Fundación para la Educación Superior y el Desarrollo

FEDESARROLLO

# Does Independence Matter. The Case of the Colombian Central Bank

Mauricio Cárdenas
Zeinab Partow

Serie Documentos de Trabajo • Working Papers Series

Mayo 1998 • Número 6

# DOES INDEPENDENCE MATTER? THE CASE OF THE COLOMBIAN CENTRAL BANK[1]

Mauricio Cárdenas and Zeinab Partow
*Fedesarrollo, A.A. 75074, Bogotá-Colombia*

**Abstract**

Why has Colombia been a case of low output variability and moderate-to-high inflation? This paper argues that regardless of the institutional arrangement, monetary authorities have stabilized the business cycle, and inflation control has not been the only objective of monetary policy. The government-controlled *Junta Monetaria* (1963-1991) often ignored the advice of the *Asesores*, an anti-inflation group of technocrats who had no voting powers. Since 1991 the independent and powerful members of *Junta Directiva* (1991-) are engaged in inflation targeting but continue to place weight on output and employment stabilization in their objective function. The institutional reform has implied a slow reduction in inflation. For a faster decline, the current system requires either greater accountability (for not meeting the inflation targets) or less weight on output stabilization.

[1] This paper is part of a regional research project sponsored by the InterAmerican Development Bank. We would like to thank Barry Eichengreen, Janet Kelly, Roberto Steiner, Leonardo Villar as well as other participants at seminars organized by the IDB and Fedesarrollo. The usual caveat applies.

## 1 INTRODUCTION

Colombia is known for its remarkable macroeconomic stability. Several authors have shown that the amplitude of the Colombian business cycle has been lower than in other nations. A number of studies have argued that the institutional design of the country, especially in relation to fiscal policy, has played a major role in explaining that outcome. For example, Cárdenas (1992) argues that the relative stability is the result of well designed countercyclical fiscal policies[2]. In turn, Hommes (1996) examines the evolution and rationality of budget institutions in Colombia since the middle of the 19th century. The conclusion is that the Minister of Finance has been at center-stage in budget matters, with considerably more power relative to other cabinet members in this regard. The arrangement has led to sound macroeconomic performance and to the satisfaction and support of the private sector.

Along similar lines, Urrutia (1996) points out that traditionally the Minister of Finance has not been a politician, but almost always a professional economist. This has been possible because of the highly competitive nature of Colombian democracy. Consensus over economic policies has arisen because politicians would rather have a technocrat occupy this ministry than a potential rival, due to the immense power associated with this position[3]. A similar scenario takes place in the National Planning Department, an institution that has substantial influence over the budget[4]. In sum, the literature has emphasized that the low variability in output typical of the Colombian economy has been the result of well designed fiscal policies, which arise from adequate budgetary institutions. However, as discussed in Cárdenas and Partow (1998) this stability is now threatened as the number of powerful interest groups in the economy expands. This is arguably what has occurred in Colombia with the gradual decline in the importance of coffee to the economy, making the achievement of consensus more difficult (see Junguito, 1996).

The Colombian economy is also known for its long-lasting, moderate and stable inflation. In fact, inflation rates have been in the 20 to 30% range during the past 25 years. Focusing on monetary institutions, and the policies that emerge from the different arrangements, this paper explores the reasons for greater success in regard to output variability relative to inflation control. Legal innovations with respect to the structure and mandate of the monetary authority have been enacted over the years. The paper concentrates on the most recent change in the institutional arrangement, from a high degree of government control during the Monetary Board (*Junta Monetaria*) years (1963-1991) to the current independent status of the *Junta Directiva del Banco de la República* granted by the 1991 constitutional reform.

The changes introduced in the new constitution were, in a *formal* sense, far-reaching. First, a clearer and narrower mandate was adopted, with provisions for conflict resolution that favor inflation control. Second, the government's influence on the composition and naming of

---

[2] In particular, Cárdenas (1994) points out that the incentive structure of the National Coffee Fund (NCF) is essential for understanding the determination of domestic coffee prices (a key variable behind private consumption) and, more generally, of the public sector deficit.

[3] See, also, Meisel (1996a).

[4] This experience reaffirms the results of Alesina, Hausmann, Hommes and Stein (1995). Based on an empirical exercise with data for 20 Latin-American countries they found that greater transparency and hierarchy within budgetary institutions lead to a better fiscal performance.

the *Junta* was diminished, making board members less vulnerable to political vicissitudes. Third, conditions for Bank lending to the government were severely restricted. Also, the fact that the independence of the Central Bank is consecrated in the Constitution imbues the decision with certain weightiness. Constitutional reform is a far more cumbersome process than a change or abrogation of a law, making it more difficult to alter the new status of the Bank.

In one of the few studies on the subject, Escobar (1996) found that during the period of government control over monetary policy (1963-1991), money growth in Colombia was higher (on average) than during periods of central bank autonomy. In the same spirit, this paper measures the degree of legal and formal central bank independence and its consequences for monetary policy. From a theoretical viewpoint, it is well known that central bank independence is not a sufficient condition for inflation control. In the approach of Rogoff (1985), the central banker has to be concerned about reputation or, alternatively, has to be more conservative than society as whole in the sense of weighting inflation deviations more heavily than in the social welfare function. In the principal-agent approach of Walsh (1995) and Persson and Tabellini (1993), imposing pecuniary costs on central bankers when inflation deviates from the target level solves the inflationary-bias problem. In New Zealand, the Reserve Bank Governor's job is at risk if inflation is higher than 3 percent per year or lower than 0. In the U.K. the Chancellor of the Exchequer recently announced that if inflation is 1 percentage point higher or lower than the inflation target, the Governor of the Bank of England should explain in a public letter why the divergence has occurred and what steps will be taken in response.[5]

In sum, formal central bank independence should lead to lower inflation when the central banker genuinely has a greater dislike of inflation than society in general or, alternatively, when contracts penalize central bankers that do not meet the inflation targets. In the conservative-central-banker approach, the central bank has independence in setting the inflation goal, as well as in the instruments used to pursue it. The central banker in the principal-agent approach is given well-defined goals as well as complete control over the instruments to achieve them, and is held accountable for the outcome. Accountability is necessary to set the proper incentives for the central bank to meet its goals and to provide political control over a powerful institution.

This paper analyzes whether formal changes in the degree of central bank independence in Colombia have affected the performance of the institution relative to its objective function. Our methodology emphasizes the instances of conflict between the goals of output and employment stabilization *vis-à-vis* inflation. The conflict resolution provides valuable information to infer the preferences of the members of the board as well as on the costs of not meeting the inflation targets. We do this by discussing in detail the monetary policy decision-making process. In addition, we perform some empirical exercises in order to assess the nature of monetary policy in Colombia. In particular, we analyze the type of monetary policy implemented during the peaks and troughs of the business cycle.

The paper is structured in five sections. Section 2 discusses the legal changes regarding the mandate of the central bank, as well as on the government's influence on the composition and naming of the Board, and the conditions for Bank lending to the Government. This section

[5] See Fischer (1995). In the case of the U.K., as well as in Canada, the penalty for excess inflation can be interpreted as the loss of reputation.

also presents a measure of the degree of independence along the lines suggested by Cukierman et al. (1992). Section 3 deals with the political process behind the origins of an independent central bank in Colombia. Section 4 explores the degree of real autonomy by looking at the minutes of the meetings of the *Junta Monetaria*. The analysis focuses on the resolution of conflicts within the monetary authorities and the nature of monetary policy. In addition, some empirical evidence on the counter-cyclical character of monetary policy, and the influence of political and institutional factors is also presented. The paper ends in Section 5 with some conclusions.

## 2 Formal Central Bank Independence in Colombia

The *Banco de la República* (created in 1923) is the second oldest central bank in Latin America[6]. Over the past 64 years, it has undergone a number of important changes in its autonomy with respect to the central Government: from a private, independent bank, to a state-run "dependent" monetary authority, and most recently, to a public, independent Central Bank. Until 1963, the Bank was a private and independent entity, although not always with a clear mandate regarding price stability. In particular, in 1951, the objective of working towards accelerating the growth of the economy was introduced, and until quite recently enjoyed at least equal importance to the goal of price stability.[7]

The *Junta Monetaria* was created in 1963 as the country's monetary, foreign exchange and credit authority, without, however, any provisions for its independence from the Government. At the time, there was growing awareness of the inherent contradictions, in terms of conflicts of interest, of a situation where an essentially private Bank enjoyed significant influence over national economic policy. The decision was made to separate the *design* of monetary policy, as well as the issuing of economic *regulation*, in the hands of the *Junta*, from the *implementation* of those regulations by the Bank[8]. As mentioned in the introduction, the 1991 constitutional reform enhanced the degree of central bank independence in Colombia. The main formal changes affected the clarity of mandate, the composition of the board of directors, and the conditions for bank lending to the government.

*i.* *Clarity of Mandate*

The granting of independence to the *Banco de la República* was associated with a clear change in the institution's objectives. Prior to the constitutional reform the responsibilities of the Monetary Authority explicitly included a broad spectrum of macroeconomic issues. In addition to the control of inflation, monetary authorities pursued employment and output stability. With the new constitution, the weights allocated to these objectives have undergone a shift. The Board of the new Bank continues in its role as the country's monetary, exchange and credit authority; however, the overriding *legal* objective of the *Banco de la República* is now inflation control. Moreover, and strengthening this mandate, is the provision that in situations of a *conflict* of

[6] Peru's central bank was created in 1922.

[7] Meisel (1996b) discusses the Colombian historical experience in regard to central bank independence.

[8] With the nationalization in 1973 of the Bank's capital and its transformation into a public institution, the practical reasons for a division between the Bank and the Monetary Board disappeared. It was only until 1991, however, that the legal framework of the two institutions was rationalized by eliminating the separation between the two bodies.

interest between the Government and the Bank, the objective of inflation control must take precedence.[9]

*ii. Composition of the Board of Directors*

A central criticism of the old *Junta Monetaria* was its composition. As we will show, with three cabinet ministers on the Board (Finance, Agriculture, and Development) as well as the Director of the National Planning Department, the demands on the Board for financing of Government programs and stabilizing employment, particularly by the sectoral ministers, were many[10]. In addition, two *Asesores* attended, without voting rights. Despite their generally high technical attributes, the advisors did not have enough power within the *Junta Monetaria*.

Table 1 displays the list advisors to the *Junta Monetaria*. As can be seen, many of them came from the ranks of the central bank and held Ph.D. degrees. The evidence gathered in this paper is suggestive of the fact that the advisors were more willing to fight inflation than the government. In this sense, we will characterize the *Junta Monetaria* as an arrangement where the conservative-central-banker was not granted enough power and independence to carry out policies.

The new *Junta del Banco de la República* includes the Minister of Finance, who is its Chairman, along with the Managing Director of the Bank and five members appointed by the President for a fixed term of four years. The Board elects the Bank's Managing Director. An innovation in the Constitution was the legal requirement that the five appointed members have a full-time dedication to their posts, and that they not represent any particular sector of the economy. The independence of the Board was further bolstered with the provision that each President could name two members of the Board during his term in office (apart from the Minister of Finance).

This is a significant improvement relative to conditions prior to the Constitutional reform. However, the ability to name two of its members, in addition to the Minister of Finance, means that the President may have a direct influence on three of the seven votes on the Board. If conditions permit, as happened in 1995-96, when one of the Directors resigned before the end of her term, thus allowing the President to appoint another member, this influence may be even greater. As for the length of tenure of the Directors, although it is fixed to four years and is renewable, it suffers from the provision that the new President can remove any two of the five Directors named by his predecessor. This in effect introduces a high degree of uncertainty of tenure for *all* Directors, leading to the possibility of government's capture of those willing to be reappointed.

---

[9]In relation to the Bank's mandate, a new provision in the Constitution is one that calls for Board decisions to be made in *coordination* with general macroeconomic policy. It is arguable that this provision dilutes the clarity of mandate; this point will be addressed below.

[10] Other members were the Managing Director of the Bank, the Director of Incomex (Instituto de Comercio Exterior or Foreign Trade Institute), and the Banking Superintendent. The latter, as well as the Economic Secretary of the President were invited and non-voting members.

In addition to the guidelines specified in the Constitution regarding the naming of Board members, a number of further disqualifications were also included in Law 31 of 1992. According to the law, persons who during the previous year had acted as legal representatives of a supervised institution in the financial sector or those who have close relatives amongst other members of the Board or in the Boards of credit-granting institutions are barred from membership in the Bank's Board. Members cannot engage in party politics or in the representation of any supervised institution, and during one year following their tenure, they are prohibited from any form of employment in the financial sector or in the Government.[11]

Table 2 displays the list of members of the new *Junta*, as well as some of their previous positions. The appointment of members of the *Junta del Banco de la República* has become a critical issue for Colombian economic policy. The information is illustrative because it shows that Presidents have chosen individuals with rich and varied exposure to the public sector, often as ministers or vice-ministers. A few of them have been presidents of business associations or directors of Fedesarrollo. It is hard to judge from this information whether the preferences of the directors match the conservative-central-banker type. However, according to the information contained in Tables 1 and 2, the profiles of the members of the independent *Junta Directiva* and the Advisors of the government-controlled *Junta Monetaria* are somewhat different in the sense that the former have more exposure to high-ranking positions within the Executive.

This is an endogenous selection in a country that emphasizes the benefits of output and employment stability. As mentioned before, the lack of voting rights of the *Asesores* allowed the authorities to appoint a group of advisors less inclined to compromise, and committed to inflation control. The flaw of the arrangement was that their advice was frequently ignored. With the powers granted to the independent *Junta Directiva*, and the weak form of accountability established in the Colombian legislation, the appointment of members of the board has been a delicate issue.

### *iii. Restrictions on Government Financing*

Strict limitations to lending by the Central Bank to the public sector enhance autonomy and independence in order to pursue the objective of price stability. As mentioned above, during the *Junta Monetaria* days there were few restrictions to Government financing. A consensus regarding the problems associated with this practice was a major impetus for the move to grant independence. After the constitutional reform, however, government's financing can now only be undertaken subject to a unanimous vote of the Board, signaling that this is no longer a routine procedure, but rather one that is to be viewed as a final recourse under exceptional circumstances. Financing of the private sector is prohibited.

In addition to the above-mentioned changes, the Constitution granted the Bank powers in a number of other areas considered crucial to firmly establishing its autonomy. The new Bank is an *administratively autonomous* entity, free to design and execute economic policies in the areas under its responsibility, although it is under the obligation to coordinate its regulations and actions with other economic authorities. *Financial autonomy* implies that the Bank can dispose

---

[11] Other restrictions exist, including those dealing with national origin, professional experience and qualifications, criminal records and so on.

of its own assets as it sees fit, investing and using profits according to what the law prescribes. The Bank, of course, continues to enjoy some of the same functions as it did prior to the Constitutional reform, namely, its status as the sole issuer of money, bank of banks, lender of last resort, administrator of international reserves, as well as fiscal agent for the Government. Importantly, it lost its function as a development bank, an activity that had been widely criticized as a highly inflationary and detrimental to the development of the capital market in Colombia[12].

*iv. Accountability*

One key issue in relation to central bank independence is the system of checks and balances that the legislation places on an institution that wields so much power. Since central bankers are not infallible it is critical to exercise some form of control, especially in an institution that normally operates under secrecy[13]. In Colombia, according to the 1991 Constitution, the President of the Republic is responsible for the supervision of the central bank while Congress exercises its political control. The central bank is required by law to report to Congress twice a year, at the beginning of regular sessions. In addition, when called, members of the Junta must attend meetings of the different Congressional Committees[14].

Although the law requires the central bank to set an inflation target for each year that must be lower than the one for the previous year, there are, however, no provisions for sanctions if those targets are not met. In this way, the conceptual framework for the Colombian central bank is more in line with the conservative-central-banker approach, rather than the principal-agent model that penalizes central banks that do not meet their targets. Clearly, this fact reinforces the importance of appointing members with low tolerance for inflation.

*v. Summary: Measuring the Degree of Independence*

We attempt to quantify the degree of Central Bank independence by updating the index constructed by Cukierman et al. (1992) to cover the post-constitutional reform period. In addition to being a measure of the theoretical degree of independence of a central bank, formal legal independence is of interest because it "suggests the degree of independence that legislators *meant to confer*" (Cukierman, 1992), thus serving as an indicator of the seriousness of institutional reform. Colombia was one of the countries originally included in this index, which is based on a variety of variables similar to those outlined in this section. The results of this exercise are summarized in Table 3. The change in the index of formal and legal independence is dramatic: on a scale of 0 to 1, with 0 representing the lowest degree of independence and 1 the highest, the Monetary Board's index was at 0.27, while that of the current structure doubled to 0.53. Appendix 1 details the way the coding was carried out and how the variables were weighted and aggregated into the final index.

---

[12] On the development of the non-bank segment of the market see Ministerio de Hacienda, Banco Mundial, and Fedesarrollo (1996).

[13] See Stiglitz (1997) for a critical view of central bank independence in a democratic society.

[14] On different occasions, the Constitutional Court has clarified these obligations of the Junta. See Hernández (1997).

In sum, while formal independence has undeniably increased, gaps remain. As already mentioned, the President maintains significant powers over the naming of Board Directors, whose length of tenure, while fixed, remains somewhat short by international standards, and vulnerable to Presidential power. The presence of the Minister of Finance, with full voting powers, on the Board is another weakness. These drawbacks are a result of the emphasis on consensus in decision-making, which is also present in the constitutional provision regarding the imperative of coordinating the Bank's decisions with those of the Government. In a way, this emphasis reflects the importance given in Colombia to output stabilization relative to inflation reduction.

## 3 The Origins of an Independent Central Bank in Colombia

This section describes, from a political economy point of view, the origins of central bank independence in Colombia. We argue that the degree of independence of the Colombian Central Bank has been strongly path dependent, mainly because institutional change has arisen from within the bank itself, rather than imposed by outside pressures.

Some preliminary discussion on the need for reform of the *Junta Monetaria* took place in the early 1980s in light of the consequences of the monetary financing of the fiscal deficit. The removal of sectoral ministers from the Board, traditionally those who had most pressured for Bank financing of the government, was proposed.[15] Concern was also expressed regarding some activities of the Bank itself (as opposed to the *Junta Monetaria*), in particular the granting of development credits, which were viewed as highly inflationary, and hindered the development of a long-term capital market. It is notable that while the containment of inflation was certainly an issue, its *reduction* from the 20-30% level was not a major concern.

The ideal opportunity for pushing forward changes in the legal character of the monetary authority arose with the convening of the Constituent Assembly in 1991. Despite fortunate timing and the general national sentiment supportive of change, the process of reforming the Bank was not always smooth. While there was support for the elimination of routine financing by the Bank of the government and the private sector, the consensus was much weaker regarding the desirability of complete independence of the Bank from the government in the formulation of monetary, exchange and credit policies.[16]

The initial proposal for reform of the legal status of the Bank came from the *administration of the Bank itself*. This proposal was then modified in the Presidency before being officially submitted to the Assembly. The differences between these two proposals shed light on a number of points of contention, and reflect the various divisions amongst policy makers regarding their visions of the role of a new, independent, central bank. Interestingly, the final approved version was closest to the Bank's original proposal, which placed greater emphasis on the need to ensure autonomy in a number of areas. Yet due to the lobbying efforts of the Bank's administration with the members of the Constituent Assembly, its original initiative became the *de facto* basis for discussions, strengthening the proposal significantly.

---

[15] Steiner, 1995, p. 4.
[16] Steiner, 1995, p.5.

The main points of contention concerned the proposed pre-eminence of the new Central Bank in exchange and credit matters. The Bank, in its own document, had envisioned a modern independent central bank responsible for the country's monetary exchange rate policies. In contrast, the Government's watered-down version seemed to be chiefly concerned with more limited changes regarding administrative and technical autonomy. With this goal in mind, the government wanted to isolate the Bank from interest groups and political pressures. The idea was to remove sectoral ministers from the Board, while transferring some of the functions of the *Junta Monetaria* to the Bank. In fact, the reaction of the Ministry of Finance to the Bank's proposal was negative, largely due to the fact that the Ministry would be stripped of its pre-eminence in exchange and credits matters. The Bank's proposal was explicit in granting the new institution the ability to establish the *regulations* regarding monetary, foreign exchange and credit policies. In contrast, the Government's proposal referred only to the Bank's *execution* of policies determined by its Board of Directors which was to be, according to the government, the monetary authority.

In terms of responsibility for the exchange rate, for example, the final agreement was that the Board would be the exchange authority, but subject to the laws issued by Congress at the initiative of the government. In other words, the Bank would determine the exchange rate in accordance with the exchange regime defined by the government through Congress[17]. In practice, this gives the Bank day-to-day management of the nominal exchange rate as well as market interventions.

A similar hesitation to grant the Bank a completely free reign to pursue the objectives consecrated in the constitution can be seen in the inclusion by the Constituent Assembly of a number of its own provisions, which were not explicitly included in either the Bank or Government proposals. Two of the most relevant address the Bank's mandate and policy coordination with the Government. Regarding the mandate of the Bank, the Assembly established that it was the State, through the Bank, which had the obligation of maintaining the purchasing power of money. In a positive sense, this requirement in theory obliges the government to promote a fiscal policy in accordance to the goal of price stability.

The Constitutional reform requires the Bank to coordinate its decisions with the Government, meaning that the Bank should not completely sacrifice other objectives to price stability. While coordination of policies is certainly desirable, its inclusion as a requirement in the constitutional reform merely enhances the impression that the anti-inflationary objective is not overriding. The requirement to coordinate in the management of the key variables is equivalent to saying that these will not be used exclusively for the reduction of inflation, and introduces a short-run bias to the Bank's policies. Arguably, this requirement undermined the credibility of the independent central bank.

The lessons of this experience are various. On the positive side, there was clear support for the need to modify the existing arrangement, especially regarding the monetary financing of

[17] There is controversy on the roles of the government and the central bank regarding the exchange rate regime. The Constitution places the 'regulation' of the exchange rate regime in the central bank. The Constitutional Court and the State Council have issued sentences that state that the role of the government is only 'indicative' in this regard. See Hernández (1997).

the government. The objective of controlling inflation enjoyed relatively wide acceptance, at least in principle. In other words, the objectives preceded the institutional design. Some consensus on the basics existed, namely on the fact that sectoral ministers should not be involved in the Board. Also, the central role played by the Bank itself was crucial, strengthening the proposals for independence and building a support lobby for its approval. The rest was a consensus-building process where the involvement of large number of parties was central. This process had costs and benefits.

In relation to the latter, the consensual origin of the reform resulted in greater public acceptance of independence. Although there have been threats to independence, there is growing opposition to counter-reforms in this area. On the other hand, it is precisely this faith in the importance of consensus building over rules, which weakened the final proposal for an independent Central Bank. Some examples are the inclusion of the Minister of Finance in the Board of Directors, as well clause calling for coordination between the Bank and the Government.

## 4 Inflation Control: Does Autonomy Matter?

As mentioned in the introduction, greater formal independence is neither a sufficient nor a necessary condition for low inflation. Institutional changes, by themselves, do not buy lower inflation. For example, in addition to an independent central bank, Germany has a culture that is averse to inflation. The Indian central bank has no provisions for independence and yet delivers a low inflation. In fact, in order to lower inflation it is necessary to either appoint conservative-central-bankers that are allowed to act in an autonomous fashion or, alternatively, to have well-specified contracts that penalize bankers that do not accomplish what they announce.

This section looks at the Colombian experience before and after the adoption of central bank independence. As has already been discussed, prior to the 1991 constitutional reforms, the Central Bank did not possess a clear mandate to concentrate on inflation control as its sole objective. An evaluation based on its performance in reigning-in inflation during the 1970s and 1980s is instructive as an overview of the decisions that were made and how they were arrived at by the Monetary Board. It is also useful for comparison with the post-reform era and illustrative of the types of influences and pressures that weighed on the decision-makers. Such a review is also indicative of the conditions that induced the Monetary Board to act in a concerted manner to reduce inflation, and those that did not.

The overall lesson is that at crucial moments in time when the reduction of inflation should have been its key preoccupation -- as stated time and again in the Advisors' Documents -- the Monetary Board was not firm in its anti-inflationary stance. A gamut of concerns resulted in the relegation of the fight against inflation to back seat status. These included the stimulation of economic activity and employment, the reluctance to use the exchange rate as an anti-inflation tool for fear of jeopardizing the competitiveness of Colombian exports, apart from general concerns regarding the profitability of the financial sector. We start by looking at the minutes of the Monetary Board, and then move to some empirical exercises aimed at understanding the determinants of monetary policy.

### 4.1 A REVIEW OF THE MINUTES FROM THE MONETARY BOARD

One explanation for Colombia's 20-30% inflation level over the past 25 years is the accommodating behavior of the monetary authority in response to inflationary shocks. In this section we review the Minutes of the Monetary Board and look in depth at the responses of the monetary authorities to these shocks. We adopt a methodology similar to Echeverry (1995), who has shown that foreign exchange reserves[18] and food supply shocks are the main explanation for Colombian inflation, in conjunction with the response of policy-makers to these shocks.[19]

In the event of an unexpected increase in international reserves, an independent and "strong" monetary policy aimed at reducing inflation would be expected to adopt a contractionary package. The package would include a real revaluation of the currency and, when the increase in reserves is not the result of higher capital flows, higher interest rates. Although in modern times central banks are less inclined to increases in the required reserves ratio, in the past this instrument was used actively. If autonomy can be partially defined as the ability to implement difficult or unpopular measures, then a "strong" policy maker would be equivalent to an autonomous one.

The evidence suggests that "strong" responses by the Central Bank to inflation were determined by the magnitude of the inflation shock. In other words, the preferences of the policy makers were such that strong responses were taken only when inflation rates increased rapidly and dramatically, regardless of the degree of formal autonomy. In fact, in its response to all but one of the episodes over the two decades under study, the Monetary Board was unable or unwilling to take the measures necessary for neutralizing the inflationary effects of the shocks to international reserves. There appears not to be much concern for reducing inflation so much as for avoiding its further acceleration. On one such occasion, the then President of Colombia said it clearly: 'it is [only] possible...to *reduce the acceleration* of the current inflationary process, since certain factors of [an] external character are affecting it'[20].

For example, this was the case after the inflow of foreign reserves in 1973, when inflation jumped from 7% in 1971 to 21% in 1973. Reactions by the Monetary Board to later shocks were similar. While an increase in food prices can be blamed for generating inflationary pressures at the end of the 1970s, it is also clear that the Monetary Board did not adhere to inflation-control measures, but merely aimed at ***containing*** the increases in the price level.[21] The Advisors to the Board, in a summary of economic conditions for 1979, state that a 24.3% growth in the Monetary Base can be considered a satisfactory accomplishment given the expansionary pressures resulting from the accumulation of international reserves. This can only be described as an acceptance of reigning inflation levels, despite a clear acknowledgment of the danger, in terms of the public's expectations and the implied difficulty of future reductions in inflation, of validating such levels (near 29% in 1979).[22]

---

[18] However, treating shocks to international reserves are exogenous may not be correct if policy responses are also crucial for the balance of payments.
[19] He characterizes policy-makers' response to eight episodes of shocks to international reserves between 1971 and 1991, and traces the behavior of policy tools available to the Monetary Board in the aftermath of those shocks.
[20] Quoted by Echeverry (1995).
[21] Echeverry (1995) pp. 33-34.
[22] Advisors' Documents, Doc. A-4, January 16, 1980, pp. 36-42.

In 1986, following an international reserves shock, the decision was made not to sacrifice the real exchange rate and reserves were consciously accumulated. The Advisors argued that bank lending to the government and access to profits of the *Cuenta Especial de Cambios*[23] were highly expansionary and should be abolished. The Board rejected the Advisors' arguments, citing the ***high level of unemployment at the time.*** The Minister of Finance argued that denying the Government access to these resources would force it to turn to Congress for approval of further financing allocations from the Central Bank.[24] The goal in terms of expansion of M1 was set at 24% for the following year (1987), with the argument that such an increase would ensure that ***productive activities*** could expand without hindrance.[25]

Policy-making in 1988, another year with an international reserves shock and high inflation, was equally lax. In June of that year, inflation reached a level of over 30%. While there was a concern that monetary policy should not validate this level of inflation, the Board was distracted by other concerns, including what it considered to be high interest rates, poor profitability of the financial sector, and lack of liquidity in the economy. In their document of May 18th, the Advisors go so far as to admit that while monetary policy has been complacent with respect to average inflation levels, "...it at least has not been oriented towards the validation of the highest levels of inflation observed at each moment in time."[26]

On one occasion, however, the Monetary Board did unequivocally show a strong anti-inflation stance: during the events following the large reserves shocks of 1976-1978, which were mainly the result of high international coffee prices. The impact on inflation was severe: it skyrocketed from 15% in January 1976 to 34% in mid-1977. The situation was worsened by the refusal of the government to increase taxes on the coffee sector, thus allowing the full transmission of the shock to the domestic economy. Also, a widespread drought affected national agricultural production.

The severity of the increase in inflation between 1976 and 1977, however, appears to have induced concerted action: on all fronts, the response of the Monetary Board was unequivocally that of a "strong" policy maker. The ordinary required reserves ratio was increased by 3 percentage points and an additional marginal ratio of 100% was implemented, Government expenditures were reduced and revenues increased through taxation. Anticipated Imports Deposits were increased, and Exchange Certificates, bonds exchanged for foreign exchange revenues, were put in place. The combined effect of these measures, in addition to the effects of a fiscal surplus, was a halving of the Monetary Base. One year later, inflation had been forced down to 12.6%.

---

[23] Throughout the years this account (created in 1935) served the purpose of registering the profits derived from the depreciation of the currency (and the appreciation of gold holdings) and the net return on international reserves. Profits derived from the multiple exchange system and taxes on coffee exports and overall remittances were also part of the Account. These profits were transferred as current revenues of the government, representing -at their peak- 23% of total central government's current income. See Jaramillo and Montenegro (1984).

[24] Acta de la Junta Monetaria, number 12599, October 29, 1986.

[25] Advisors' Documents, Doc. A-27, March 1987.

[26] Advisors' Documents, Doc. A-066, May 1988, p. 2.

It is interesting to note at this point that in the midst of this particular episode there were no changes either of the Managing Director of the Central Bank or of the Advisors to the Board. Neither were there any significant legal changes that allowed the Board to act in a more autonomous manner. Strong action against inflation was possible due to a ***consensus*** among policy makers at the time that the level of inflation, well above 30%, was inadmissible[27]. However, this need for consensus is a clear indication of the *lack of real autonomy.* Lower levels of inflation had not resulted in a similar effort, and would not do so in the future.

To sum, in the absence of consensus any increase in inflation was necessarily validated by weak or non-committal monetary policy. The emphasis on inflation containment rather than inflation reduction indicates that the Monetary Board had always possessed the instruments to fight inflation; what it lacked was the conviction of all parties that the fight was worth the effort. Tough measures were postponed due to pressures from the sectoral ministers as well as interest groups. The Advisors repeatedly complained of the inconsistency in the application of monetary policy by the Board. The Advisors to the Board openly referred, at the time, to the need to continue resisting political pressures on a number of fronts[28]. In fact, the minutes indicate specific decisions were often taken, "'... in response to pressures from the regions and industry and trade associations", that are counter to general objectives.[29]

How has this situation changed in the years following the creation of an independent Central Bank? The removal of sectoral ministers from the Board of Directors was an important step towards the isolation of monetary policy from political pressures favoring expansion. Similarly, the prohibition of Central Bank financing of the Government in all but the most exceptional circumstances has increased the ability of the Board of Directors to withstand clearly expansionary demands. In this regard, the real autonomy of the Central Bank has unequivocally increased. But, has the greater autonomy resolved the inflationary bias?

It is tempting to argue that the consequences of this enhanced independence are clearly visible in the behavior of the Colombian inflation rate. Figure 1 shows the decline in inflation in the 1990s. It may be arguable that the acceptable upper threshold has fallen from a level of 30% to one closer to the lower twenties, although such an assertion is difficult to support until such a threshold is seriously challenged. However, a final evaluation of the actions of the *Junta del Banco de la República* requires access to the minutes of the meetings of this institution, which have not been disclosed yet. Also, the ability of monetary and credit policy to achieve inflation reduction has been severely crippled due to the fact that fiscal adjustment is not forthcoming. This was the case in Colombia during 1996 and 1997, and as such, the conclusions regarding the results of monetary policy must be tempered by this fact.

### 4.2 Empirical Analysis

In this section we present results of various econometric exercises that attempt to determine whether measures taken by the Bank can be characterized as pro- or counter-cyclical.

---

[27] Advisors' Documents, Doc. A-094, August 22, 1990, p.12.

[28] Advisors' Documents, Doc. A-99, November 22, 1979, pp. 3-6; Doc. A-102, November 28, 1979, p. 5; and Echeverry (1995), Summary of the Minutes of the Monetary Board, pp. 27-30.

[29] ibid, p.20.

Also, we are interested in knowing whether monetary policy has been influenced by the different institutional arrangements and by other political factors, such as the occurrence of elections and the type of political party in power. We start by looking at annual data for the period 1947-1996. The main results are given by the following equation:

$$\dot{m}_t = \underset{(6.9)^{***}}{0.175} - \underset{(-2.4)^{**}}{1.025\dot{y}_{t-1}} + \underset{(0.4)}{0.159\dot{y}_{t-1}*DJM} - \underset{(-1.96)^{*}}{0.067DJD} + \underset{(2.3)^{**}}{.002t} + \underset{(1.9)^{*}}{.001t*DLIB} + \varepsilon_t,$$

$R^2$=0.58; DW=1.86; n=50. *(**)[***] denotes significance at 10%(5%)[1%] level.

$\dot{m}_t$ is the percentage change in M1, $\dot{y}_t$ is GDP's growth rate, *DJM* is a dummy variable that takes a value of 1 during the *Junta Monetaria* years (1963-1991), *DJD* is a dummy variable that takes a value of 1 during the independent *Junta Directiva* years (1992-1996), *t* is a time trend, and *DLIB* is a dummy variable that takes a unitary variable during liberal governments.

This regression is of interest because it indicates that, on average, monetary policy has been counter-cyclical in Colombia. A one-percentage point increase in economic growth at time *t-1* is followed at time *t* with a decrease in monetary growth by 1.03 percentage points. Furthermore, this result has been invariant to the institutional arrangement. However, during the period of independence of the central bank, annual money growth has been, on average, 6.7% lower than before. It is interesting to note that money growth has accelerated throughout the period at a rate of 0.2 percentage points per year. Moreover, this rate of acceleration has been 0.3 percentage points per year during Liberal governments, indicating that partisan cycles have influenced monetary policy[30].

We performed a similar exercise using GDP deviations from trend as a measure of the business cycle:

$$\dot{m}_t = \underset{(8.5)^{***}}{0.134} - \underset{(-1.74)^{*}}{0.715\bar{y}_{t-1}} - \underset{(-1.1)}{0.024DJM} - \underset{(-3.47)^{***}}{0.13DJD} - \underset{(-1.22)}{0.042DLIB} + \underset{(2.5)^{**}}{.002t} + \underset{(1.75)^{*}}{.002t*DLIB} + \varepsilon_t$$

$R^2$=0.57; DW=2.00; n=50,

where $\bar{y}$ denotes the (log) deviations from a Hodrick-Prescott GDP trend. Again, the results suggest the counter-cyclical character of monetary policy and the secular acceleration in money growth (especially during liberal administrations). Also, monetary expansion has been lower after independence. These results are consistent with Escobar (1996) who found greater monetary expansion during liberal governments. In sum, the legal changes introduced in the Constitution of 1991 had a permanent effect of monetary policy. In a way, they lowered the average annual growth in money, but did not eliminate the acceleracionist bias, which is more palpable during liberal administrations.

[30] This is not true for political business cycles that suggest greater expansion at election years.

To further analyze these issues we identified five periods of interest over the past two decades. During these periods the rate of growth of GDP was particularly high -- above 6% for at least two consecutive quarters -- or low, below 2%, again for at least two consecutive quarters. As can be seen in Figure 2, three of these incidents took place prior to the granting of independence to the Central Bank, and two following independence. Two of the five periods were booms (1978.II-1979.I and 1993.III-1995.III), while three were recessions (1981.IV-1983.II, 1990.III-1991.III, and the current downturn in the economy which began in 1996).

The exercise traced the behavior of five variables, namely the real exchange rate, the interest rate, the required reserves ratio, as well as M1 and inflation, over an 18-month period following the realizations of exceptionally high or low growth rates. The methodology follows Romer and Romer (1989) and estimates univariate forecasting equations for each variable, and then examines the difference between their forecasted and actual behavior during the five periods.[31] The forecast indicates the behavior of the variable that would have occurred without any intervention. Should, for instance, actual interest rates be higher than the forecast, one may conclude that the Central Bank had followed a contractionary policy with respect to that variable.

We use quarterly data from 1969:1 until 1996:2 (with the exception of the series for required reserves, which extends until 1996:4). Definitions of each of the variables, as well as results of Dickey-Fuller unit root tests can be found in Table 4. The forecast is made using an autoregressive model that takes into account 24 lags. By using two years of information we try to control for the possibility that the economy may *naturally* experience a downturn (expansion) following periods of high (low) growth, regardless of the policies pursued by the Central Bank. Thus, the lag structure reduces the bias in the forecasts.

The results indicate that the forecast equations are adequate in capturing the behavior of the five series.[32] Dynamic forecasts are then carried out for the 18-months following the initiation of each of the five periods mentioned above. The differences between these forecasts and the actual behavior of each of the variables are shown in figures 3-7. The dates indicate the quarter of initiation of the recession or boom.

Again, our interest lies in characterizing the behavior of the Central Bank as pro- or counter-cyclical. In boom times, a "strong" policy maker would be expected to raise nominal interest rates and to lower the growth of M1. Thus, the package would lead to a real revaluation of the currency and a decline in the growth of inflation. Similarly, a conservative Central Bank will give more weight to inflation reduction than to the recovery of the economy (compared to the government's preferences). In other words, although there is some room for monetary expansion, the central banker would not jeopardize inflationary targets during recessions.

During the two periods where growth rates accelerated, namely in the 1978-79 period and the 1993-95 years, the behavior of the Bank's policy instruments was similar. Real exchange rates behaved as expected (revalued) but actual M1 was higher than forecasted for both periods. Interest rates in 1978 were initially below forecast values, but increased later (8 periods into the shock). In 1993, interest rates increased only one year following the initiation of the expansion

[31] Echeverry (1995) also uses this method in his work on foreign exchange reserve shocks and inflation in Colombia.
[32] Q-statistics show that no problems of serial correlation persist with 24 lags.

and required reserves were held below their forecast value throughout the expansion. Interest rates did not increase immediately because of the fear that they would exacerbate capital inflows.

In this sense, the implementation of a contractionary package relied more heavily on the appreciation of the currency, which in turn did not curb the consumption boom. However, the results in terms of inflation were favorable both in 1978 and in 1993, although for the first period inflation began to rise again 12 months following the coffee shock. Later, in mid-1994 a fully counter-cyclical contractionary package was implemented, including an increase in interest rates[33]. Nonetheless, as similar actions were taken in 1978/79, one cannot make the claim that this was necessarily due to a tougher, more independent, institution.

We also analyzed three periods where (annualized) quarterly growth rates fell to below 2% for at least two consecutive quarters. Two of these incidents, those that occurred in 1981 and in 1990, took place prior to the granting of independence, and one followed the Constitutional reforms of 1991. The results are mixed. On the exchange rate, interest rate and M1 fronts, there are no clear signs of expansionist behavior prior to independence. As for the required reserves ratio, the behavior of the *Banco de la República* may be seen as counter-cyclical (in terms of GDP) during 1990. In fact, the actual ratio was approximately 5 points below what would be expected according to the forecast. Not surprisingly, in terms of inflation results, 1981 was slightly below forecast, whereas 1990 was above.

Since 1996 the economy has been experiencing a slowdown. This is the first episode since the granting of independence to the *Banco de la República*. On the positive side, growth in M1 has been consistently below forecasts, in line with the results obtained with the annual data. Also, the difference between the actual real exchange rate and its forecast is negative, indicating a revaluation. It must be noted, however, that in all five episodes analyzed, both booms and recessions, the exchange rate has been revalued.

The behavior of the remaining three variables is of interest. Actual interest rates fell below their forecasted values two periods after the shock and have continued their decline since. Throughout 1996, the Government worked towards garnering the support of the private sector and Congress to influence a more expansive monetary policy. The presence of the Minister of Finance on the Board of Directors, ostensibly for coordination purposes between the Bank and the Government, in fact translated into a voice expressing the Government's concerns regarding the decline in productive activity, and the impact of restrictions on liquidity and of high interest rates. Clearly, the arguments used go beyond the Board's mandate of inflation reduction, and undermine the isolation of the Board from political pressures.[34] Although there was some room for a reduction in interest rates, the end result was inconsistent with the inflation goal set for 1996 (see Figure 8). The magnitude of the reduction in interest rates is suggestive of the presence of short-term expansionist pressures, rather than responding to long-term objectives befitting an

[33] The 1993 expansion was, to a large extent, induced by fiscal and monetary policy, and not the result of terms of trade shocks, as in the late 1970s. However, exogenous capital inflows were also a major force leading to the expansion in 1993.

[34] In the middle of 1996 the Minister of Finance made public statements regarding the failure in the achievement of the Board's intermediate targets for the year, in particular in terms of credit growth and monetary aggregates which were considered to be too low.

independent central bank. This is even more worrisome in the context of a growing fiscal deficit that created additional difficulties for economic adjustment. In fact, the difficulties experienced by the financial sector during 1996 posed what was perhaps the greatest restriction on the imposition of a tight monetary policy.[35]

Also, throughout 1996 and 1997 the required reserve ratio was steadily reduced. As can be seen in figure 5, this ratio plunged four months following the shock to levels significantly below those forecasted. However, this reduction cannot entirely be attributed to pressures for monetary expansion, as there were technical arguments to bring these requirements in line with international standards. At any rate, inflation rates following the 1996 shock were significantly *above* their forecast based on the autoregressive model.

In sum, the results of this section indicate that monetary policy has played a counter-cyclical role in Colombia, regardless of the institutional design. However, during the period of an independent *Junta* monetary expansion has been, on average, lower than before. Possibly, this result is a direct consequence of the elimination of lending operations to the public and private sectors. Despite the clarity of mandate to preserve the value of money, monetary policy in practice still is influenced by a multiplicity of objectives, particularly during recessions or periods of low growth. As was the case prior to independence, these concerns include productive activity, employment generation and the health of the financial sector.

## 5 Conclusions

This study has shown that the government-controlled *Junta Monetaria* adopted truly anti-inflationary policies only when inflation rates increased rapidly and dramatically. Strong action against inflation was possible only after a *consensus* among policymakers was reached (the consensus being that a rate of inflation above 30% was inadmissible). This need for consensus is a clear indication of the *lack of real autonomy* on the part of the central bank. The end result, as is clearly observable in the Colombian case, was a shift from the emphasis on inflation reduction to inflation containment, combined with an active use of monetary policy for output stabilization. In other words, the *Junta Monetaria* always possessed the instruments to fight inflation; what it lacked was the conviction of all parties that the fight was worth the effort.

In relation to the legally independent *Junta Directiva*, the paper concludes that money growth has been lower after 1992, mainly due to the Constitutional restrictions on central bank lending to the private and public sectors. However, inflation control has not been the only objective of monetary policy. In this sense, the central bank has not been isolated from the consensual nature of economic policy making in Colombia.

Thus, the institutional reform has not implied a dramatic reduction in inflation. The government-controlled *Junta Monetaria* often ignored the advice of the *Asesores de la Junta*, a conservative group of technocrats that had no voting powers. The preferences of the independent members of *Junta Directiva* reveal less tolerance for inflation than under the previous regime,

[35] Overdue accounts receivable were at particularly high levels for the system as a whole, and in particular for the commercial finance companies, where overdue accounts represented over 13% of the total, the highest level for the decade.

but continue to place weight on output and employment stabilization in their objective function. The end result has been a gradual and slow decline in inflation.

**REFERENCES**

Alesina A., Hausmann R., Hommes R. y Stein E., (1995) "Budget Institutions and Fiscal Performance in Latin América" mimeo BID, Septiembre.

Blinder, A. (1987) "The Rules-versus-Discretion Debate in the Light of Recent Experience," *Weltwirtschaftliches Archiv*, Bd. 123, pp. 399-414.

Burdekin, R. (1987) "Cross-Country Evidence on the Relationship Between Central Banks and Governments." *Journal of Macroeconomics*, volume 9, number 3, pp. 391-403.

Cárdenas, M. (1992) *"Ciclos Económicos y Bonanzas Exportadoras: Teoria y evidencia en cuatro países productores de café", Ensayos sobre Política Económica, June.*

Cárdenas, M. (1994) *"Stabilization and Redistribution of Coffee Revenues: A Political Economy Model of Commodity Marketing Boards," Journal of Development Economics, 44: 351-380, 1994.*

Cárdenas, M. and Z. Partow (1998) "Oil, Coffee, and the Dynamic Commons Problem in Colombia" Fedesarrollo, Working Papers Series, 5.

Cukierman, A. (1992) *Central Bank Strategy, Credibility and Independence: Theory and Evidence* (Cambridge: The MIT Press).

Cukierman, A., S. Webb, and B. Neyapti (1992) "Measuring the Independence of Central Banks and Its Effect on Policy Outcomes" *The World Bank Economic Review*, volume 6, number 3, pp.353-398.

Echeverry, J.C. (1995) "Auge y Perpetuación de una Inflación Moderada. Colombia 1970-1991" *Ensayos Sobre Política Económica*, number 28, pp.5-57.

Escobar, A. (1996) "Ciclos Políticos y Ciclos Económicos en Colombia: 1935-1994" *Coyuntura Económica*, junio.

Fischer, S. (1995) "Central-Bank Independence Revisited" *The American Economic Review"*, Vol. 85, No. 2, pp. 201-211, May.

Hernández, G. (1997) "El Banco de la República como banco central independiente", mimeo, Banco de la República, Febrero.

Hommes, R. (1996) "Evolution and Rationality of Budget Institutions in Colombia", *Working Paper Series*, No. 317. Inter-American Development Bank.

Jaramillo, J. C. and A. Montenegro (1984) "Cuenta Especial de Cambios: descripción y análisis de su evolución reciente," *Ensayos sobre Política Económica*, 2, Septiembre.

Junguito, R. (1996) "The Management of Coffee Bonanzas and Crisis: Political Economy Issues" *Paper presented at the Second Colombian Conference, University of London.*

McCallum, R. T. (1989) "The Case for Rules in the Conduct of Monetary Policy," *Weltwirtschaftliches Archiv*, Bd. 123, pp. 415-429.

Meisel, A. (1996a) "Why No Hyperinflation in Colombia? On the Determinants of Stable Economic Policies", *Borradores Semanales de Economía*, Banco de la República, Julio.

Meisel, A. (1996b) "Autonomía de la Banca Central e Inflación: la Experiencia Colombiana, 1923-1995" *Borradores Semanales de Economía*, number 49.

Ministerio de Hacienda, Fedesarrollo y Banco Mundial (1996) *Misión de Estudios del Mercado de Capitales. Informe Final*, Bogotá.

Ortega, F. (1994). "Autonomía de la Banca Central," in *Las Reformas Económicas del Gobierno del Presidente Gaviria: Una Visión Desde Adentro.* O. L. Acosta and I. Fainboim, eds. Bogotá, Ministerio de Hacienda y Crédito Público.

Persson, T. and G. Tabellini (1993) "Designing Institutions for Monetary Stability", *Carnegie-Rochester Conference Series on Public Policy*, 39, pp. 53-84, Diciembre.

Rogoff, K. (1985) "The Optimal Degree of Commitment to an Intermediate Monetary Target", *Quarterly Journal of Economics*, 100(4), pp. 1169-90, Noviembre.

Romer, C. and D. Romer (1989) "Does Monetary Policy Matter? A New Test In the Spirit of Friedman and Schwartz," in *NBER Macroeconomics Annua*l.

Steiner, R. ed. (1995) *La Autonomía del Banco de la República, Economía Política de la Reforma* (Bogotá: Tercer Mundo Editores).

Stiglitz, J. (1997) "Central Banking in a Democratic Society" Timbergen Lecture, mimeo, World Bank.

Urrutia, M. (1991) "On the Absence of Economic Populism in Colombia" in Dornbusch, R. and S. Edwards, Eds. *The macroeconomics of populism in Latin America,* National Bureau of Economic Research Conference Report, Chicago and London: University of Chicago Press, pp. 369-87.

Urrutia, M. (1994) "Autonomía del Banco de la República," in *Las Reformas Económicas del Gobierno del Presidente Gaviria: Una Visión Desde Adentro*. O. L. Acosta and I. Fainboim, Eds. Bogotá, Ministerio de Hacienda y Crédito Público.

Urrutia, M. (1996) Institutions and Economic Policy Making *Paper presented at the Second Colombian Conference, University of London.*

Walsh, C. (1995) "Optimal Contracts for Central Bankers", *American Economic Review*, 85(1), pp. 150-67, March.

# TABLE 1

## *ADVISORS TO THE MONETARY BOARD*

| | Period | Previous Job at Central Bank | Ph.D. |
|---|---|---|---|
| Francisco Ortega | 1970-75 | x | |
| Eduardo Sarmiento | 1974-78 | | x |
| Juan Camilo Restrepo | 1975-77 | | |
| Harold Calvo | 1977-78 | | |
| Juan Camilo Restrepo | 1978-81 | | |
| Luis Eduardo Rosas | 1978-82 | | |
| Jorge García García | 1981-82 | x | x |
| Juan Carlos Jaramillo | 1982-84 | x | |
| Fernando Montes N. | 1982-84 | x | |
| Manuel Ramírez | 1984-85 | | |
| Carlos Caballero A. | 1984-86 | | |
| Gilberto Gómez A. | 1985-87 | | x |
| Armando Montenegro | 1986-89 | x | x |
| Rudolf Hommes R. | 1987-88 | | x |
| Javier Fernández Riva | 1988-90 | | |
| Jaime Jaramillo Vallejo | 1989-91 | | x |
| Ulpiano Ayala | 1991 | | x |
| Hernando José Gómez | 1990-91 | x | |

# TABLE 2

## *MEMBERS OF THE BOARD OF DIRECTORS*

| | | PREVIOUS JOBS | | |
|---|---|---|---|---|
| | Period | Minister or Vice-minister (**) | President of a Business Association | Director of Fedesarrollo |
| María Mercedes Cuéllar de M. | 91-96 | M | | |
| Roberto Junguito Bonnet | 91- | M | x | x |
| Nestor Humberto Martínez N. | 91-93 | | | |
| Carlos Ossa Escobar | 91-93 | V | x | |
| Miguel Urrutia Montoya | 91- | M | | x |
| Oscar Marulanda Gómez | 93-97 | | | |
| Hernando José Gómez Restrepo | 93-97 | V | | |
| Salomón Kalmanovitz Krauter | 93- | | | |
| Antonio Hernández Gamarra | 96- | M | | |
| Luis Bernardo Flórez Enciso | 97- | M | | |
| Leonardo Villar Gómez | 97- | V | | |
| Rudolf Hommes Rodríguez* | 90-94 | M | | x |
| Guillermo Perry Rubio* | 94-96 | M | | x |
| José Antonio Ocampo Gaviria* | 96- | M | | |

* Minister of Finance in exercise. ** Director of National Planning is considered as minister

**Table 3**

**Ranking of central banks by overall legal independence**

| Country | Index of Legal Independence (unweighted)[1] | Average yearly inflation |
|---|---|---|
| West Germany | 0.68 | 3 |
| **Colombia (post 1992)** | 0.53 | 22.8* |
| Egypt | 0.53 | 17 |
| United States | 0.51 | 5 |
| Canada | 0.46 | 6 |
| Argentina | 0.44 | 319 |
| Ireland | 0.39 | 9 |
| Venezuela | 0.37 | 21 |
| Mexico | 0.36 | 65 |
| Indonesia | 0.32 | 10 |
| France | 0.28 | 7 |
| **Colombia (pre 1992)** | 0.27 | 24.5** |
| Singapore | 0.27 | 3 |
| Norway | 0.14 | 8 |

* covering the period 1992.1-1996.12
** covering the period 1980.1-1991.12

Source: Based on Cukierman et al. (1992), Table 2

**Figure 1**


[1] The index refers to legal independence in the 1980s (except for Colombia, as indicated). Inflation figures are also for the 1980s.

**Figure 2**

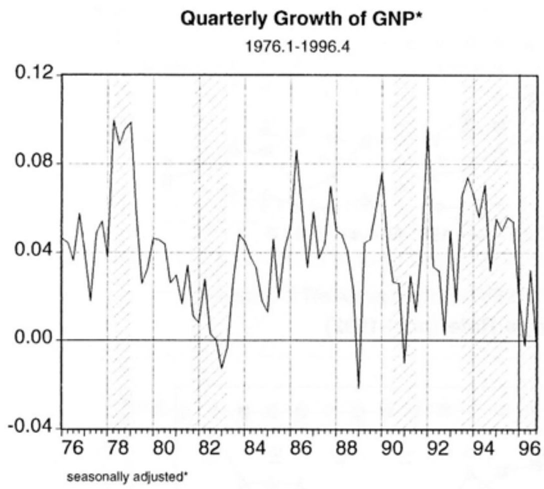



**Table 4: Variable Definitions and Unit Root Tests**

| Variable | ADF test | Critical Value | Significance |
|---|---|---|---|
| | | | |
| DINF | -3.39 | -3.43 | 5% |
| DM1** | -4.11 | -3.99 | 1% |
| DRER* | -2.52 | -1.94 | 5% |
| DIR* | -2.47 | -1.94 | 5% |

Source: Revista del Banco de la Republica. Unless otherwise noted, the tests were performed with 12 lags, constant and trend.

*: no trend
**: 18 lags

DINF: yearly log differences of monthly inflation; i.e. log ($INF_t$) - log ($INF_{t-12}$). Based on the CPI.
DM1: yearly log differences of monthly values of M1.
DRER: yearly log differences of monthly values of the real exchange rate index.
DIR: yearly log differences of monthly values of the interest rate on 90-day certificates of deposit.

**Figure 3**

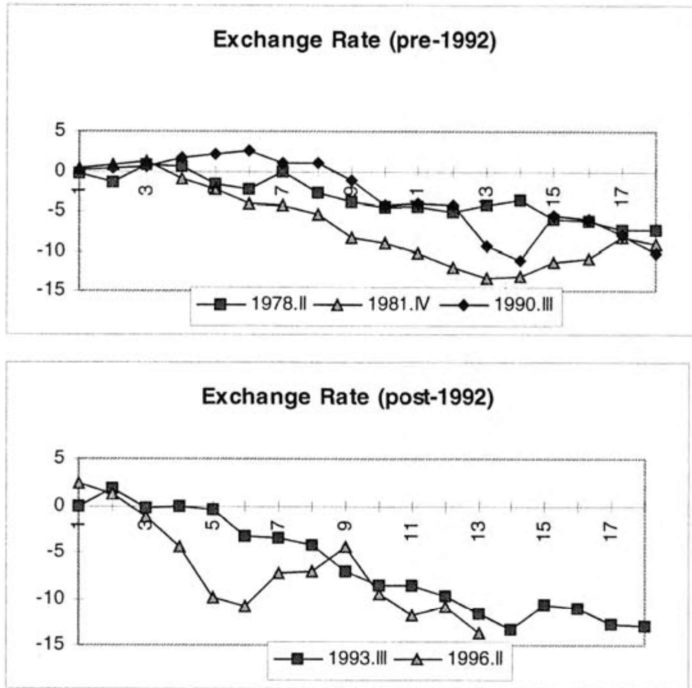



**Figure 4**

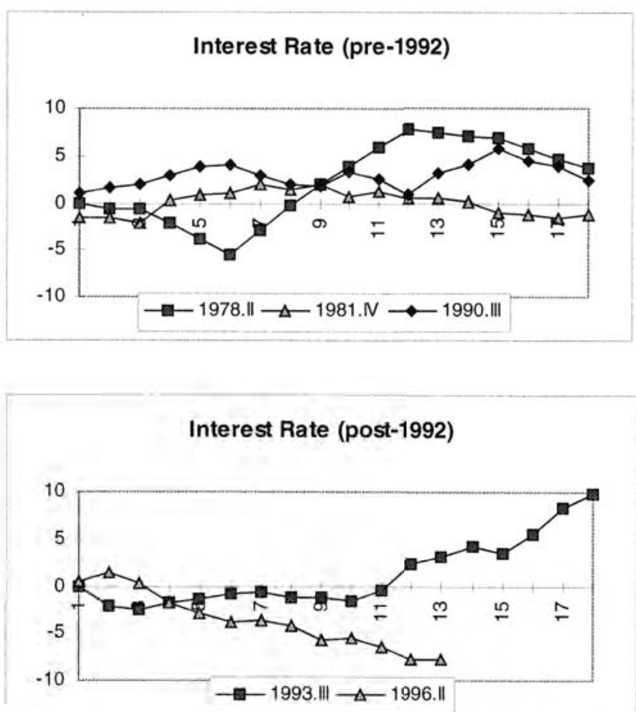


Figure 5

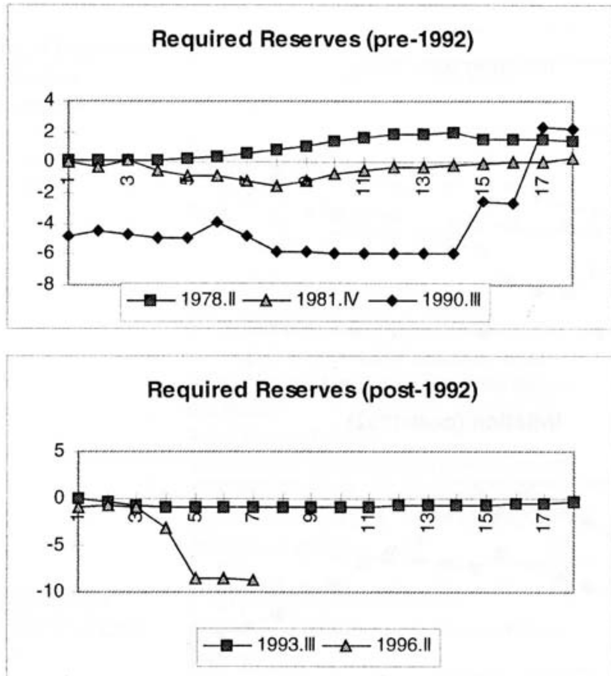



Figure 6

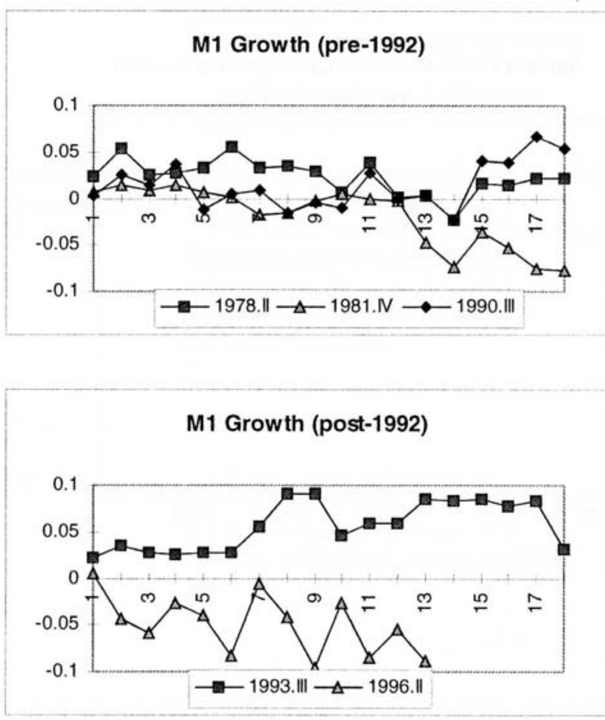
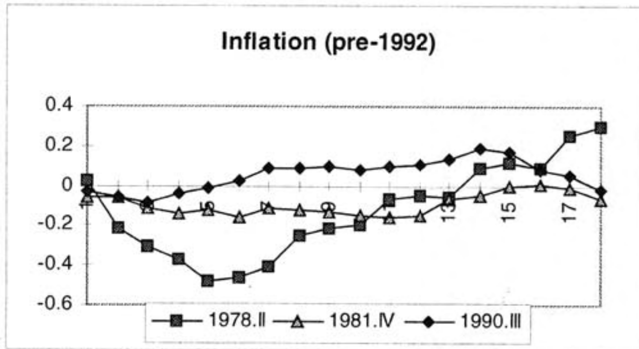


Figure 7



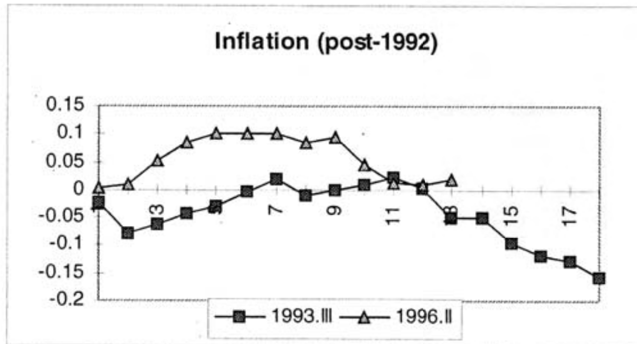
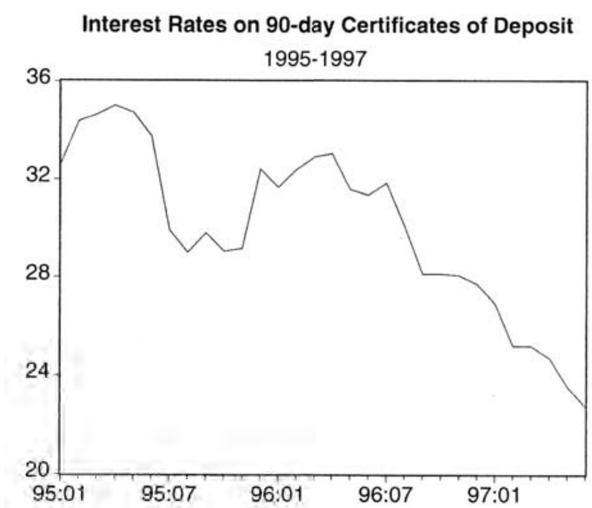




Figure 8



## Appendix 1: An Index of Legal Independence

**Table A.1: Coding of Legal Variables**

| **Group** | **Definition of variable** | **Levels of independence and their meanings** | **Numerical codings** | **pre-1992 code** | **post-1992 code** |
|---|---|---|---|---|---|
| CEO | Term of office of CEO in years *(too)* | 1. $too \geq 8$ | 1 | | |
| | | 2. $8 > too \geq 6$ | 0.75 | | |
| | | 3. $too = 5$ | 0.5 | | |
| | | 4. $too = 4$ | 0.25 | | **0.25** |
| | | 5. $too < 4$ | 0 | **0** | |
| | Who appoints CEO? *(app)* | 1. CB board | 1 | | **1** |
| | | 2. council composed of members from executive and legislative branches and CB Board | 0.75 | **0.75** | |
| | | 3. legislative branch | 0.5 | | |
| | | 4. executive branch (council of ministers) | 0.25 | | |
| | | 5. decision of one or two members of executive branch (e.g. prime minister or minister of finance | 0 | | |
| | Provisions for Dismissal of CEO *(diss)* | 1. no provisions for dismissal | 1 | | |
| | | 2. dismissal possible only for non-policy reasons | 0.83 | **0.83** | **0.83** |
| | | 3. dismissal at discretion of CB board | 0.67 | | |
| | | 4. dismissal for policy reasons at legislative branch's discretion | 0.5 | | |
| | | 5. unconditional dismissal at legislative branch's discretion | 0.33 | | |
| | | 6. dismissal for policy reasons at executive branch's discretion | 0.17 | | |
| | | 7. unconditional dismissal at executive branch's discretion | 0 | | |
| | Is CEO allowed to Hold another office? *(off)* | 1. CEO prohibited by law from holding any other office in government | 1 | | **1** |
| | | 2. CEO not allowed to hold any other office in government unless authorized by executive branch | 0.5 | | |
| | | 3. Law does not prohibit CEO from holding another office | 0 | **0** | |
| Policy Formulation s | Who formulates Monetary policy *(monpol)* | 1. CB alone has authority to formulate monetary policy | 1 | | **1** |
| | | 2. CB participates in formulation of monetary policy together with government | 0.67 | **0.67**[2] | |
| | | 3. CB participates in formulation of monetary policy in an advisory capacity | 0.33 | | |

[2] In the coding of this variable we differ from Cukierman (1992). Whereas he assigns, erroneously, we believe, a numerical code of zero (0), we have chosen to assign a code of 0.67. For the variable *obj* we also assigned a different code than that chosen by Cukierman, namely 0.4 rather than his zero.

| Group | Definition of variable | Levels of independence and their meanings | Numerical codings | pre-1992 code | post-1992 code |
|---|---|---|---|---|---|
| | | 4. Government alone formulates monetary policy | 0 | | |
| | Government Directives and *(conf)* | 1. CB given final authority over issues clearly defined as CB objectives | 1 | | **1** |
| | | 2. Government has final authority only over policy issues that have not been clearly defined as CB goals or in case of conflict within CB | 0.8 | | |
| | | 3. In case of conflict final decision up to a council whose members are from CB, legislative and executive branch | 0.6 | | |
| | | 4. Legislative branch has final authority on policy issues | 0.4 | | |
| | | 5. Executive branch has final authority on policy issues, but subject to due process and possible protest by CB | 0.2 | **0.2** | |
| | | 6. Executive branch has unconditional authority over policy | 0 | | |
| | Is CB given active Role in formulation of government's Budget? *(adv)* | 1. Yes | 1 | | |
| | | 2. No | 0 | **0** | **0** |
| CB Objectives | *(obj)* | 1. Price stability mentioned as the only or major goal, and in case of conflict with government CB has final authority to pursue policies aimed at achieving goal | 1 | | **1** |
| | | 2. Price stability mentioned as the only goal | 0.8 | | |
| | | 3. Price stability mentioned along with other objectvies that do not seem to conflict with price stability (e.g. stable banking) | 0.6 | | |
| | | 4. Price stability mentioned with a number of potentially coflicting goals (e.g. full employment) | 0.4 | **0.4** | |
| | | 5. CB charter does not contain any objectives for CB | 0.2 | | |
| | | 6. Some goals appear in the charter, but price stability not one of them | 0 | | |
| Limitations on lending | Process of approval of loans to Government | 1. lending to government prohibited | 1 | | |
| | | 2. lending only permitted under exceptional circumstances (e.g. economic emergency, unanimous Board approval) | 0.67 | | **0.67** |
| | | 3. no prohibitions to lending to government | 0.33 | | |
| | | 4. no prohibitions to lending to government or to private sector | 0 | **0** | |

| Group | Definition of variable | Levels of independence and their meanings | Numerical codings | pre-1992 code | post-1992 code |
|---|---|---|---|---|---|
| | Limitations on Advances *(lla)* | 1. Advances to government prohibited | 1 | | |
| | | 2. Advances permitted but subject to limits in terms of absolute cash amounts or to other types of relatively strict limits (up to 15% of government revenues) | 0.67 | **0.67** | |
| | | 3. Advances subject to relatively accomo-dative limits (e.g. advances can exceed 15% of government revenues or are specified as fractions of government expenditures) | 0.33 | | |
| | | 4. No legal limits on advances; their quantity subject to periodic negotiations between government and CB | 0 | | **0** |
| | Limitations on Securtized lending *(lls)* | Specification of levels identical to those for advances | | **0** | **0** |
| | Who decides Control of terms of Lending? *(ldec)* | 1. CB controls terms and conditions of government borrowing from it | 1 | | |
| | | 2. Terms of CB lending specified in the law, or CB given legal authority to set these terms | 0.67 | | |
| | | 3. Law leaves the decision about the terms of CB lending to government to negotia-tions between CB and executive branch | 0.33 | **0.33** | **0.33** |
| | | 4. Executive branch alone decides the terms of CB lending to government and imposes them on CB | 0 | | |
| | How wide is the Circle of potential Borrowers from CB? | 1. Only central government can borrow from CB | 1 | | **1** |
| | | 2. Central and state governments as well as all political subdivisions can borrow from CB | 0.67 | | |
| | | 3. In addition to the institutions mentioned under 2 public enterprises can borrow from CB | 0.33 | | |
| | | 4. CB can lend to all of the above as well as to the private sector | 0 | **0** | |
| | Type of limit when Such limit exists *(ltype)* | 1. Limit specified as an absolute cash amount | 1 | | |
| | | 2. Limit specified as a percentage of CB capital or other liabilities | 0.67 | **0.67** | |
| | | 3. Limit specified as a percentage of government revenues | 0.33 | | |
| | | 4. Limit specificed as a percentage of government expenditures | 0 | | |

| Group | Definition of variable | Levels of independence and their meanings | Numerical codings | pre-1992 code | post-1992 code |
|---|---|---|---|---|---|
| | Maturity of loans *(lmat)* | 1. Maturity of CB loans limited to a maximum of 6 months | 1 | | |
| | | 2. Maturity of CB loans limited to a maximum of one year | 0.67 | **0.67** | |
| | | 3. Maturity of CB loans limited to a maximum of more than one year | 0.33 | | |
| | | 4. No legal upper bound on the maturity of CB loans | 0 | | **0** |
| | Restrictions on Interest rates *(lint)* | 1. interest rate on CB loans must be at market rate | 1 | | |
| | | 2. interest rate on CB loans to government cannot be lower than a certain floor | 0.75 | | |
| | | 3. interest rate on CB loans cannot exceed a certain ceiling | 0.5 | | |
| | | 4. no explicit legal provisions regarding the interest rate on CB loans | 0.25 | **0.25** | |
| | | 5. law stipulates no interest rate charge on government's borrowing from the CB | 0 | | **0** |
| | Prohibitions on Lending in primary Market *(lprm)* | 1. CB prohibited from buying government securities in primary market | 1 | **1** | **1** |
| | | 2. CB no prohibited from buying government securities in primary market | 0 | | |

A unified index is constructed based on table A.1. Following Cukierman (1992), the four "ceo" variables are aggregated into a single variable *ceo*, by calculating an unweighted mean of the codings. The three variables under policy formulations" are aggregated into one variable, *pf*, by computing a weighted mean: a weight of 0.5 for *conf* and 0.25 for each of *monpol* and *adv* are used. The last four variables in the group of "limitations on lending" are aggregated into a single variable, *lm*, by calculating an unweighted mean.

**Table A.2 Aggregation of Variables**

| Legal Variable | | Weight | Weight (C)* |
|---|---|---|---|
| *ceo* | (chief executive officer) | 0.20 | 0.20 |
| *pf* | (policy formulation) | 0.15 | 0.15 |
| *obj* | (objectives) | 0.15 | 0.15 |
| *lapp* | (limitations on lending - approval) | 0.15 | - |
| *lla* | (limitations on lending - advances) | 0.10 | 0.15 |
| *lls* | (limitations on lending - securitized) | 0.05 | 0.10 |
| *ldec* | (limitations on lending - who decides) | 0.05 | 0.10 |
| *lwidth* | (limitations on lending - width) | 0.05 | 0.05 |
| *lm* | (limitations on lending - miscellaneous) | 0.10 | 0.10 |
| | | 1.00 | 1.00 |

* Weights employed by Cukierman (1992)

The resulting codes are summarized in the following table.

**Table A.3: Coding the Components of Legal Independence**

| Variable | pre-1992 code | post-1992 code |
|---|---|---|
| *Ceo* | 0.40 | 0.77 |
| *Pf* | 0.27 | 0.75 |
| *Obj* | 0.40 | 0.10 |
| *Lapp* | 0.00 | 0.67 |
| *Lla* | 0.67 | 0.00 |
| *Lls* | 0.00 | 0.00 |
| *Ldec* | 0.33 | 0.33 |
| *Lwidth* | 0.00 | 1.00 |
| *Lm* | 0.40 | 0.25 |
| Unweighted index | 0.27[3] | 0.53 |
| Weighted index | 0.31 | 0.61 |
| Weighted index (C)* | 0.35 | 0.53 |

* Results based on Cukierman's (1992) weights.

[3] Due to alterations we made in the coding of the variables mentioned in the previous note, our index is different from that obtained by Cukierman et al. (1992), which was 0.26.