during periods of fixed exchange regimes and zero elsewhere, World Inflation, measured by the average inflation of industrial countries, and an Index of Structural Reforms which varies in the interval [0, 1] with higher values indicating deeper economic reforms.

To check for the possibility of lagged effects associated with changes in central bank legislation, the regressions were computed again exploring various combinations, with one to four lags for the indexes of CBI. The use of lagged values may also contribute to reduce the

possibility of reverse causality mentioned previously. With this treatment, the coefficients of legal CBI became statistically significant again for three- and four-lag specifications (columns [4]-[6] in Table 7). As a robustness check, parallel regressions were computed using one to four lags for both the indexes of legal CBI and structural reforms, with similar results. An alternative specification, including an interactions term between the legal CBI indexes and the structural reform index, produced non-significant coefficients possibly due to multicollinearity, and was rejected.²⁰ All these conclusions hold when the sample is restricted to the LAC sub-sample, which includes most of the reform countries.

Overall, these results point to the complementary nature of various aspects of economic reform, and are consistent with the hypothesis that both structural reform and increased legal CBI played a role in disinflation in the sampled countries during the 1990s. However, a causal relationship running from central bank reform to inflation performance cannot be established from these exercises, due to the possibility of reverse causality. In fact, the use of lagged CBI may not be sufficient to correct the potential endogeneity of central bank reform, especially since inflation tends to display inertia.

C. Accounting for Endogeneity

A more appropriate treatment to account for the possible endogeneity of central bank reform requires the use of instrumental variables. This section uses two alternative methods: Generalized Two Stage Least Squares (G2SLS) developed by Balestra and Varadharajan-Krishnakumar (1987) and Error Correction Two-Stage Least Squares (EC2LSL) described in Baltagi and Chang (2000). In both cases, lagged values of the MCI were used as instruments for CBI. The results of the first stages, not reported, suggested that the instrument was appropriate, with the associated coefficient significant at the one-percent level in all cases.

The regressions are presented in Table 8. Those in columns [1] and [2] treat CBI as endogenous and apply the Swamy and Arora (1972) estimators of the variance components, which include a small-sample correction. The use of a random-effects estimator requires accepting that the idiosyncratic error term is uncorrelated with the set of explanatory variables, which is a strong assumption given the nature of the data. However, the Hausman (1978) specification test was unable to reject the null of coefficient equality between the random- and the fixed-effects models in all cases, as indicated by the p-values reported at the bottom of the table. As before, the results indicate that inflation in the sampled countries is positively correlated with world inflation, higher during banking crises, and negatively correlated with structural reforms. However, the coefficient of CBI became not significant.

While the case of reverse causality from inflation to structural reforms is less likely, parallel regressions are presented in columns [3] and [4], treating as endogenous both CBI and

²⁰ The correlation between the indexes of central bank independence and the interaction term exceeded 0.92 in all cases.

structural reforms (the latter also instrumented by its lagged values). The regressions reported in columns [5] and [6], use the Baltagi and Chang (2000) consistent estimator of the variance components. In both cases, the results are qualitatively similar to those discussed previously. Summing up, these regressions fail to show a significant causal relation running from legal CBI to inflation in all cases, and indicate that the negative coefficients of legal CBI reported in the previous section are biased downwards, due to the possible endogenous nature of central bank reform. Similar conclusions were obtained using the other two indexes of legal CBI (not reported). At face value, these results suggest that the extraordinary reduction in inflation achieved in Latin America and the Caribbean during the nineties is probably attributable to a broad range of economic policies, with a negligible role to the legal central bank reform. A remaining caveat, however, is the validity of these indexes to account for the evolution of effective CBI.

Table 8. Panel Regressions of Inflation on MCI using Instrumental Variables

	[1]	[2]	[3]	[4]	[5]	[6]
	G2SLS instr. mct	EC2SLS intr.: mct	G2SLS intr.: sr mct	EC2SLS intr.: sr mct	G2SLS intr.: sr mct	EC2SLS intr.: sr mct
Dummy Banking Crises	0.117*** [0.028]	0.102*** [0.026]	0.112*** [0.028]	0.097*** [0.026]	0.124*** [0.029]	0.108*** [0.027]
Dummy Exch. Regime	-0.056** [0.024]	-0.073*** [0.021]	-0.054** [0.024]	-0.070*** [0.022]	-0.060*** [0.022]	-0.074*** [0.020]
World Inflation (in percent)	0.030** [0.013]	0.037*** [0.012]	0.028** [0.013]	0.032*** [0.012]	0.029** [0.013]	0.033*** [0.012]
Index Structural Reform	-0.444*** [0.129]	-0.547*** [0.114]	-0.483*** [0.158]	-0.643*** [0.131]	-0.524*** [0.137]	-0.643*** [0.119]
Total Modified Cukierman	-0.100 [0.109]	0.070 [0.062]	-0.109 [0.117]	0.068 [0.063]	-0.073 [0.096]	0.072 [0.057]
Observations	149	149	149	149	149	149
Number of countries	19	19	19	19	19	19
R-Sq. within	0.25	0.25	0.25	0.24	0.25	0.24
R-Sq. between	0.49	0.60	0.47	0.59	0.53	0.60
R-Sq. overall	0.36	0.41	0.35	0.41	0.38	0.41
Estimator of variance	S-A	S-A	S-A	S-A	B-C	B-C
Ho: Difference in coef. not systematic (p-values)	0.433		0.509		0.286	

This table presents the results of panel regressions for the whole sample of countries during 1990-2002, excluding (eight) hyperinflation episodes. The dependent variable is inflation (π), scaled as $\pi/(1+\pi)$. The regressions were computed using instrumental variables, to account for the possible endogeneity of Central Bank Independence and Structural Reforms. Two estimation methods were used: Generalized Two-Stage least Squares (G2SLS) and Error Correction Two-Stage least Squares (EC2SLS), each combined with two different estimators of the variance components: the Swamy and Arora (1972, S-A), which contains a small sample correction, and the consistent estimators proposed by Baltagi and Chang (2000, B-C). In columns [1] and [2] CBI was instrumented by the lagged values of the MCI, while columns [3] to [6] further instrument structural reforms by its lagged values. Control variables include a Dummy Banking Crises, which equals one during years with banking crises and zero elsewhere, A Dummy Regime, which equals one during periods of fixed exchange regimes and zero elsewhere, and World Inflation, measured by the average inflation of industrial countries.

IV. CONCLUDING REMARKS

After two decades of high inflation, most countries in Latin America and the Caribbean entered into a phase of more prudent macroeconomic management in the 1990s, with the aim of reducing inflation and improving economic performance. A far-reaching reform of central bank legislation was adopted in many countries to strengthen central bank autonomy from the government and facilitate the control of inflation.

Based on the assessment of central bank charters and the relevant part of constitutions in 24 Latin American and Caribbean countries during the 1990s, three conclusions emerge. First, a comparison of legal CBI in the sampled countries shows significant regional differences between LAC and CAR countries. Central bank reform was widely implemented in LAC during the 1990s, but largely absent among CAR countries. As a result, most central bank in LAC enjoy today higher formal operational and political independence, while CAR central banks are still politically dependent on the executive branch. However, leaving aside a few hyperinflationary episodes in LAC, inflation performance in LAC and CAR countries did not differ much during the nineties.

Using three alternative indexes of legal CBI and after controlling for international inflation, the exchange regime, and the occurrence of banking crises, a negative correlation between legal CBI and inflation is obtained. This result survives the inclusion of an index of structural reforms which illustrates the complementary nature of various aspects of economic reform.

Taking into account the possible endogeneity of central bank reform, however, the results fail to support the existence of a causal relationship running from legal CBI to inflation. This suggests that the extraordinary reduction in inflation achieved in the region during the 1990s is probably due to a combination of policies and cannot be attributed exclusively to legal central bank reforms, which warns on excessive optimism on the effects of legal central bank independence on inflationary performance. On the other hand, important caveat remains, since the indexes of legal CBI used in this paper are, at best, imperfect measures of effective CBI.

Structure of the Cukierman and the “Modified Cukierman” Indexes

Cukierman Index Criteria (weights)	Values	“Modified Cukierman” Index Criteria (weights)	Values
Central Bank CEO (0.20)		Central Bank Board (0.20)	
<i>1. Term of office of CEO (0.25)</i>		<i>1. Term of office of Governor(0.20)</i>	
- Equal or more than 8 years	1	- More than presidential period	1
- 6 years or more but less than 8 years	0.75	- The period does not coincide	0.67
- Equal to 5 years	0.50	- Same period as the executive branch	0.33
- Equal to 4 years	0.25	- Less than executive branch or not specified in the law	0
- Less than 4 years	0		
<i>2. Who appoints the CEO (0.25)</i>		<i>2. Who appoints the Governor (0.20)</i>	
- The Central Bank Board	1	- Double process (Executive/Legislative), or through the Central Bank Board if also appointed in a double process, or for longer or overlapped periods with respect to the executive branch	1
- Council composed by executive and legislative branch and Central Bank Board	0.75	- The executive branch directly or through the Central Bank Board, when this is directly appointed by the executive branch	0
- By legislative branch	0.50		
- By executive branch	0.25		
- By one or two members of executive branch	0		
<i>3. Provisions for dismissal of CEO (0.25)</i>		<i>3. Appointment and term of office rest of the Board (0.20)</i>	
- No provision	1	- More than presidential period or for a non-defined period	1
- Only for non-policy reasons (e.g., incapability, or violation of law)	0.83	- For the same period as the President of the Republic with overlap	0.75
- At a discretion of Central Bank Board	0.67	- Double process for the same period	0.50
- For policy reasons at legislative branch’s discretion	0.50	- Executive and private sector appoint the majority of directors for same period or less	0.25
- At legislative branch’s discretion	0.33	- Executive branch appoints the majority for the same period or less	0
- For policy reasons at executive branch’s discretion	0.17		
- At executive branch’s discretion	0		
<i>4. CEO allowed to hold another office in government (0.25)</i>		<i>4. Dismissal of Board members (0.30)</i>	
- Prohibited by law	1	- Double process approved by the Senate or by a qualified majority and for violations codified in legislation	1
- Not allowed unless authorized by executive branch	0.5	- By an independent Central Bank Board	0.75
- No prohibition for holding another office	0	- Double process with simple majority, based on policy decisions or due to subjective reasons	0.50
		- By executive branch or subordinated Central Bank Board due to legal reasons	0.25
		- By executive branch or subordinated Central Bank Board due to policy or subjective reasons, or no legal provision	0
		<i>5. CEO allowed to hold another office in government (0.10)</i>	
		- Prohibited by law	1
		- Not allowed unless authorized by	0.5

		executive branch	
		- No prohibition for holding another office	0
Central Bank objectives (0.15)		Central Bank objectives (0.15)	
<i>5. Central Bank objectives</i>		<i>6. Fundamental objective (1.00)</i>	
- Price stability is the only or major goal, and in case of conflict with government, the Central Bank has final authority	1	- Price stability is the single or primary objective	1
- Price stability is the only goal	0.8	- Price stability together with non-conflicting objectives but without priority	0.75
- Price stability along with other objectives that do not seem to conflict with the former	0.6	- Price stability plus others goals including stability of financial system that may conflict with the former, without priority	0.50
- Price stability along with other objectives of potentially conflicting goals (e.g., full employment)	0.4	- Price stability together with objective of economic growth / economic development with no priority	0.25
- Central Bank charter does not contain any objective	0.2	- Objectives do not include price stability	0
- Some goals appear in the charter but price stability is not one of them	0		
Policy formulation (0.15)		Policy formulation (0.15)	
<i>6. Who formulates monetary policy (0.25)</i>		<i>7. Who formulates monetary policy (0.50)</i>	
- Central Bank has the legal authority	1	- Central Bank has the legal authority	1
- Central Bank participates together with government	0.67	- Executive branch holds the final decision on exchange rate policy	0.67
- Central Bank in an advisory capacity	0.33	- Central Bank participates on monetary policy formulation in an advisory capacity or faces legal limitations on monetary instruments or interest rates	0.33
- Government alone formulates monetary policy	0	- Government formulates monetary policy alone	0
<i>7. Government directives and resolution of conflicts (0.50)</i>		<i>8. Government directives and resolution of conflicts (0.30)</i>	
- Central Bank given final authority over issues defined in the law as objectives	1	- Central Bank given final authority over issues defined in the law as objectives	1
- Government has final authority over issues not clearly defined as Central Bank goals	0.8	- Government has final authority over issues not clearly defined as Central Bank goals	0.8
- Final decision up to a council whose members are from the Central Bank, executive branch, and legislative branch	0.6	- Final decision up to a council whose members are from the Central Bank, executive branch, and legislative branch	0.6
- Legislative branch has final authority	0.4	- Legislative branch has final authority	0.4
- Executive branch has final authority, but subject to due process and possible protest by Central Bank	0.2	- Executive branch has final authority, but subject to due process and possible protest by Central Bank	0.2
- Executive branch has unconditional authority over policy	0	- Executive branch has unconditional authority over policy	0
<i>8. Central Bank given active role in formulation of government's budget (0.25)</i>		<i>9. Central Bank involvement in debt approval (0.20)</i>	
- Yes	1	- Approves government debt	1
- No	0		

		- Legally required to provide opinion on technical aspects	0.5
		- No involvement at all	0
Central Bank lending (0.50)		Central Bank lending (0.40)	
<i>9. Limitations on advances (0.30)</i>		<i>10. Limitations on advances (0.15)</i>	
- Advances to government prohibited	1	- Advances to government prohibited	1
- Permitted but subject to limits in terms of absolute cash amounts or relative limits (government revenues)	0.67	- Limited by small percentage of government revenues or by monetary program	0.67
- Permitted subject to relatively accommodative limits (more than 15% of government revenues)	0.33	- Allowed under lax limits (more than 15% of government revenues)	0.33
- No legal limitations on advances. Subject to negotiations with government	0	- Allowed without limits	0
<i>10. Limitations on securitized lending (0.20)</i>		<i>11. Lending to Government (0.30)</i>	
- The same as in 9		- Not allowed	1
<i>11. Who decides control of terms of lending to government (0.20)</i>		- In the secondary market with restricted limits	0.75
- Central bank controls terms and conditions	1	- In the secondary market with lax or without limits	0.50
- Terms of lending specified in law, or Central Bank given legal authority to set conditions	0.67	- In the primary market with limits or approved by Central Bank Board with a qualified majority	0.25
- Law leaves decision to negotiations between the Central Bank and government	0.33	- In the primary market without limits	0
- Executive branch alone decides and imposes to the Central Bank	0	<i>12. Who decides financing conditions to government (0.10)</i>	
<i>12. Beneficiaries of Central Bank lending (0.10)</i>		- Central Bank defines terms and conditions	1
- Only central government	1	- Defined by law	0.67
- Central and state governments, as well as further political subdivisions	0.67	- The law allows negotiations between government and Central Bank	0.33
- Also public enterprises can borrow	0.33	- Executive decides independently	0
- Central Bank can lend to all of the above and to the private sector	0	<i>13. Beneficiaries of Central Bank financing (0.10)</i>	
<i>13. Type of limits when they exist (0.05)</i>		- Only the government	1
- As an absolute cash amount	1	- Government plus local governments	0.67
- As a percentage of Central Bank capital or other liabilities	0.67	- All of the above plus public enterprises	0.33
- As a percentage of government revenues	0.33	- All of the above and to the private sector	0
- As a percentage of government expenditure	0	<i>14. Interest rates in advances or lending (0.10)</i>	
<i>14. Maturity of loans (0.05)</i>		- At market rates	1
- Limited to a maximum of 6 months	1	- Interest rates not specified in law	0.5
- Limited to a maximum of 1 year	0.67	- At below market rates	0
- Limited to a maximum of more than one year	0.33	<i>15. LOLR (0.15)</i>	
- No legal upper bounds	0	- For liquidity purposes with limitations (up to 180 days or up to banks' equity), or no legal provision for emergency lending.	1
		- For liquidity at conditions defined by the central bank	0.75
		- Provisions for constructive ambiguity or	0.50

<i>15. Restrictions on interest rates (0.05)</i>		rediscount of commercial bank loans	
- Must be at market rate	1	- Open assistance to cope with solvency problems	0.25
- On loans to government can not be lower than a certain floor	0.75	- To finance bank restructuring and/or paying deposit insurance	0
- Interest rate on Central Bank loans can not exceed a certain ceiling	0.50		
- No explicit legal provisions regarding interest rate in Central Bank loans	0.25	<i>16. Financial autonomy (0.10)</i>	
- No interest rate charge on government's borrowing from Central Bank	0	- Government should maintain central capital integrity	1
		- Government is legally allowed to capitalize the central bank	0.67
<i>16. Prohibition on Central Bank lending in primary market to Government (0.05)</i>		- The law does not allow the government to capitalize the central bank	0.33
- Prohibition from buying government securities in primary market	1	- The Central Bank conducts quasi-fiscal operations.	0
- No prohibition	0		
		Accountability (0.10)	
		<i>17. Accountability of Central Banks (0.75)</i>	
		- Reports to executive branch and informs at least annually to Congress.	1
		- Reports to the executive once a year and submits an annual report to Congress.	0.75
		- Annual report to the executive. Informs to the executive branch whenever fundamental disequilibria emerge, or reports through the media without specific periodicity.	0.50
		- Issues annual report at specific time.	0.25
		- Distributes an annual report without establishing particular period of time for it.	0
		<i>18. Central Bank transparency (0.25)</i>	
		- Discloses detailed financial statements at least once a year with a certification of an independent auditor	1
		- Discloses consolidated financial statements at least once a year with seal of the Banking Superintendent or other public sector authority	0.75
		- Discloses financial statements at least once a year, certified by an internal auditor	0.50
		- Publishes partial financial statements	0.25
		- Does not publish financial statements or the law authorizes the central bank to deviate from international accounting standards	0

**GMT Index and the Independence of Central Banks
(Latin America and the Caribbean)**

	Arg-0	Arg-1	Bah	Bar	Bel	Bol-0	Bol-1	Bra	Chi	Col-0	Col-1	CR-0	CR-1
Index of Political Independence	0	8	4	3	3	2	7	5	7	4	4	4	6
Government does not appoint Governor	0	1	0	0	0	0	1	1	1	1	1	1	0
Governor in office > 5 years	0	1	0	0	0	0	1	1	0	0	0	0	0
Government does not appoint Board	0	1	0	0	0	0	1	1	1	0	0	0	1
Board in office > 5 years	0	1	0	0	0	0	0	1	1	0	0	0	1
Government participation in Board	0	1	1	1	1	0	1	0	1	0	0	0	1
Government does not approve mon. policy	0	1	1	1	1	1	1	0	1	1	1	1	1
Legal Mandate mon.stability	0	1	1	1	1	0	1	1	1	1	1	1	1
Conflict Resolution	0	1	1	0	0	1	1	0	1	1	1	1	1
Index of Economic Independence	6	5	4	4	4	5	6	5	7	4	6	5	5
Direct credit not automatic	1	0	0	0	0	0	0	0	1	1	1	1	0
Market interest rates	0	1	0	1	1	0	1	1	1	0	1	1	1
Temporary	1	1	1	1	1	1	1	1	1	1	1	0	1
Limited amount	1	1	1	0	1	1	1	1	1	0	0	1	1
Primary market participation	1	1	0	0	0	1	1	0	1	1	1	0	1
Discount rate set by Cent. Bank	1	1	1	1	1	1	1	1	1	1	1	1	1
Banking supervision responsibility	1	0	1	1	0	1	1	1	1	0	1	1	0
Total GMT	6	13	8	7	7	7	13	10	14	8	10	9	11

GMT Index and the Independence of Central Banks (Continued)
(Latin America and the Caribbean)

	DR	Ecu-0	Ecu-1	ES-0	ES-1	Gua	Guy-0	Guy-1	Hon-0	Hon-1	Jam	Mex-0	Mex-1
Index of Political Independence	4	3	4	5	4	3	4	4	4	4	3	3	8
Government does not appoint Governor	0	1	1	0	0	0	0	0	0	0	0	0	1
Governor in office > 5 years	1	0	0	0	0	0	0	0	1	0	0	1	1
Government does not appoint Board	0	0	0	1	1	1	0	0	1	0	0	0	1
Board in office > 5 years	1	0	0	0	0	0	0	0	0	0	0	0	1
Government participation in Board	0	0	0	1	0	0	1	1	0	1	0	0	1
Government does not approve mon. policy	1	1	1	1	1	1	1	1	1	1	1	0	1
Legal Mandate mon.stability	0	0	1	1	1	0	1	1	0	1	1	1	1
Conflict Resolution	1	1	1	1	1	1	1	1	1	1	1	1	1
Index of Economic Independence	4	5	7	2	7	5	4	5	4	6	3	3	5
Direct credit not automatic	0	0	1	0	1	1	0	1	0	0	0	0	0
Market interest rates	1	0	1	0	1	1	0	1	1	1	0	0	1
Temporary	0	1	1	1	1	1	1	1	1	1	1	0	1
Limited amount	1	1	1	0	1	1	1	1	1	1	1	1	1
Primary market participation	0	1	1	0	1	0	0	0	0	1	0	0	0
Discount rate set by Cent. Bank	1	1	1	1	1	1	1	1	1	1	1	1	1
Banking supervision responsibility	1	1	1	0	1	0	1	0	0	1	0	1	1
Total GMT	8	8	11	7	11	8	8	9	8	10	6	6	13

GMT Index and the Independence of Central Banks (Concluded)
(Latin America and the Caribbean)

	Nic-0	Nic-1	Par-0	Par-1	Per-0	Per-1	Sur	T&T	Uru-0	Uru-1	Ven-0	Ven-1
Index of Political Independence	3	3	4	6	5	6	2	4	4	5	3	6
Government does not appoint Governor	0	0	0	1	1	1	0	0	1	1	0	1
Governor in office > 5 years	0	0	0	0	0	0	0	0	0	0	0	1
Government does not appoint Board	0	0	0	1	1	1	0	0	1	1	0	0
Board in office > 5 years	0	0	0	0	0	0	0	0	0	0	0	1
Government participation in Board	0	0	1	1	1	1	0	1	1	1	0	0
Government does not approve mon. policy	1	1	1	1	1	1	0	1	1	1	1	1
Legal Mandate mon.stability	1	1	1	1	0	1	1	1	0	1	1	1
Conflict Resolution	1	1	1	1	1	1	1	1	0	0	1	1
Index of Economic Independence	6	6	3	5	5	7	4	4	3	5	4	6
Direct credit not automatic	0	0	0	0	0	1	0	0	0	1	0	1
Market interest rates	1	1	0	1	0	1	0	0	0	0	0	1
Temporary	1	1	1	1	1	1	1	1	1	1	1	1
Limited amount	1	1	1	1	1	1	1	1	1	1	1	0
Primary market participation	1	1	0	1	1	1	0	0	0	1	0	1
Discount rate set by Cent. Bank	1	1	1	1	1	1	1	1	1	1	1	1
Banking supervison reponsibility	1	1	0	0	1	1	1	1	0	0	1	1
Total GMT	9	9	7	11	10	13	6	8	7	10	7	12

**Cukierman Index and the Independence of Central Banks
(Latin America and the Caribbean)**

	Arg-0	Arg-1	Bah	Bar	Bel	Bol-0	Bol-1	Bra	Chi	Col-0	Col-1	CR-0	CR-1
Central Bank Governor	0.625	0.770	0.583	0.418	0.480	0.625	0.688	0.563	0.708	0.355	0.770	0.730	0.333
Term of office	0.25	0.75	0.5	0.5	0.5	0.25	0.75	0.75	0.5	0	0.25	0.25	0.25
Who appoints	0.25	0.5	0	0	0.25	0.25	0.5	0.5	0.5	0.75	1	1	0.25
Dismissal	1	0.83	0.83	0.17	0.17	1	0.5	1	0.83	0.67	0.83	0.67	0.83
Other responsibilities	1	1	1	1	1	1	1	0	1	0	1	1	0
Central Bank primary objective	0.4	1	0.6	0.6	0.4	0	0.8	0	0.6	0.2	1	0.4	0.6
Price stability	0.4	1	0.6	0.6	0.4	0	0.8	0	0.6	0.2	1	0.4	0.6
Policy Formulation	0.083	0.750	0.550	0.550	0.268	0.750	0.750	0.368	0.750	0.750	0.750	0.668	0.750
Who formulates monetary policy	0.33	1	1	1	0.67	1	1	0.67	1	1	1	0.67	1
Conflict resolution	0	1	0.6	0.6	0.2	1	1	0.4	1	1	1	1	1
Central Bank role governm. Budget	0	0	0	0	0	0	0	0	0	0	0	0	0
Central Bank lending	0.440	0.784	0.480	0.563	0.631	0.479	0.868	0.596	1.000	0.467	0.735	0.814	0.839
Limits in advances to governm.	0.33	1	0.67	0.67	0.67	0.67	0.67	0.67	1	0.67	0.67	1	1
Limits in loans to government	0.33	0.33	0.67	0.33	0.67	0.33	1	0.33	1	0.33	0.67	0.67	0.67
Who decides terms of lending	0.67	0.67	0.33	1	1	0.33	1	1	N/A	0.67	1	0.67	0.67
Beneficiaries	0.33	1	0.33	0.33	0.33	1	1	0.33	N/A	0.33	1	1	1
Type of limits	0.33	0.67	0.67	0.67	0.67	0.67	0.67	0.33	N/A	0.67	0	0.67	0.67
Maturity of loans	0.67	N/A	0	0.33	0.33	0	0.67	0.33	N/A	0.67	N/A	N/A	N/A
Restrictions on interest rates	0.5	1	0.25	0.25	0.25	0.25	1	0.25	N/A	0.5	1	0.25	0.75
Prohibition lending to government	1	1	0	0	0	0	1	1	1	0	0	1	1
Cukierman weighted	0.417	0.808	0.529	0.537	0.511	0.477	0.804	0.465	0.844	0.447	0.784	0.713	0.689
Political Independence	1.025	1.770	1.183	1.018	0.880	0.625	1.488	0.563	1.308	0.555	1.770	1.130	0.933
Economic Independence	0.523	1.534	1.030	1.113	0.898	1.229	1.618	0.963	1.750	1.217	1.485	1.482	1.589

Cukierman Index and the Independence of Central Banks (Continued)
(Latin America and the Caribbean)

	DR	Ecu-0	Ecu-1	ES-0	ES-1	Gua	Guy-0	Guy-1	Hon-0	Hon-1	Jam	Mex-0	Mex-1
Central Bank Governor	0.708	0.668	0.730	0.395	0.418	0.355	0.480	0.645	0.645	0.520	0.500	0.500	0.813
Term of office	1	0	0.25	0.5	0.5	0.25	0.5	0.5	0.75	0.25	0.5	0.75	0.75
Who appoints	0	1	1	0.25	0	0	0.25	0.25	0	0	0	0.25	0.5
Dismissal	0.83	0.67	0.67	0.83	0.17	0.17	0.17	0.83	0.83	0.83	1	1	1
Other responsibilities	1	1	1	0	1	1	1	1	1	1	0.5	0	1
Central Bank primary objective	0	0	0.6	0.6	0.8	0	0.4	0.4	0	0.6	0.4	0.4	0.8
Price stability	0	0	0.6	0.6	0.8	0	0.4	0.4	0	0.6	0.4	0.4	0.8
Policy Formulation	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.583	0.750
Who formulates monetary policy	1	1	1	1	1	1	1	1	1	1	1	0.33	1
Conflict resolution	1	1	1	1	1	1	1	1	1	1	1	1	1
Central Bank role governm. Budget	0	0	0	0	0	0	0	0	0	0	0	0	0
Central Bank lending	0.361	0.513	1.000	0.096	1.000	1.000	0.521	0.783	0.294	0.735	0.277	0.377	0.719
Limits in advances to governm.	0.33	0.67	1	0	1	1	0.67	1	0.33	0.67	0.33	0.33	0.67
Limits in loans to government	0.33	0.33	1	0	1	1	0.33	0.33	0.33	0.67	0.33	0.33	0.67
Who decides terms of lending	0.67	1	N/A	0	N/A	N/A	0.33	1	0.33	1	0.33	0.33	1
Beneficiaries	0.33	0	N/A	0.33	N/A	N/A	1	1	0	0.33	0	0.67	1
Type of limits	0.33	0.33	N/A	0.33	N/A	N/A	0.33	0.67	0.33	0.33	0.33	0.33	0.67
Maturity of loans	0	0.33	N/A	0.67	N/A	N/A	0.67	0.67	0.67	1	0.33	0	0
Restrictions on interest rates	0.25	0.25	N/A	0.25	N/A	N/A	0.75	1	0.25	1	0.25	0.25	1
Prohibition lending to government	0	0	1	0	1	1	0	0	0	1	0	1	0
Cukierman weighted	0.435	0.502	0.849	0.329	0.816	0.684	0.529	0.693	0.388	0.674	0.411	0.436	0.754
Political Independence	0.708	0.668	1.330	0.995	1.218	0.355	0.880	1.045	0.645	1.120	0.900	0.900	1.613
Economic Independence	1.111	1.263	1.750	0.846	1.750	1.750	1.271	1.533	1.044	1.485	1.027	0.960	1.469

Cukierman Index and the Independence of Central Banks (Concluded)
(Latin America and the Caribbean)

	Nic-0	Nic-1	Par-0	Par-1	Per-0	Per-1	Sur	T&T	Uru-0	Uru-1	Ven-0	Ven-1
Central Bank Governor	0.375	0.375	0.418	0.583	0.375	0.708	0.480	0.583	0.563	0.625	0.645	0.708
Term of office	0.5	0.5	0.25	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Who appoints	0	0	0.25	0.5	0.5	0.5	0.25	0	0.25	0.5	0.25	0.5
Dismissal	0	0	0.17	0.33	0.5	0.83	0.67	0.83	0.5	0.5	0.83	0.83
Other responsibilities	1	1	1	1	0	1	0.5	1	1	1	1	1
Central Bank primary objective	0.4	0.6	0.4	0.6	0.4	1	0.4	0.4	0.2	0.6	0.4	0.6
Price stability	0.4	0.6	0.4	0.6	0.4	1	0.4	0.4	0.2	0.6	0.4	0.6
Policy Formulation	0.750	0.750	0.468	0.668	0.750	0.750	0.268	0.750	0.450	0.450	0.750	0.750
Who formulates monetary policy	1	1	0.67	0.67	1	1	0.67	1	1	1	1	1
Conflict resolution	1	1	0.6	1	1	1	0.2	1	0.4	0.4	1	1
Central Bank role governm. Budget	0	0	0	0	0	0	0	0	0	0	0	0
Central Bank lending	0.685	0.753	0.298	0.773	0.530	0.918	0.447	0.413	0.596	0.667	0.547	0.918
Limits in advances to governm.	0.67	0.67	0.33	0.67	0.67	1	0.67	0.67	1	1	0.67	1
Limits in loans to government	0.67	0.67	0	1	0	0.67	0.67	0.33	0.67	0.67	0.67	0.67
Who decides terms of lending	0.33	0.67	0.33	0.67	1	1	0.33	0.33	0.33	0.33	0.33	1
Beneficiaries	1	1	0.33	1	0.33	1	0	0	0.67	0.67	0.33	1
Type of limits	1	1	0.67	0.33	0.33	0.67	0.67	0.67	0.33	0.33	0.33	0.67
Maturity of loans	0.67	0.67	0.33	0.67	1	N/A	1	0.67	0	0.67	0.67	N/A
Restrictions on interest rates	1	1	0	0.75	0.25	1	0.25	0.25	0.25	1	0.25	1
Prohibition lending to government	1	1	1	1	1	1	0	0	0	0	1	1
Cukierman weighted	0.590	0.654	0.363	0.693	0.512	0.863	0.420	0.495	0.508	0.616	0.575	0.803
Political Independence	0.775	0.975	0.818	1.183	0.775	1.708	0.880	0.983	0.763	1.225	1.045	1.308
Economic Independence	1.435	1.503	0.766	1.440	1.280	1.668	0.715	1.163	1.046	1.117	1.297	1.668

**“Modified Cukierman” Index and the Independence of Central Banks
(Latin America and the Caribbean)**

	Arg-0	Arg-1	Bah	Bar	Bel	Bol-0	Bol-1	Bra	Chi	Col-0	Col-1	CR-0	CR-1
Government of the Central Bank	0.416	1	0.241	0.166	0.384	0.166	0.8	0.6	0.934	0.05	0.884	0.241	0.341
Term of office Governor	0.33	1	0.33	0.33	0.67	0.33	1	1	0.67	0	0.67	0.33	0.33
Who appoints the Governor	1	1	0	0	0	0	1	1	1	0	1	0	0
Appointment and term of Board	0.25	1	0	0	0.75	0	0.75	1	1	0.25	0.75	0	1
Dismissal of Governor and Board	0	1	0.25	0	0	0	0.5	0	1	0	1	0.25	0.25
Responsibilities of governor	1	1	1	1	1	1	1	0	1	0	1	1	0
Central Bank primary objective	0.25	1	0.5	0.5	0.25	0	1	0.25	0.75	0	1	0.25	1
Price stability	0.25	1	0.5	0.5	0.25	0	1	0.25	0.75	0	1	0.25	1
Policy formulation	0.17	0.80	0.68	0.68	0.56	0.80	0.80	0.46	0.80	0.80	0.64	0.84	1
Who formulates monetary policy	0.33	1	1	1	1	1	1	0.67	1	1	0.67	0.67	1
Conflict resolution	0	1	0.6	0.6	0.2	1	1	0.4	1	1	1	1	1
Central Bank and public debt	0	0	0	0	0	0	0	0	0	0	0	1	1
Central Bank lending	0.37	0.64	0.62	0.51	0.61	0.40	0.77	0.50	0.82	0.35	0.76	0.70	0.79
Advances to government	0.33	1	0.67	0.67	0.67	0.67	0.67	0.67	1	0.67	0.67	1	1
Loans to government	0.5	0.25	0.75	0.5	0.25	0.25	1	0.5	1	0.25	0.5	0.75	0.75
Beneficiaries of financing	0.33	1	0.33	0.33	0.33	0.33	1	0.33	N/A	0.33	1	1	1
Who decides terms of lending	0.67	0.67	0.33	1	1	0.67	1	1	N/A	0.67	1	0.67	0.67
Interest rates	0	1	0.5	0.5	0.5	0.5	1	0.5	N/A	0	1	0.5	1
LOLR	0.5	0.75	0.5	0.5	1	0.5	0	0.25	0	0.5	0.75	0.5	0.75
Financial autonomy Central Bank	0	0.33	1	0	1	0	0.67	0.33	0.67	0	1	0.33	0.33
Accountability	0.1875	1	0.8125	0.8125	0.8125	0.125	0.88	0.69	1	0.1875	1	0.19	0.56
Accountability norms	0	1	0.75	0.75	0.75	0	1	0.75	1	0	1	0.25	0.75
Transparency	0.75	1	1	1	1	0.5	0.5	0.5	1	0.75	1	0	0
Total Modified Cukierman	0.314	0.825	0.553	0.495	0.523	0.326	0.825	0.496	0.846	0.289	0.827	0.510	0.739
Political Independence	0.121	0.350	0.123	0.108	0.114	0.033	0.310	0.158	0.299	0.010	0.327	0.086	0.218
Economic Independence	0.175	0.375	0.349	0.305	0.327	0.280	0.427	0.270	0.447	0.260	0.400	0.405	0.465
Accountability	0.019	0.100	0.081	0.081	0.081	0.013	0.088	0.069	0.100	0.019	0.100	0.019	0.056

“Modified Cukierman” Index and the Independence of Central Banks (Continued)
(Latin America and the Caribbean)

	DR	Ecu-0	Ecu-1	ES-0	ES-1	Gua	Guy-0	Guy-1	Hon-0	Hon-1	Jam	Mex-0	Mex-1
Government of the Central Bank	0.6	0.3	0.216	0.141	0.291	0.291	0.234	0.459	0.65	0.466	0.416	0.066	0.866
Term of office Governor	1	1	0.33	0.33	0.33	0.33	0.67	0.67	1	0.33	0.33	0.33	0.33
Who appoints the Governor	0	0	0	0	0	0	0	0	0	0	0	0	1
Appointment and term of Board	0	0	0.25	0	0.25	0.25	0	0.75	0.25	0	0	0	1
Dismissal of Governor and Board	1	0	0	0.25	0.25	0.25	0	0.25	1	1	1	0	1
Responsibilities of governor	1	1	1	0	1	1	1	1	1	1	0.5	0	1
Central Bank primary objective	0	0	0.75	0.75	1	0	0.25	0.5	0	0.75	0.25	0.25	1
Price stability	0	0	0.75	0.75	1	0	0.25	0.5	0	0.75	0.25	0.25	1
Policy formulation	0.80	0.84	0.84	0.90	0.8	1	0.8	0.635	0.835	1	0.635	0.465	0.64
Who formulates monetary policy	1	0.67	0.67	1	1	1	1	0.67	0.67	1	0.67	0.33	0.67
Conflict resolution	1	1	1	1	1	1	1	1	1	1	1	1	1
Central Bank and public debt	0	1	1	0.5	0	1	0	0	1	1	0	0	0
Central Bank lending	0.42	0.36	0.82	0.15	0.85	0.78	0.61	0.73	0.28	0.63	0.42	0.42	0.72
Advances to government	0.33	0.67	1	0	1	1	0.67	0.67	0.33	0.67	0.33	0.33	0.67
Loans to government	0.5	0.25	1	0	1	1	0.25	0.5	0.25	0.75	0.25	0.5	0.75
Beneficiaries of financing	0.33	0	N/A	0.33	N/A	N/A	1	1	0	0.33	0	0.67	1
Who decides terms of lending	0.67	1	N/A	0	N/A	N/A	0.33	1	0.33	1	0.33	0.33	1
Interest rates	0.5	0.5	N/A	0.5	N/A	N/A	0.5	1	0.5	1	0.5	0.5	0.5
LOLR	0.5	0.25	0	0.25	0.25	0	1	0.5	0.25	0.25	1	0.25	0.5
Financial autonomy Central Bank	0	0	0.67	0.33	0.67	0.33	1	1	0.33	0.33	0.67	0.33	0.67
Accountability	0.25	0.31	0.31	0.56	0.75	0.44	0.63	0.81	0.19	0.75	0.75	1.00	1
Accountability norms	0.25	0.25	0.25	0.75	0.75	0.5	0.5	0.75	0	0.75	0.75	1	1
Transparency	0.25	0.5	0.5	0	0.75	0.25	1	1	0.75	0.75	0.75	1	1
Total Modified Cukierman	0.435	0.362	0.639	0.393	0.745	0.565	0.510	0.634	0.385	0.682	0.461	0.388	0.805
Political Independence	0.120	0.060	0.156	0.141	0.208	0.058	0.084	0.167	0.130	0.206	0.121	0.051	0.323
Economic Independence	0.290	0.270	0.452	0.196	0.462	0.463	0.363	0.385	0.236	0.402	0.265	0.238	0.382
Accountability	0.025	0.031	0.031	0.056	0.075	0.044	0.063	0.081	0.019	0.075	0.075	0.100	0.100

“Modified Cukierman” Index and the Independence of Central Banks (Concluded)
(Latin America and the Caribbean)

	Nic-0	Nic-1	Par-0	Par-1	Per-0	Per-1	Sur	T&T	Uru-0	Uru-1	Ven-0	Ven-1
Government of the Central Bank	0.1	0.316	0.391	0.666	0.516	0.766	0.184	0.241	0.516	0.616	0.166	0.641
Term of office Governor	0	0.33	0.33	0.33	0.33	0.33	0.67	0.33	0.33	0.33	0.33	0.33
Who appoints the Governor	0	0	0	1	1	1	0	0	1	1	0	1
Appointment and term of Board	0	0.75	0.75	0.75	0.5	0.5	0	0	0.5	0.5	0	1
Dismissal of Governor and Board	0	0	0.25	0.5	0.5	1	0	0.25	0.5	0.5	0	0.25
Responsibilities of governor	1	1	1	1	0	1	0.5	1	0	1	1	1
Central Bank primary objective	0.5	0.75	0.25	0.5	0.25	1	0.25	0.25	0	0.5	0.25	0.5
Price stability	0.5	0.75	0.25	0.5	0.25	1	0.25	0.25	0	0.5	0.25	0.5
Policy formulation	0.80	0.80	0.88	0.74	0.80	0.80	0.40	0.90	0.46	0.72	0.74	0.74
Who formulates monetary policy	1	1	1	0.67	1	1	0.67	1	0.67	1	0.67	0.67
Conflict resolution	1	1	0.6	1	1	1	0.2	1	0.4	0.4	1	1
Central Bank and public debt	0	0	1	0.5	0	0	0	0.5	0	0.5	0.5	0.5
Central Bank lending	0.73	0.84	0.21	0.77	0.51	0.93	0.37	0.54	0.47	0.72	0.44	0.81
Advances to government	0.67	0.67	0.33	0.67	0.67	1	0.67	0.67	1	1	0.67	1
Loans to government	0.5	0.75	0	1	0.5	0.75	0.25	0.5	0.5	0.75	0.5	0.5
Beneficiaries of financing	1	1	0	1	0.33	1	0.33	0.33	0.67	0.67	0.33	1
Who decides terms of lending	0.33	0.67	0.33	1	1	1	0	0.67	0.33	0.33	0.33	1
Interest rates	1	1	0.5	1	0.5	1	0.5	0.5	0	1	0.5	1
LOLR	1	1	0.5	0.25	0.5	1	0.5	0.5	0.25	0.75	0.5	0.75
Financial autonomy Central Bank	1	1	0	0.33	0	1	0.33	0.67	0.33	0.33	0	1
Accountability	0.81	1.00	0.38	0.75	0.38	0.69	1.00	0.81	0.75	0.75	0.38	0.88
Accountability norms	0.75	1	0.25	1	0.5	0.75	1	0.75	0.75	0.75	0.25	1
Transparency	1	1	0.75	0	0	0.5	1	1	0.75	0.75	0.75	0.5
Total Modified Cukierman	0.590	0.733	0.368	0.702	0.502	0.862	0.380	0.519	0.435	0.669	0.395	0.726
Political Independence	0.095	0.176	0.116	0.208	0.141	0.303	0.074	0.086	0.103	0.198	0.071	0.203
Economic Independence	0.413	0.457	0.215	0.419	0.323	0.490	0.206	0.352	0.256	0.396	0.287	0.435
Accountability	0.081	0.100	0.038	0.075	0.038	0.069	0.100	0.081	0.075	0.075	0.038	0.088

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