Financial Globalization and CBI Reforms in Emerging Countries

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Abstract

During the 1990s there was a worldwide trend towards central bank independence. The most commonly advanced theories of the causes of the spread of central bank independence in developing countries do not explain fully why governments agreed at some point to cede monetary power to central banks. In this paper we try to explain the reasons for this decision using a model in which political actors compete to retain and increase their power. In particular, we assume that a central bank is able to protect and enhance its independence if it can count on a constituency that puts pressure on the government in its favor. Financial globalization has given the central banks of emerging countries the opportunity to count on a broad and strong constituency, most notably on the IMF. In this way the conditions were laid down for a political exchange between central banks, on the one hand, and the international constituency, in particular the IMF, on the other. While the former offered this constituency a pledge to favor neo-liberal reforms, the IMF offered support to central banks in putting pressure on governments to expand the degree of independence of these institutions.

Jel classification: E58, F33

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Introduction

During the 1990s there was a worldwide trend towards central bank independence. Over the past two decades the number of independent central banks has significantly increased, with many countries adopting far-reaching reforms of the legal status of central banks. This process has involved most countries. In section 1 we give an illustration of the timing and manner of CBI reforms in emerging countries. Much of the literature attributes the disinflation of the 1990s to the spread of independent central banks.

Numerous empirical papers have demonstrated the existence of an inverse relationship between the degree of central bank independence and a country's inflation rate.

This literature takes as its theoretical premise the time inconsistency approach. In this approach, granting independence to the central bank is a prescription: it reduces the inflationary bias as a way of increasing the general affluence of the community.

The time inconsistency approach, like all Rational Choice approaches, tends to establish actor preferences exogenously and to assume actor motives as given a priori.[1]

In this perspective, government is considered a benevolent planner that reflects the preferences of society. In reality, however, the preferences and motives of actors change with new and evolving contexts. These changes depend both on institutional changes and on changes in the environment where political struggle takes place.

On the issue discussed in this paper, when we abandon the basic assumptions of the time inconsistency approach, one question becomes unavoidable: why, in the last two decades, have governments, particularly those of emerging countries, relinquished part of their power by delegating monetary policy to central banks?

In section 2 we carry out a survey of the explanations given for the process of the diffusion of independent central banks in emerging countries. In this section we also show the main weaknesses of these explanations, which put the emphasis either on political demand or on political supply, reflecting a substantially deterministic approach.

In section 3 we present a model which assumes that political actors fight to gain power: central banks, for example, wish to widen their margins of independence from government. In this endeavor, actors seek the support of constituencies that are able to exert pressure on their counterparts. In a financially globalized international context, the World Bank and, even more so, the IMF can become for central banks a constituency capable of persuading governments to expand or to respect their autonomy.

In this way the conditions for a political exchange are given: international organizations, in particular the IMF, provide support to central banks and in exchange central banks undertake to promote the reforms desired by international organizations and to engage in virtuous behavior.

In section 4 we bring some empirical evidence, mainly of a narrative kind, of the conclusions from this model. Most of this evidence suggests that, at least initially, it was financial globalization that favored CBI reforms, rather than the reverse. This conclusion finds support in section 5, where we

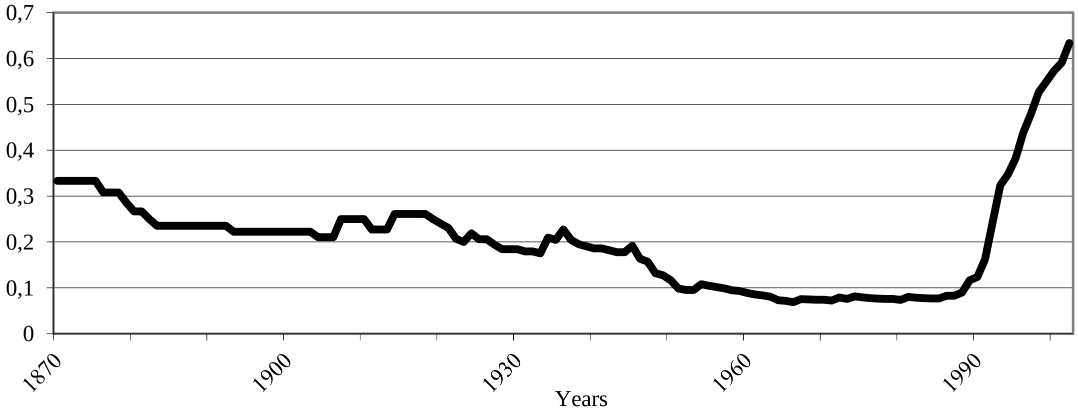
[1] See, among others, Steinmo *et al.* (1992) and Thelen (1999).

illustrate and discuss the results of an econometric verification so as to identify whether and to what extent the IMF and capital inflows make the independence of a central bank more likely.

1. The nature of CBI reforms in emerging countries

Whilst from 1950 to 1989 there was no evidence of moves towards increased independence of central banks in emerging countries, the 1990s saw reforms in many of these countries which were to lead to greater *de iure* central bank independence[2] (Figure 1).

Figure 1: Proportion of central banks with legal independence, 1870-2002



Despite the variety of legislative instruments used, these reforms showed a significant degree of uniformity in the principles adopted[3] (Table 1).

This uniformity is represented primarily by the explicit pursuit of price stability as an ultimate policy objective. In the previous years, however, most central banks in these countries were responsible for economic growth also via the use of inflationary monetary policies. With the attribution of price stability came implicit recognition of the fact that in the long term variations in money have little impact on output, i.e., that the Philips curve is vertical.

[2] See, among others, Jacome (2001), Crowe and Meade (2007), and Arnone *et al.* (2009).

[3] See Carstens and Jacome (2005), Jacome and Vasquez (2005) and Crowe and Meade (2007).

Table 1 – Institutional reforms of emerging countries' central banks

Mandate of the Central Bank	Price stability	Price stability together with	
		good working of payment system	financial system stability
	Argentina, Bolivia, Colombia, Costa Rica, Dominican Rep., Korea, Indonesia, Mexico, Peru, Philippines, Venezuela	Chile, Honduras, Nicaragua	Guatemala, Paraguay, Uruguay, Thailand, Malaysia
Board of Directors tenure vis-à-vis Parliament's term of office	Longer	Same length	Shorter or not specified
	Argentina, Chile, Costa Rica, Mexico, Philippines, Venezuela, Thailand	Bolivia, Colombia, Guatemala, Indonesia, Korea, Malaysia	Dominican Rep., Honduras, Nicaragua, Paraguay, Peru, Uruguay
Who appoints or confirms members of the Board of Directors	Executive branch alone	Between the executive and the legislative branch	With the involvement of the private sector
	Colombia, Dominican Rep., Honduras, Malaysia, Philippines, Thailand.	Korea, Indonesia, Peru, Venezuela	Guatemala, Nicaragua
Mechanism of removal	Strictly on legal grounds	On non-legal grounds or for economic policy reasons	
	Argentina, Bolivia, Colombia, Dominican Rep., Honduras, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Thailand, Venezuela	Chile, Costa Rica, Guatemala, Nicaragua, Paraguay, Uruguay	
Who proposes or decides upon removal	Legislative branch	Executive branch alone	Judicial branch or the executive board itself
	Argentina, Chile, Colombia, Mexico, Paraguay, Peru, Uruguay, Venezuela	Bolivia, Costa Rica, Guatemala, Indonesia, Korea, Malaysia, Philippines, Thailand, Nicaragua	Dominican Rep., Honduras

Source: Carstens and Jacome (2005) for Latin American countries and national constitutions for other countries.

A second feature shared by CBI reforms was the introduction of institutional mechanisms aimed at protecting central banks from pressure exerted by government and parliament. Crucially, such mechanisms covered the appointment of central bankers, their term of office and the establishment of objective procedures for their dismissal. In many cases, the mechanisms selected for the appointment of central bank governors required the involvement not only of the executive but also of the legislature. This dual involvement was designed with two objectives in mind: firstly, to increase central bankers' independence from the executive and, secondly, to detach monetary policy from the political arena, where it was typically conducted along bipartisan lines. The mechanism usually adopted to achieve the second objective is the establishment of a term of office for the central banker (or the members of the Board) that goes beyond the duration of the legislature.

In this way, a particular political majority may find itself in policy discussions with a central banker appointed by its political rivals when they were in power.

As regards the attempts to protect central bankers' autonomy contained in most CBI reforms, legislative measures exist to resolve conflicts between central bank and government that set out the conditions for the dismissal of central bank governors. In this way, the executive can no longer arbitrarily remove those central bankers who fail to cooperate with its plans.

Thanks to these reforms, the *de iure* political independence of emerging countries' central banks increased significantly during the 1990s (Table 2).

Table 2 – Evolution of central bank political independence

Country	Date of CBI reforms	Political Independence	
		Late 1980s	End 2003
Asia			
Indonesia	1999	0.17	0.67
Korea	1997	0.20	0.50
Malaysia	1994	0.17	0.50
Philippines	1993	0.33	0.83
Thailand	2008	0.33	0.33
Latin America			
Argentina	1992	0.33	0.83
Bolivia	1995	0.33	0.67
Brazil	-	0.17	0.33
Chile	1989	0.17	0.50
Colombia	1992	0.17	0.35
Mexico	1993	0.50	0.67
Peru	1993	0.50	0.50
Uruguay	-	0.17	0.67
Venezuela	1992	0.33	0.67

Source: Arnone *et al.* (2009).

In addition to their uniformity of content, CBI reforms in emerging countries took place mostly between 1992 and 1998.

Most of the literature on central bank independence has addressed the question of whether and how this independence impacts on the rate of inflation. Although an extensive body of work shows the effects of CBI reforms on the role of domestic inflation,[4] so far there have only been limited attempts, both theoretical and empirical, to explain, firstly, why policymakers in several emerging countries decided almost at the same time to delegate monetary policy to an independent body.

2. A review of the literature

Traditional explanations for the diffusion of CBI reforms in emerging countries vary considerably. Among economists the most widespread and commonly held view is based on the time consistency hypothesis, according to which government as a benevolent planner has an incentive to resort to inflationary surprises in order to bring the unemployment rate down below its natural level. This leads subjects to expect inflationary surprises.[5] In this situation, the central bank, in order to avoid a fall in output and a rise in the unemployment rate above its natural level generated by inflation expectations, has little choice but to adopt an accommodating monetary policy. In this way expected inflation is self-fulfilling and monetary policy has an inflationary bias. This bias can be minimized or even eliminated by delegating monetary policy to a central banker opposed to inflation[6] or subject to a contract performance.[7]

In the light of this, many countries set in motion reforms of central banks.[8] It has been rightly observed that the hypothesis of time inconsistency is more a prescription than an explanation.[9] Moreover, this hypothesis, based on the assumption that policymakers act as benevolent planners, attaches no importance to the fact that government, by delegating monetary policy to an independent institution, loses control of monetary policy and, therefore, political power.

In short, we must ask ourselves what it is that induces a government to grant independence to a central bank and to accept loss of political power.

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[4] For a survey, see Cukierman (2008).

[5] See Kydland and Prescott (1977); Barro and Gordon (1983).

[6] See Rogoff (1985).

[7] See Persson and Tabellini (1993) and Walsh (1995).

[8] See Alesina and Summers (1993) and Cukiermann (2008).

[9] See Kirshner (2003) and Maman and Rosenhek (2007).

The rejection of the benevolent planner hypothesis underpins explanations suggested by political economists for the diffusion of central bank independence. This approach explains the climb-down by government over monetary powers in terms of the effects of globalization. This favors the emergence of pressure, both internal and external, on governments to enhance the independence of central banks.

Domestic forms of pressure are emphasized by two different types of explanations: *private interest-based* and *political interest-based* explanations.

Private interest-based explanations of CBI reforms insist on the fact that these reforms were sought by financial interest groups that benefited from low inflation.[10] In particular, Posen (1995) claims that a central bank will take an anti-inflationary monetary policy stance when there is a coalition of interests protecting it.[11]

The main limitation of these explanations lies in the fact that in some countries, especially in Latin America, the period of time between the start of capital flows and CBI reforms was very short: too short, that is, for powerful domestic financial interest groups to be formed that could invoke the autonomy of the central bank.

While *private interest-based* explanations underline the role played by the demand for reforms coming from interest groups, the *political interest-based* explanations of CBI reforms stress the role of the political supply side. Some of these explanations refer to policy choices, others to the characteristics of the political arena or the nature of political institutions in a certain country. Firstly, the importance of policy choices is stressed by those scholars who attribute a central bank's independence to institutional factors such as high political fragmentation,[12] a large number of veto players,[13] the prevalence of a particular majority,[14] or an imminent change of majority[15] or regime.[16] These explanations help highlight the importance of specific factors in particular countries, but fail to give a general explanation of CBI reforms diffusion.

[10] See Maxfield (1991) and Posen (1995).

[11] Similar conclusions have been reached by contributions that view the legal independence of central banks as an ineffective disciplinary mechanism given that any virtuous stance on the part of the central bank comes from an aversion to inflation by society as a whole. See Hayo (1998) and Hayo and Hefeker (2001).

[12] See Cukiermann (1992).

[13] See Keefer and Stasavage (2002).

[14] See, among others, Goodman (1991), Milesi-Ferretti (1995), Bernhard and Leblang (1999), Clark (2002) and Bernhard (2002).

[15] See Lohmann (1994; 1998).

[16] See Boylan (2001).

Secondly, the importance of the political arena is highlighted by those[17] who claim that policymakers, when they expect to lose power, attempt to limit the decisional opportunities of the governments that will succeed them by transferring power to independent agencies, such as the central bank. This argument is also used in the analysis of regime changes.[18] It is argued that when a country moves from autocracy to democracy, the autocrat seeks to keep intact the political and social system by fixing certain operational limits on the new democratic government such as attributing powers to an independent central bank.

Thirdly, the crucial role of the institutional framework is stressed by those who claim that the creation of an independent central bank is more probable in a highly fragmented political context[19] or in a context where the high number of veto players makes overriding practices by governments unlikely[20].

Most *political-interest based* explanations run up against several difficulties.

In particular, explanations that focus on the institutional framework favoring central bank independence fail to account for CBI reforms in emerging countries since these reforms happened almost everywhere without changes in the institutional framework. On the other hand, explanations that refer to the political complexion of the government majority, or to the risk of majority or regime change, are able to explain certain episodes, such as what happened in Chile. These explanations, however, are confronted with the fact that CBI reforms in emerging countries have been put forward by both left and right wing governments, as well as by both weak and strong governments.

However, one of the main weaknesses of explanations based on domestic factors, both *economic interest-based* and *political interest-based* explanations, is that they pay little attention to the fact that CBI reforms in some regions, in particular in Latin America, tended to be concentrated in a particular period of time.

This limitation has led various scholars to turn to international factors, specifically to globalization, as the main reason for CBI reforms. In this context we can distinguish between a sociological explanation, an ideological explanation and some political explanations.

Some sociologically based works claim that globalization and the ensuing interconnection amongst countries have had an effect on the structure of a state. This interconnection favors forms of what has been termed *normative isomorphism*.

[17] See Goodman (1991) and Lohmann (1994; 1998).

[18] See Boylan (2001).

[19] See Bernhard (2002).

[20] See Keefer and Stasavage (2002) and Hallerberg (2002).

States characterized by a network of relations can adopt models of isomorphic behavior. The primary channel of transmission of such behavior patterns is emulation, which tends to prevail in situations where states have close trade relations. Indeed, these countries "…are likely to adopt similar patterns of behavior, including the granting of independence to their central banks."[21] In other words, a country's attribution of monetary policy to an independent central bank is a symbol of its belonging to a distinct group of trading partners.[22] Another channel along which isomorphic behavior is transmitted is competition. As states tend to adopt the behavior patterns of successful competitors[23], it follows that the more a country competes in foreign trade or on capital markets where independent central banks are established, the higher the degree of independence its central bank will have. The *normative isomorphism* hypothesis suggests the conclusion that central bank independence tends to be regionally widespread as a result of a contagion effect. This conclusion appears to be confirmed by the Latin American countries, where central bank reforms were concentrated in a particular period of time, that is, from the late 1980s to the early 1990s. Such an hypothesis, however, fails to explain the disconnected and erratic attribution of independence to central banks in Southeast Asian countries.

A second kind of explanation that focuses on the role of globalization underlines the rising role played by experts in the public administrations of emerging countries. These experts, educated at American universities, are part of an epistemic economic community together with officials of international organizations and international financiers. This community took the neo-liberal paradigm as its point of reference.[24]

However compelling they may appear, explanations that emphasize the ideological aspect do not clarify the reasons why experts have assumed such an important role in the governments of emerging countries. Moreover, they shed no light on why CBI reforms in some areas, as in Latin America, have taken place almost at the same time as capital inflows, while in other areas, as in Southeast Asia, they occurred much later.

Among the papers that refer to the political aspects of globalization we can make out two different kinds of explanations. The first[25] emphasizes the interventions of international political actors and argues that the IMF and the U.S. government imposed the adoption of independent central banks on peripheral countries on account of their dependent position.

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[21] Polillo and Guillén (2004; p. 23).

[22] See McNamara (2002).

[23] See Di Maggio and Powell (1983).

[24] See Marcussen (2005).

[25] See Stiglitz (2002).

However, the pressure exerted by international actors, although important, are insufficient to explain CBI reforms, in particular their different timing and different manner. Such aspects can be explained only by also taking into account the domestic political equilibrium.

The third kind of explanation, which emphasizes the effects of globalization on the diffusion of central bank independence, points up the role of domestic politicians and their desire to enhance the inflationary credibility of their country. According to this hypothesis, CBI reforms were the result of the desire of governments to encourage substantial foreign capital inflows. Such inflows, moreover, can only occur when a country has high anti-inflationary credibility. The attribution of monetary policy to an independent central bank guarantees foreign investors that the value of their investments will not be eroded in the future by inflation or by a fall in the value of the national currency. Furthermore, if monetary policy is delegated to an independent central bank, it is realistic to suppose that the value of the currency will be stable over time and that investors will be in a better position to forecast future returns on their assets: "…the 1990s witnessed a wave of increase in central bank independence because government leaders were trying to attract and retain capital."[26]

The main shortcoming of the explanations of the diffusion of CBI reforms that stress the role of globalization is their being mechanical and deterministic. They tend to dismiss the interactions between different institutional actors within each country, and the effects that globalization can have on these interactions. In short, globalization can alter the political equilibrium within a country. Thanks to globalization some actors have the opportunity to strengthen while others can weaken.

In this context, politics regains a central role and the choice of increasing central bank independence is no longer dictated by exogenous factors but is the outcome of a change in the equilibrium of power among institutional actors.[27] Its implications can be illustrated using an analytical model.

4. The model

In section 2 we have seen the limitations of the explanations of the diffusion of central bank independence based on the hypothesis that government is a benevolent planner. In reality, government is a political actor that interacts with other political actors. This interaction is premised on the struggle for power.

[26] Maxfield (1997; p. 35).

[27] See Maman and Rosenhek (2011; 2012).

In reality, however, political actors, although being conditioned in their choice by the legacy of the past or by institutional constraints, on the one hand, interact, on the other hand, have initiative capacity in looking for constituencies' support.

Such initiative capacity takes two main forms. On the one hand, a political actor can formulate a project and fight for a discourse. On the other hand, the same actor can use this discourse to gain and mobilize the consensus of certain constituencies, to acquire power or to increase it.[28]

In this perspective we can assume that central banks used the neo-liberal discourse to acquire political power. In this ideology the concession of independence to central banks has been presented as the inevitable outcome of the de-politicization of monetary policy imposed by globalization.[29]

This discourse has been promoted in the peripheral areas mainly by international organizations such as the World Bank, but in particular by the IMF.

These actors became a potential constituency for central banks, eager to widen their political power. So, the conditions were laid down for a political exchange between central banks on the one hand, and the IMF on the other. While the latter offered the international constituency the pledge to promote neo-liberal reforms designed to eliminate forms of financial repression and to conduct a virtuous monetary policy, the international constituency offered support to central banks by putting pressure on governments to widen the degree of independence of these institutions.

In order to provide a formal representation of the ideas expressed so far, I use a central banker á la Rogoff, which allows us to examine the case of a goal-independent central bank, i.e., a political player. As in Lohmann (1992), the government grants partial independence to a conservative central banker who places greater importance on inflation stabilization than the government itself. The central banker implements a lower inflation rate at the cost of a distorted response to output shocks. The government retains the option to override the central banker's decision at some strictly positive costs. In this context, in normal times the central banker sets the inflation rate, while in extreme situations the government overrides central bank policy and applies its preferred inflation rate.

Under a model of this type, if one assumes that the mobility of capital increases and that, therefore, the shocks on output are greater, it is concluded that as a result of financial globalization central bank independence is reduced. In reality, things have turned out differently. The inability of models à la Lohmann to grasp this fact lies in one of their basic hypothesis. In Lohmann (1992), as in Flood and Isard (1988) and Jensen (1997), the cost of reducing central bank independence is exogenous. This assumption, while convenient, does not allow us to take into account the fact that the government needs consensus if it wants to reduce central bank independence. The present paper

[28] See Schmidt (2009).

[29] See Flinders and Buller (2006), Marcussen (2006) and Hay (2007).

models this fact assuming that the cost of overriding central bank independence depends on the pressure the IMF puts on government.

We assume that the central bank offers a particular level of financial regulation to the IMF in exchange for a certain level of pressure on the government.[30] As in Grossman and Helpman's (1994) model, this implies that if the constituency accepts this offer, it has to implement the agreed level of pressure.[31]

In developed economies the central bank's natural constituency is made up of banks and the financial community. In emerging economies, given the low development level of financial systems, central banks have fewer possibilities to refer to this kind of constituency. This helps to explain their lower levels of independence. Capital flows and financial globalization enhance the possibilities for a central bank to find actors who can represent its constituency.

In the model we assume for simplicity's sake that this constituency is represented by the IMF.

The structure of the model is the following. There are three players – the Government, the Central Bank and the IMF – and three stages. We assume that in the first stage, after wage setters have negotiated nominal wages an output shock hits the economy. In this stage the Central Bank makes an offer to its constituency: it promotes a financial deregulation favourable to the IMF in exchange for pressure on the government to maintain central bank independence. In the second stage the central bank's constituency engages in costly lobbying to influence the decision of the government to reduce central bank independence. In the last stage, the central bank sets the inflation rate; taking into account constituency pressure, the government decides whether or not to reduce central banker's independence.

The economy is characterized by the supply function:

(1) $$y = \pi - \pi^e + z.$$

The model is formulated in logarithms: y is output[32], π is the inflation rate, π^e is expected inflation[33] and z is an output shock.[34]

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[30] This offer is tied to the fact that most central banks in emerging countries have – but above all had – banking supervision and regulation functions. See Barth *et al.* (2001).

[31] This is presumably supported by a continuation game in which there are repeated interactions, but as in much of the literature, to simplify the analysis I do not model these.

[32]Measured in deviations from potential output.

[33]Expected inflation does not play a role in the model. It is fixed in the first stage of the game at $E(\pi) = \frac{\hat{y}(1+\lambda+\varepsilon q)-\varepsilon q z_A^e}{(1+\lambda)(\lambda+\varepsilon)-\varepsilon q}$.

Government's preferences over policy outcomes are reflected in the following loss function:

(2) $L^G = (y - \hat{y})^2 + \lambda\pi^2 + \delta c,$

where $\hat{y}$ is the government's output bliss point, $\hat{y} > 0$, λ is the relative weight placed on the inflation and output goals, $0 < \lambda < \infty$; δ is a dummy variable which takes on a value of 1 when the government reneges on its commitment to maintain central bank independence, and 0 otherwise; and c is the cost that the government incurs when it reneges, c>0.

Monetary policy is delegated to a conservative central banker, who places more weight on inflation stabilization than government:

(3) $L^{BC} = (y - \hat{y})^2 + (\lambda + \varepsilon)\pi^2 + \frac{\theta}{2}(R - R^*)^2.$

Since the central bank has some power over financial regulation, its loss function depends also on deviations of financial regulation from an optimum level R^*. The latter is the level that allows for an efficient allocation of resources.

The cost of reducing central bank independence is endogenous and depends on the constituency's efforts. We assume, therefore, that the cost of overriding central bank independence is equal to an exogenous part, c_I, due to institutional reasons, and to an endogenous part, c_b, due to the pressure on government exerted by the central bank's constituency. The cost of reducing central bank independence is therefore:

(4) $c = c_I + c_b.$

The effort of the central bank's constituency is the result of the minimization of its loss function. To simplify the algebra, we assume that the latter depends only on two elements: financial regulation and the cost of lobbying. We assume that the higher the level of regulation, the lower the utility of the central bank's constituency, and that lobbying is costly. Formally, the loss function of the IMF is:

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where z_A^e is the expected value of z in the case the central bank loses its independence and q is the probability of such event.

[34] Normally distributed with mean zero and variance, σ^2.

(5) $$L^{IMF} = \alpha R + c_b,$$

where the first term represents the costs due to regulation and the second the costs of lobbying. The model consists of three stages. As usual, we start from the last stage, i.e., the stage during which government and central bank interact. The central bank announces the inflation rate π_I:

(6) $$\pi_I = \frac{-z+\hat{y}+\pi^e}{1+\lambda+\varepsilon}.$$

Being conservative, the central bank, on average, sets a lower inflation rate and offsets output shocks to a lesser extent than desired by government.
If the government were to override the central bank, it would achieve a positive output-stimulation effect and avoid the central banker's distortionary response to the output shock, at the price of paying the cost *c* of overriding the central bank. The government overrides the central bank decision if its loss function evaluated at π_I and $\delta=0$ is higher than its loss function evaluated at π_A and $\delta=1$, that is, if:

(7) $$L^G\left(\pi_I(z)\right)\Big|_{\delta=0} - L^G\left(\pi_A(z)\right)\Big|_{\delta=1} = \frac{(-z+\hat{y}+\pi^e)^2\varepsilon^2}{(1+\lambda)(1+\lambda+\varepsilon)^2} - c > 0.$$

where π_A is the level of inflation that minimizes the government loss function, eq. (2):

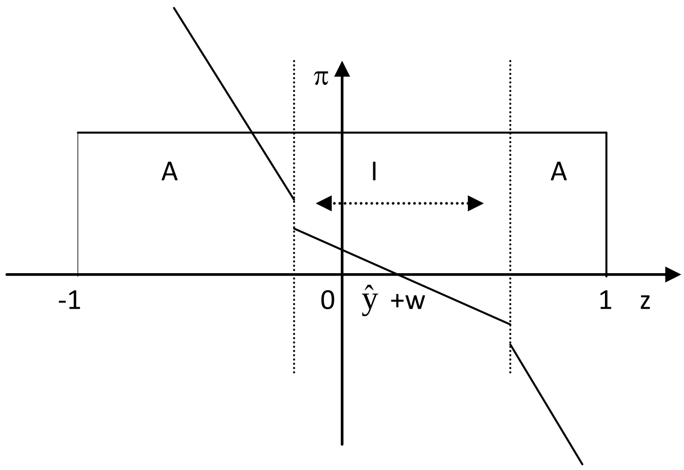
(8) $$\pi_A = \frac{-z+\hat{y}+\pi^e}{1+\lambda}.$$

Given equation (7), the inflation rate is given by:

(9) $$\pi = \begin{cases} \pi_I & z \in I \\ \pi_A & z \in A \end{cases} \text{ where } I = \left\{ z \middle| \frac{(-z+\hat{y}+\pi^e)^2\varepsilon^2}{(1+\lambda)(1+\lambda+\varepsilon)^2} - c \le 0 \right\} \text{ and } A = R \notin I.$$

Eq. (9) can be represented in Figure 2.

Figure 2 – A representation of the region of independence



The horizontal axis shows values of shock *z* to the economy. The vertical axis shows the inflation rate. Line AB indicates the optimal monetary policy for the central bank: monetary policy decisions are taken by the central bank if the shock occurs in the I region. Line CD represents the optimal monetary policy for the government: monetary policy is decided by the government if the shock occurs in one of the A regions. The extent of the region where central banks are independent depends on lobbying efforts by the IMF.

In the second stage of the game, the central bank's constituency has to decide whether to accept the central bank offer. The central bank offers the pair $(\hat{R},\ \hat{c}_b)$: a regulation value of $\hat{R}$ in exchange for the constituency exercising pressure on government equal to $\hat{c}_b$. If the banking sector does not accept the offer, the central bank sets the level of regulation at R^*, the optimum level of regulation for efficiency reasons. In this case, the IMF will choose the level of c_b that minimizes eq. (4) with $R=R^*$, i.e.$c_b = 0$.

The IMF will accept the central bank's offer $(\hat{R},\ \hat{c}_b)$ if the loss incurred by accepting this offer is lower than the loss incurred by not accepting it. Using equation (4), the choice of the IMF is:

$$(10) \qquad c = \begin{cases} \hat{c} \text{ if } \hat{c} \leq \alpha\left(R^* - \hat{R}\right) \\ 0 \text{ otherwise} \end{cases}.$$

In the event that the central bank's offer is accepted, the independence region of the central bank is:

$$(11) \qquad I = \hat{y} + \pi^e \pm \frac{1+\lambda+\varepsilon}{\varepsilon}\sqrt{(1+\lambda)\left[c_I + \alpha\left(R^* - \hat{R}\right)\right]}.$$

Equation (11) shows that the more favourable the financial regulation offered by the central bank to the IMF, the larger its region of independence.
In the first stage of the game, we consider the optimal offer of the central bank to the IMF. Given the realization of the shock, the central bank, so as not to be overridden, should offer a level of regulation to its constituency equal to:[35]

(12) $\hat{R} \leq R^* - \frac{1}{\propto}\left[\frac{(-z+\hat{y}+\pi^e)^2\varepsilon^2}{(1+\lambda)(1+\lambda+\varepsilon)^2} - c_I\right].$

As eq. (12) shows, the favourable regulation that the central bank should offer to the IMF to be able to maintain its independence depends on several factors.

1. If the shock to the economy is not too great,[36] the central bank does not offer any favourable regulation because it has its independence anyway.
2. The higher the exogenous cost of overriding central bank independence, c_I, the closer the financial regulation offer is to the efficient level.
3. The lower ε is, i.e., the more similar the preferences of the central bank and the government are, the closer the financial regulation offer is to the efficient level.
4. The higher α is, i.e. the higher the cost of regulation for the IMF, the closer the financial regulation offer is to the efficient level.

The central bank has to decide whether or not to make an offer to its constituency. It takes this decision by comparing its loss function if it makes an offer, i.e., it pays the cost of an inefficient deregulation to maintain its independence, with its loss in the event it is overridden. The central bank makes an offer to its constituency if, by doing so, its loss is lower than if it is overridden:

(13) $L^{CB}(\pi_I(z))\big|_{R=\hat{R}} < L^{CB}(\pi_A(z))\big|_{R=R^*}.$

The solution of eq. (13) shows that the central bank makes an offer to the IMF when the shock to the economy pertains to one of the two following intervals:

(14) $I_1 = \left(\hat{y} + \pi^e + \sqrt{A_1}, \hat{y} + \pi^e + \sqrt{A_2}\right)$ and $I_2 = \left(\hat{y} + \pi^e - \sqrt{A_2}, \hat{y} + \pi^e - \sqrt{A_1}\right).$

[35] Using eq. (9) and (10).

[36] Such that the sum in the square root is negative.

where $A_{1,2} = \frac{\alpha^2(1+\lambda+\varepsilon)^3}{\theta\varepsilon^2}\left[1 + \frac{\theta}{\alpha^2}\frac{1+\lambda}{1+\lambda+\epsilon}c_I \pm \sqrt{1 + \frac{2\theta}{\alpha^2}\frac{1+\lambda}{1+\lambda+\epsilon}c_I}\right]$, with A_1 the smallest one.

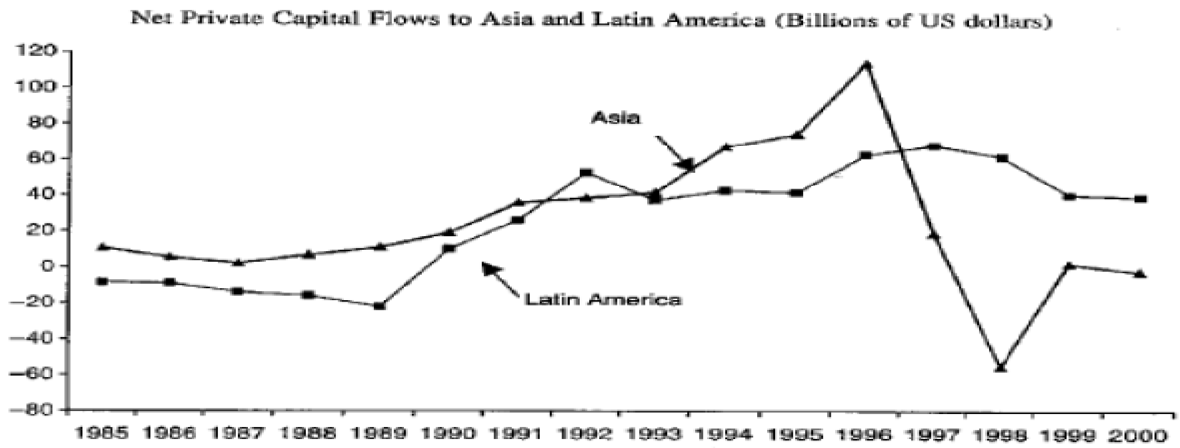
Equation (14) shows that there is a central region where shocks are small, where the central bank does not need to make any offer because it is independent anyway. Then, there are two regions, where shocks are of a certain magnitude; in these regions the central bank makes an offer to the Fund to maintain its independence. Lastly, if shocks are really big, it is not worthwhile for the central bank to make an offer because the cost in terms of regulation inefficiency would be too great. It is interesting to see how these regions vary according to certain parameters.
The model allows the following conclusions:

- **a.** The higher the pressure capacity of the IMF, the higher are the costs of overriding and, therefore, the higher is the independence of the central bank.
- **b.** Central bank independence is higher when its ability to influence the level of regulation is greater.
- **c.** The exchange between the IMF and the central bank implies, on the one hand, an increase in the bank's independence, and, on the other hand, an intense process of deregulation.

4. Financial globalization and CBI reforms

Among the explanations for CBI reforms discussed above, the credibility hypothesis seems to enjoy the most empirical support. Indeed, a significant number of emerging countries, above all those in Latin America, saw considerable foreign capital inflows in the years after CBI reforms (Figure 3).

Figure 3 – Capital inflows and the real exchange rate



Source: IMF (1995 and 2001).

However, Table 3 reveals that for most emerging countries, the first foreign capital inflows preceded CBI reforms.

Table 3 – Capital flows and CBI reforms

Countries	Year in which capital flows started	Date of CBI reform
Asia		
Indonesia	1990	1999
Korea	1996	1997
Malaysia	1989	1994
Philippines	1992	1993
Thailand	1988	2008
Latin America		
Argentina	1991	1992
Bolivia	1990	1995
Brazil	1992	-
Chile	1990	1989
Colombia	1991	1992
Ecuador	1990	1992
Mexico	1989	1993
Paraguay	1991	1995
Peru	1992	1993
Venezuela	1991	1992

Source: Calvo *et al.* (1993), Jacome (2001) and central banks' websites.

This evidence suggests an inverse causal relationship, that is, it was not the higher degree of central bank independence that favored capital influx, but the opposite. Indeed, in a seminal paper, Calvo *et al.* (1993) argued that the surge in private flows to emerging countries was mainly due to scarce investment opportunities in industrialized countries following the slowdown in production and changes in interest rate differentials in favor of emerging countries.[37] Consequently, the causes for this surge in capital flows were mainly exogenous, in other words for the most part detached from emerging countries' policy choices and institutional reforms. In the wake of Calvo *et al.* (1993), later contributions[38] sought to show how the onset of these capital flows to emerging countries was the result not only of exogenous causes, i.e., push factors, but also of endogenous causes, i.e., pull factors such as macroeconomic fundamentals. However, when credibility is dependent on the

[37] See also Calvo *et al.* (1996).

[38] See, among others, Chuhan *et al*. (1998).

international interest rate, push factors acquire considerable explanatory force.[39] The discrepancy between these two pieces of empirical evidence is resolved in contributions which, by using longer time series, have been able to show that, whilst the surge in private flows is dependent on exogenous factors, its persistence over time is determined by endogenous factors and domestic macroeconomic fundamentals in particular.[40]

This evidence is consistent with the hypothesis that the surge in private flows favored CBI reforms and not vice versa.

Why, however, should the high degree of international financial integration have favored the start of CBI reforms?

As we have seen in section 2., the private-interest based explanations offer some possible answers. Capital inflows strengthen the position of financial interest groups: the increased capacity of these groups to exert political pressure may reasonably be expected to favor reforms that include a heightened degree of central bank independence.[41]

However, in many Latin American countries CBI reforms got underway shortly after the start of the inflow of private capital. The relative rapidity of reforms suggests that there was not sufficient time for newcomers to organize themselves to offer resistance to reform from incumbents.

It is our opinion that in most of these countries the start of large capital inflows towards emerging countries has rapidly changed the balance of power between different political actors.

An emblematic case is Latin America. In the late 1980s and early 1990s, the high inflation rate in the countries of this region made necessary structural reforms and policies of fiscal and financial consolidation. In this context, central banks demanded a larger degree of autonomy. In 1982 in Mexico, for example, the governor of the central bank, Miguel Mancera, who was on record as a strong supporter of economic reforms, was dismissed and replaced by Carlos Tello. Similarly, in Argentina, in 1989, during the negotiations for an IMF standby loan the Executive Board of the Central Bank agreed with the Fund on the need to proceed, in addition to other reforms, to "a modification of the charter of the Central Bank with a view to granting the bank independence from the executive branch and strictly limiting its financing to the public sector, thereby facilitating its

[39] See Fernandez-Arias (1996).

[40] See Taylor (1996), Hernandez and Rudolph (1997) and Corbo and Hernandez (1999).

[41] On the other hand, according to Rajan and Zinglaes (2001), international financial integration, by promoting the development of the domestic financial system, also favors the entry of new firms onto the market. These newcomers can access resources on foreign markets, thereby overcoming the obstacles to project funding present on the domestic market. This leads to an increase in competition between firms and threatens incumbents' economic and political monopoly. This threat weakens their resistance to reforms, including the granting of independence to central banks.

basic function of preserving the value of the national currency".[42] The following year the governor of the central bank of Argentina, wishing to preserve the independence and the spheres of power of the institution he led, expressed his opposition to the establishment of a currency board and was subsequently forced to resignation.

In view of this we can say that while, on the one hand, the high turnover of governors of central banks in Latin America in the eighties and nineties highlights these institutions' lack of independence from the executive, on the other, it underlines their need to acquire a greater degree of political independence. In this perspective, the low turnover of Southeast Asian central banks' governors signals not so much their high political independence as their subordination to government[43] (Table 4).

Table 4 – Turnover of CB governors

	1980-89	1995-2004
Asia		
Indonesia	0.2	0.3
Korea	0.5	na
Malaysia	0.2	0.3
Philippines	0.2	0.2
Thailand	0.1	0.5
Latin America		
Argentina	1.0	0.6
Bolivia	0.3	0.2
Brazil	0.8	0.5
Chile	0.8	0.3
Colombia	0.2	0.1
Ecuador	na	na
Mexico	0.3	0.2
Paraguay	0.3	na
Peru	0.4	0.3
Venezuela	0.3	0.5

Source: Cukierman *et al.* (1993) and Amone *et al.* (2009).

[42] IMF (1989).

[43] See Cargill (2012).

But how may the start of large capital inflows have helped strengthen the power of central banks over governments?

This evidence suggests taking into account not only changes in political demand but also changes on the political supply side.

The above considerations lead us to believe that the diffusion of CBI reforms can be explained only by taking into account the effects of financial globalization on politics. This helps explain why, after the start of sizeable capital inflows, in some countries these reforms were faster than in others.

This explanation, however, needs to start first of all from a clarification of how the onset of capital flows could have affected the political supply side.

As is well known, democratic systems are based on the separation of powers. This separation, albeit heterogeneous across different political systems, implies a dialectical relationship between the various institutions that are assigned constitutionally distinct areas of power. These institutions behave as political actors that perform the duties entrusted to them while attempting to maintain and, if possible, extend their power. In order to do this, these actors seek the support of particular constituencies, which give their support on condition that certain measures favorable to their interests are implemented. In return for granting these measures, political actors will require support in the protection and expansion of their prerogatives. Such a situation determines a political exchange between political actors and constituencies.

In a democracy, the constituency of parliamentary parties is composed of interest groups that demand protection of their economic interests and offer electoral support. In the case of the central bank, a non-elective organism, the constituencies have a different nature.

In developed countries, these constituencies are represented mainly by financial groups, primarily banks, which offer their support to the central bank in exchange for monetary policies and regulations favorable to them.[44] Where, as was the case in many emerging countries in the 1980s, the financial system is underdeveloped and the banking system is largely publicly owned, central banks may find support in international organizations, like the IMF and the World Bank, and private international investors.

If, on the one hand, the onset of capital flows may have had beneficial effects on the economic growth of countries, as in the case of emerging countries, where there was a relative scarcity of capital, on the other hand, it exposed these countries to the risks of volatility linked to short-term

[44] See Pittaluga and Seghezza (2012).

international financing, such as portfolio investments.[45] For this reason, many emerging countries were exposed to the risk of financial crises and needed the technical assistance of the IMF. In this context, central banks act as *boundary organizations*: they mediate between government and the IMF by dealing with the tensions between these two actors.[46] Given this function, central banks act as promoters and guarantors of reforms for the IMF and, at the same time, they preserve margins of discretion for the country, and therefore, for the government, against the possibility that the IMF imposes the lines of economic policy. However, when the risk of financial and currency crisis occurs, the IMF becomes better able to ask for the implementation of radical reforms against the granting of loans.

One of the most necessary reforms was to give *de iure* independence to central banks. Emblematic are the letters of intent sent to the IMF by the governments of countries assisted financially by this organization. In one of these letters, dated 3 December 1997, the government of Korea made the commitment that "shortly following the Presidential elections in December, a special session of the National Assembly will be called to pass […] a revised Bank of Korea Act, which provides for central bank independence, with price stability as its main mandate."[47] Similar commitments are to be found in letters of intent written by the Thai and Indonesian governments on 13 November 1998 and September 21, 1999, respectively.[48] The Fund, even where it did not intervene to force the granting of independence to central banks as a clause for its conditional loans, favored this process by spreading the idea that the conduct of monetary policy is a technical and apolitical matter. As Vreeland (2003; p. 12) writes: "One can think of an IMF arrangement as composed of two parts: a 'loan' and a set of 'conditions' imposed by the IMF in return for the loan".[49] The conditions imposed by the Fund corresponded to the neo-liberal ideology. Stiglitz (2002; p. 13) refers to "… the new missionary institutions through which these ideas were pushed on the reluctant poor countries that often needed their loans and grants".

The pressure from the IMF to implement CBI reforms was obviously very strong at times of financial and currency crises or when there was an imminent risk of such crises.

However, even when the risk was not imminent, the IMF called for deeper economic reforms, especially in countries suffering from chronically high inflation and large macroeconomic

[45] For a survey on advantages and disadvantages of financial globalization, see Prasad *et al.* (2009).

[46] See Stockdale (1999) and Hay and Smith (2005).

[47] South Korea's letter of intent can be accessed at http://www.imf.org/external/np/loi/12397.htm

[48] Thailand's letter of intent can be accessed at htpp:/www.imf.org/external/np/loi/1999/092199.htm

[49] See also Broome and Seabroke (2007).

imbalances and, therefore, subject to a change in direction of capital flows and vulnerable to crises. In pursuit of this goal the IMF regarded as a political internal reference not so much the political class as the technocratic elite made up largely of central bankers.

The choice of central banks as an interlocutor for the IMF and the World Bank was dictated both by operational and ideological reasons. On the one hand, financial globalization, by favoring a significant increase in interconnections among different agents, and by rendering more complex the conduct of monetary policy, made the decision-making process in the financial sector appear as an exclusively technical process requiring professional capacities that only central banks had. As Woods (2006; p. 68) writes: "Armed with technical knowledge, the institutions [that is, IMF and World Bank] foster the emergence of "technocrats" who understand and are sympathetic to their reform agenda … The result is to give specific policymakers and agencies considerable leverage."[50]

On the other hand, in the neo-liberal ideology pursued by the IMF, the adoption of sound macroeconomic policies implied the removal of monetary policy from the political arena. Only in this way could an economy compete with other countries in a globalized world.[51]

By presenting themselves as apolitical institutions standing above parties, central banks put themselves forward as agencies dedicated exclusively to the maximization of social welfare, strengthening their power.[52]

The apolitical nature of central banks was tinged by the neo-liberal ideology of the IMF and the World Bank, and when the IMF was called upon to manage balance of payments crises and to assist countries with serious macroeconomic imbalances, it based its policy prescriptions on this ideology. As observed by Harold James (1996; p. 133): "[O]ne of the major functions of the IMF has been concerned with the transmission of ideas … by bolstering the position of reformers in the bureaucratic structures, usually the finance ministry or central bank."

Endorsing these "discourse" aspect of the neo-liberal model proposed by the IMF, central banks urged the IMF, especially during its technical assistance missions, to put pressure on governments to increase the degree of CB independence.[53]

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[50] Even more explicit are the words of Teichman (2004; p. 196): "In most of the large Latin American countries the rise of technocrats to policy predominance was a key feature of the market reform process during the period (Centeno , 1997; Teichman, 1995; Centeno and Silva, 1998). Technocrats at the helm of finance ministries and central banks were, in most cases, the most important interlocutors between their countries and leaders for programs to address problems of poverty and inequality." On this point, see also Vreeland (2000), Drazen (2001) and Ramcharan (2002).

[51] See Hay and Smith (2005).

[52] In the monetary sphere, the neo-liberal ideology gave rise to a copious literature on central bank independence. On this point, see Kirshner (2001), Grabel (2003) and Marcussen (2006), and Manam and Rosenhek (2007).

The role of the international constituency, and in particular of the IMF, in facilitating CBI reforms varied in space and time and indeed the various factors just discussed have had different degrees of importance in different regions. The strengthening of central bank power was faster in countries where governments had previously resorted to seigniorage to a large extent,[54] like Latin American countries (Table 5).

Table 5 – Average inflation

Countries	1980-84	1985-89	1990-94	1995-99
Asia				
Indonesia	12.4	6.8	8.6	20.5
Korea	12.6	4.3	7.0	4.4
Malaysia	5.5	1.4	3.8	3.9
Philippines	18.4	10.0	11.1	7.9
Thailand	9.9	3.2	4.8	5.1
Latin America				
Argentina	268.1	863.3	505.1	0.8
Bolivia	352.0	2414.4	13.4	7.4
Brazil	132.4	532.3	1667.2	19.4
Chile	22.4	20.3	17.5	6.0
Colombia	22.9	24.0	26.6	18.3
Ecuador	25.1	42.9	44.8	33.3
Mexico	56.1	82.0	16.3	24.5
Paraguay	15.4	25.6	23.3	9.7
Peru	84.1	878.6	1607.4	8.4
Venezuela	13.0	33.0	41.1	53.8

Source: IMF, *International Financial Statistics*.

These countries, given their persistent macroeconomic imbalances, despite the disinflation policies introduced in the late 1980s, were particularly exposed to the volatility of international capital movements and, therefore, to the onset of crises. So they, more than other countries, depended on the IMF stance and the behavior of international financial investors.

[53] The onset of capital flows enabled the central banks not only to find support in the IMF, but also to expand their constituency to other international political actors. Firstly, central banks could count on the indirect support of international finance, which, as stressed by Strange (1996), even with a partial financial integration of the country, was able to punish macroeconomic policies that did not conform to the neo-liberal model favored by the IMF. In particular, by disinvesting its assets in a given currency, it was able to trigger serious financial and currency crises. Secondly, central banks of emerging countries could wrest power from the government and count on the support of another international political actor, the international community of central banks.

[54] See Fry (1997).

Being able to count on the pressure of the international constituency, the central banks of Latin America were able to see their independence recognized before those of Southeast Asia. This recognition not only meant the climb-down of governments who used seigniorage as a means to cover deficits, but also the relinquishing of tools of financial repression, such as selective credit controls and interest rate ceilings, designed to direct the allocation of credit toward particular sectors and firms.[55]

CBI reforms in Latin America were foreshadowed by economic reforms. The latter were sustained and urged by international organizations, in particular by the IMF. The reforms called for by these organizations implied less weight in the economy of the state.

All this meant a significant loss of power for the political class: its capacity to intervene directly on the structure of the economy and on its growth patterns was severely weakened.[56]

In Latin America, in many cases the IMF used the central banks as a lever to obtain the adoption of economic reforms. The 1991Annual Report of the central bank of Peru points out: "*Finalmente, es de señalar que las reformas estructurales tuvieron come objetivo el reordenamiento de la economía mediante la eliminación de trabas al libre funcionamento de las fuerzas del Mercado, para que sean éstas las que determinen los valores reales de los bienes y servicios de acuerdo a su disponibilidad en la economia. En tal sentido se llevó a cabo la liberalización de los mercados cambiario y financier – incluyendo la dación de la nueva Ley General de Instituciones Bancarias y de Seguros – y se profundizó la liberalizatión de las operaciones de comercio exterior, entre otras medidas*."[57]

The Mexican Central Bank also supported the economic reforms recommended by international organizations: "*Esta politica cuyos principales componentes son la apertura externa de la economia, la desregulación económica, la liberalización de los mercados y la desincorporación de empresas publicas, ha producido y producirà cambios muy beneficos en el marco macroeconómico*."[58]

This attitude of the Banco de Mexico led in some cases to a conflict between this political actor and other actors, such as the government and political parties. Emblematic is the process through which in the second half of the eighties Mexico decided trade liberalization. "*Unsurprisingly, the Ministry of Trade did not want to relinquish the control and patronage it had gained from administering*

[55] See Haggard and Lee (1993).

[56] See Haggard and Maxfield (1993).

[57] See Banco Central de Reserva (1992; p. 8).

[58] Banco de Mexico (1993; p. 60).

Mexico's deep range of protectionist instruments."[59] By contrast, the World Bank and Mexico's Central Bank were convinced that trade liberalization would reduce inflation. Therefore, "*the World Bank and Mexico's Central Bank soon became very close partners …*".[60]

The support central banks gave to neo-liberal reforms was particularly strong in the financial sector, since in many countries they performed functions of banking supervision. In this sector, especially in Latin America, coinciding with the surge in central banks becoming independent, some radical processes of deregulation were implemented (Table 6).

Table 6 – Index of financial reform[1]

	Date of CBI reform	1985	1990	1995	2000	2005
Asia						
Indonesia	1999	33.3	52.4	53.4	61.9	66.7
Korea	1997	47.6	42.9	71.4	76.2	71.4
Malaysia	1994	38.1	76.2	76.2	66.7	81.0
Philippines	1993	35.7	45.2	72.6	76.2	81.0
Thailand	2008	25.0	45.2	64.3	66.7	61.9
Latin America						
Argentina	1992	9.5	33.3	81.0	76.2	71.4
Bolivia	1995	33.3	47.6	71.5	81.0	90.5
Brazil	-	4.8	28.6	38.1	52.4	57.1
Chile	1989	52.4	71.4	71.4	85.7	90.5
Colombia	1992	4.7	19.0	61.9	71.4	71.4
Ecuador						
Mexico	1993	14.3	47.6	76.2	90.5	95.2
Paraguay						
Peru	1993	19.0	27.4	81.0	90.5	90.5
Uruguay		47.6	52.4	71.4	76.2	71.4
Venezuela	1992	26.2	45.2	45.2	90.5	82.1

Source: Abiad *et al.* (2008). [(1)]The index ranges from 0 to 100. It is as higher as financial liberalization increases.

[59] See Woods (2007; p. 93).

[60] See Woods (2007; p. 93).

The situation of emerging countries in the Southeast Asian region was significantly different from that in Latin America. In Southeast Asia monetary policy had been traditionally virtuous. By following export-led models of growth, Southeast Asian governments continually favored a depreciation in the real exchange rate and thereby pursued a low level of inflation. Therefore, since governments' and central banks' preferences with regard to inflation and output were similar, central banks were to some extent similar to a bureaucratic structure of the government: consequently they had narrow margins to operate as a political actor. This explains why the turnover of Asian central bank governors was always very low (Table 4).

At the same time, at least until the late 1990s, more precisely up to the 1997-98 financial crisis, the pressure put on governments by the IMF was not strong.

This helps explain why CBI reforms in several Southeast Asian countries occurred considerably later than in Latin America (Table 3). In many countries, such as Indonesia and Korea, CBI reforms were spurred on by IMF prescriptions and took place after the financial crisis of 1997-98, much later than the surge in private capital flows.

All this suggests two main conclusions. Firstly, in emerging countries the onset of large capital inflows from abroad preceded rather than followed CBI reforms. This suggests that financial globalization has strengthened central banks as political actors. Secondly, the increased international integration of emerging countries reinforced the IMF's ability to interfere in the economic policies of these countries. This increased influence is manifested both directly, through technical assistance missions, and indirectly, by exerting leverage on domestic political actors such as central banks. Thirdly, the timing and manner in which CBI reforms occurred in developing countries were different. In Latin America these reforms took place mostly in the early 1990s. By contrast, in many countries of Southeast Asia *de iure* independence of central banks increased after the crisis of 1997-98.

Therefore, we can assess that CBI reforms carried out in emerging countries were conditioned, but not determined by financial globalization. The surge of capital flows changed the domestic political equilibrium: the interaction between the central bank and the government became more complex because of the entry of new political actors, such as the IMF, into the political arena.

5. An econometric evidence

Most recent empirical literature on central banking has focused on evaluating the repercussions of central bank independence on the inflation rate.[61] There are very few empirical contributions on the

[61] For a survey see Eijffinger and De Haan (1996) and Berger *et al.* (2001).

determinants of central bank independence,[62] and fewer still which emphasize the role of international variables, such as the degree of openness and capital flows.[63]

In this paper, in order to ascertain the validity of the hypothesis put forward in section 3, we have estimated a probit model, where the binomial dependent variable CBI is equal to 1 in the year of the central bank reform and 0 in the preceding years (obviously the CBI series ends in the year when the reform takes place).

As independent variables we have used two variables relating to the start of capital inflows in the country: the multinomial variable CAP, which is 0 in the years preceding the start of capital inflows, 1 in the year of inception, 2 in the following year; and the variable CAPL that indicates for each year of the sample the number of years that have passed since the inception of capital inflows. The variable IMFM picks up the year of the IMF technical mission suggesting CBI reform: its value is 0 in the years before the IMF mission urging for central bank reforms and is 1 in the following years.

The sample consists of the experiences of 21 countries in the period between 1985 and 2008. On the basis of the year of central bank reform (which for each country determines the end of the sample period), the sample is composed of 236 observations, 21 of which are reform episodes. Therefore the implicit probability of central bank reform is 8.9%, which represents the cut-off value to assess the classification capacity of our estimate.

The results are given in Table 6. They show that all independent variables have the expected signs and are significant. Recommendations made by the technical assistance missions of the IMF increase the likelihood of reform by 36 percentage points. Capital inflows facilitate projects of reforming the central bank; however, the strength of this impulse has a bell shape curve in its relation to the time elapsed since the inception of capital inflows. More precisely (Figure 4), if we evaluate the other variables at their mean value, the inception of a substantial flow of foreign capital determines an increase in the probability of central bank reform that grows during the first two years and then declines constantly: if in the same year of capital inflows the probability of reform of the central bank increases only slightly, already by the following year the probability increases by 4.5 percentage points, while in the subsequent year the probability hits its point of highest increase, reaching almost 18 percentage points. From the third year onward there is a declining phase of the positive impulse.

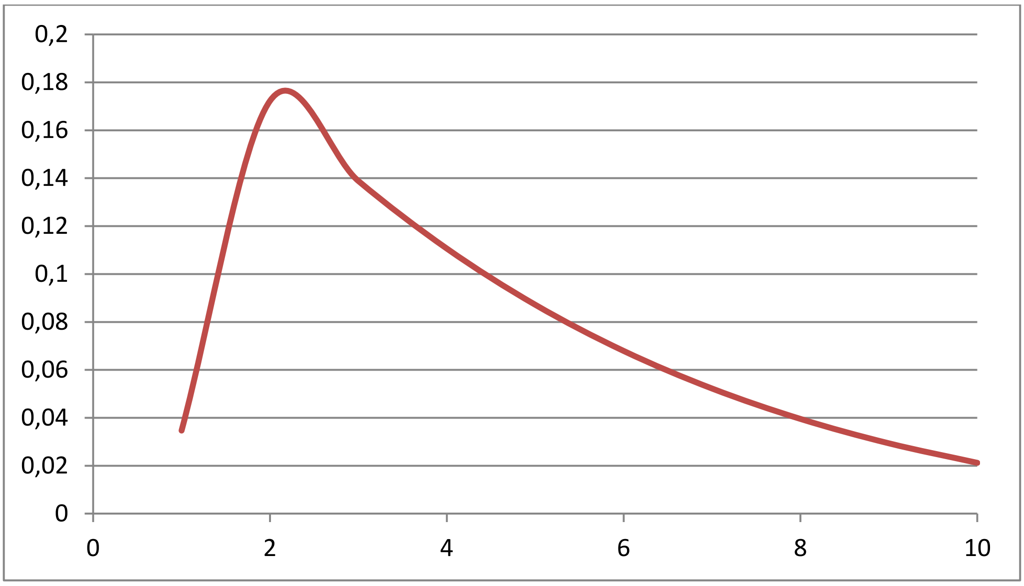
This evolution seems to indicate that the positive effect of capital influx on the probability of reform takes a certain amount of time to unfold completely but that, after a certain amount of time, the

[62] See De Haan and van't Hag (1995) and Bernhard (1998).

[63] See Polillo and Guillen (2005).

incentive to reform the central bank tends to diminish. However, this effect is higher than the cut-off up to 6 years after the start of capital inflows.

Figure 4- The effect of capital inflows on the probability of central bank reform



The estimate has a good ability to adapt to the actual data, both in relation to the high value of the McFadden's R2, and in relation to the classification outcome according to the cut-off point chosen (Table 7). In particular, it is remarkable how this specification can correctly classify 18 of the 21 episodes of reform (therefore with a first-type error limited to 14.3%) and can limit false signals of reforms to 20%; overall the ability of correct classification is only slightly below 80% (Table 7).

Table 6. Estimate of the probability of CBI reform

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-5,054	0,967	-5,227	0,000
IMF1	2,931	0,634	4,623	0,000
CAP2L1	1,813	0,547	3,316	0,001
CAP2L	-0,243	0,099	-2,458	0,014
McFadden R-squared	0,3780	Mean dependent var		0,0890
S.D. dependent var	0,2853	S.E. of regression		0,2291
Akaike info criterion	0,4073	Sum squared resid		12,1804
Schwarz criterion	0,4660	Log likelihood		-44,0660
Hannan-Quinn criter.	0,4310	Deviance		88,1319
Restr. deviance	141,6843	Restr. log likelihood		-70,8422
LR statistic	53,5524	Avg. log likelihood		-0,1867
Prob(LR statistic)	0,0000			
Obs with Dep=0	215	Total obs		236
Obs with Dep=1	21			

Table 7. Table of correct classification

Episode of:	Predicted group			Actual group
	No Reform	Reform	Percent correct	
No Reform	172	43	80.0	215
Reform	5	16	76.2	21
Type I error: 23.8%; Type II error: 20.0%				

It can therefore be said that the empirical analysis shows that CBI reforms in emerging countries were brought about mainly by the inflow of capital and on the recommendations of the IMF. This falsifies the argument that governments increased the independence of central banks to attract capital from abroad. It is, however, consistent with the conclusions of the model presented in section 3, according to which these exogenous factors, by determining a change in the political balance among political actors, in particular between government and central bank, favored the adoption of CBI reforms.

5. Conclusions

The main explanations for the diffusion of central bank independence in emerging countries tend to focus on two main aspects. A first line of interpretation is to be found in works that refer to the time inconsistency hypothesis. In these contributions CBI reforms are presented as an inevitable decision by a benevolent planner. This decision is consistent with the prescription to eliminate, or at least mitigate, the inflationary bias associated with discretionary monetary policy.

A second strand of research tends to emphasize the role of globalization, which is almost always regarded as an exogenous factor that determines the adoption of central bank reforms. This is the case in contributions which advance the hypothesis of normative isomorphism, those based on the assumption of an imposition by international organizations, like the IMF, and in those that relate CBI reforms to an epistemic economic community, in particular through the spread of the neo-liberal ideology. In this vein can be traced back even the interpretation that bring back the decision by governments to raise the level of central bank independence to increase the anti-inflation credibility of the country in order to attract foreign capital.

For different reasons the two strands of interpretation just mentioned give little weight to the interaction between political actors: that is, they neglect the fact that these actors are struggling to maintain and increase their power. In pursuing this goal they make use of the support of constituencies, to whom they promise favorable policy decisions in return for their support.

In industrialized countries, where financial systems are highly developed, central banks usually find their constituency in banks and the financial community. These institutions rely on this interest group to defend their margins of independence. This kind of political exchange is less likely in emerging countries where the financial system is often underdeveloped and banks are publicly owned. In these countries the start of capital flows created the conditions for central banks to find their own constituency of reference. This constituency was, at least at the beginning, the IMF.

Globalization has meant that the risks of instability in emerging countries increased and thus also the frequency and intensity with which these countries had to turn to the Fund to receive technical and financial assistance. It was in this context that a political exchange between the IMF and central banks could emerge. The former offered the latter its support by putting pressure on governments to expand their independence. Central banks, in turn, encouraged the implementation of a strict monetary policy and regulatory reforms in accordance with the neo-liberal discourse of the IMF.

The formal representation of this political exchange allows us to draw two main conclusions. First, the higher the pressure capacity of the IMF on the government, the higher the degree of central bank independence. Secondly, the higher the support that the central bank finds in the international constituency, in particular in the IMF, the more likely it is that the central bank promotes a process of deregulation, especially in financial matters.

These two conclusions are verified empirically. On the one hand, through a Probit econometric test, we show that CBI reforms are much more likely if suggestions in this direction are made by the IMF and when large capital inflows commence. It is, therefore, the latter that promotes the independence of central banks rather than the opposite, as argued in the most commonly held interpretations.

On the other hand, we find support for the fact that CBI reforms were followed by measures of deregulation and financial liberalization.

Finally, the conclusion that the higher the pressure capacity of the Fund, the more timely were the CBI reforms helps to explain why these occurred in Latin America before they occurred in Southeast Asia. The former, plagued as it was by macroeconomic imbalances, faced an increased risk of instability at the start of financial globalization and therefore found itself needing to seek assistance from the Fund. The pressure capacity of the IMF was already very high at the time when capital flows commenced. In Latin America, moreover, the need to reduce inflation gave central banks the status of political actors already in the 1980s. This led to these institutions, more than in other emerging countries, urging economic reforms, in particular financial deregulation. Given the low level of inflation and the lack of economic imbalance, central banks in the countries of Southeast Asia had difficulty to emerge as political actors. This helps to explain both the delay with which they obtained a higher *de iure* independence and the delay in implementing financial deregulation.

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