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Exchange Rate Bands and Shifts in the Stabilization Policy Regime:
Issues Suggested by the Experience of Colombia

Prepared by Alberto Carrasquilla 1/

Authorized for distribution by Peter Wickham

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Abstract

After 25 years, the Colombian authorities decided to abandon the crawling peg exchange rate policy and implement a regime of nominal exchange rate bands. Initial conditions in Colombia contrast sharply with those of other cases in which bands were part of an ongoing effort to reduce high inflation. This paper argues that the change in regime was motivated by a change in policy objectives. Starting from a policy whose rationale implied targeting stable inflation, a simple analytical model of optimal policy is presented; initial results with the new regime suggest that inflation is now considered costlier and that policy implementation has been consistent with this new view.

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1/ Deputy Governor, Central Bank of Colombia. The paper was written while the author was a Visiting Scholar in the Research Department. He wishes to thank Juan C. Jaramillo, Carmen Reinhart and Peter Wickham for helpful comments and discussions on a previous draft.

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Summary

For 25 years, Colombia's monetary and exchange rate policies were built around a crawling peg regime aimed at maintaining stable inflation rates in the moderate range. In early 1994, the authorities decided to replace that regime with a system of exchange rate bands. In other countries, exchange rate bands were introduced as part of ongoing stabilization efforts to reduce inflation rates of over 100 percent. In contrast, Colombia viewed them as a mechanism or an initial condition for disinflation. The timing and objectives of the policy shift are interesting in themselves.

The paper argues that the policy shift represents a change in perception about the costs of inflation to Colombia. To test this, a simple analytical model of optimal policy is presented, with the initial results suggesting that inflation is indeed deemed costlier by the Colombian authorities than was the case before. The purpose of the paper, therefore, is to discuss the post-1989 period, evaluating the stated hypothesis and pinpointing general issues of exchange rate policy, and of bands in particular, that may prove to be of broader analytical interest and practical relevance.

Since the early 1970s, Colombia has traded off higher inflation for an institutional setup in which inflation would hover in the 20-30 percent range. Monetary, fiscal, commercial, and exchange rate policies were designed to maintain this situation. In return, the government obtained substantial inflationary finance throughout the period; from average (but volatile) rates of around 0.8 percent of GDP, the inflation tax rose to a (stable) rate of over 2 percent of GDP during 1980-93. These funds were an important component in the financing of central bank credit and help explain why the Colombian public sector debt, at 30 percent of GDP, is low by international standards.

Efforts initiated at the beginning of the 1990s to liberalize the current and capital accounts, the financial sector, and the labor market show that the authorities gradually accepted that inflation could not remain at conventional levels. Furthermore, given that important disinflation was occurring in other countries of the region, they realized that inflation must come down. Accordingly, they set out to make the central bank independent, achieving this goal with the establishment of the new constitution in 1991. The new central bank abandoned active sterilization, began issuing dollar-denominated debt, and decided to abandon the crawling peg in favor of a relatively complex exchange rate regime. In January 1994, explicit exchange rate bands were put in place to allow exchange rate flexibility and to obtain independence for the conduct of monetary policy. At the same time, external and internal shocks--enhanced capital inflows and an expenditure boom--have led to an appreciation of the real exchange rate. Concerns with competitiveness have been traded off against gains in disinflation.

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I. Introduction

Exchange rate target zones, or band systems, in which central banks are committed to defend the nominal value of a currency within predefined bounds, are a common type of exchange arrangement since the demise of the Bretton Woods system. ^{1/} The arguments for defending this type of scheme are usually based on the idea that this kind of commitment is necessary to maintain a degree of flexibility and to eliminate (or reduce) the possibility of a destabilizing speculation, which, many posit, characterized exchange rate dynamics in the 1980s. ^{2/} Flexibility is needed to ensure a degree of monetary autonomy in the context of continuous shocks, while some rigidity is needed to anchor expectations.

During the late 1980s and early 1990s, several developing economies adopted this general system of exchange rate bands. Although bands were used to guard against destabilizing speculation, to a more important degree they were part of the countries' ongoing stabilization programs. For example, after a period of fixed rates--aimed at affecting expectations--Chile, Israel and Mexico adopted band systems because, under fixed rates, inflation continued to be higher than abroad, implying excessive appreciation.

Colombia is the most recent example of a country adopting a band system and it offers several interesting features. ^{3/} In the context of a long-standing tradition of moderate (not high) inflation, Colombia adopted a system of nominal exchange rate bands, rather than a fixed rate regime, to replace its crawling peg. Therefore, Colombia differs in important ways from the usual sequence, where expectations are affected by a period of fixed rates, and later on flexibility is introduced in an attempt to enhance competitiveness.

Why did Colombia come to adopt an exchange rate band regime? The argument in this paper is that it is the consequence of a shift towards a more anti-inflationary stance on the part of the authorities. As stated above, this contrasts with other cases in which bands were introduced once inflationary goals had been broadly achieved and competitiveness had become a concern. The purpose of this paper, therefore, is to discuss the post-1989 period, with the twofold objectives of evaluating the stated hypothesis and of pinpointing general issues of exchange rate policy and of exchange rate bands in particular, which, it is hoped, will prove to be of broader analytical interest and practical relevance.

The paper is organized in five sections. Section II reviews the adjustment process under the crawling peg. It briefly discusses what may be called the "initial conditions" that Colombian policymakers inherited; these include a high degree of inflationary persistence, substantial

^{1/} The European Exchange Rate Mechanism, or ERM, is a prominent example of a band system.

^{2/} See, for example, Krugman (1988).

^{3/} See Helpman, Leiderman and Bufman (1993) for an interesting discussion of the other three cases (Chile, Israel, and Mexico).

indexing of nominal contracts, and a crawling peg regime. All of these characteristics are related to a basic underlying rationale which, when properly understood, explains the decision to implement bands. It will be argued that the fundamental internal logic is clearly of a fiscal nature. Section III describes the nature of external shocks in Colombia since 1989 and the government's policy responses to them. The discussion attempts to offer an integrated view of these processes. Section IV looks at how extensive the policy shift has actually been, and Section V presents some concluding remarks on the issues suggested by the Colombian experience, in both analytical and practical terms.

II. Adjustment Process Under the Crawling Peg

1. Basic stylized facts

The period 1989-94 has been one of heightened activity in the area of exchange rate policy innovations in Colombia, as was also the case in several other Latin American countries. This high level of activity on the exchange rate policy front is uncommon in a country where policy stability and gradualism have been the norm throughout its modern economic history. ^{1/} To better understand the shifts that occurred in the early 1990s, in this section we briefly discuss the nature of stabilization policy in Colombia before 1991. We begin by presenting basic stylized facts, and later turn to the macroeconomics of the process.

Chart 1 summarizes basic nominal data for Colombia. It shows the yearly inflation rate (actual and the 6-year moving average of consumer price increases) during the period 1951-92, and illustrates the strong characteristic, that is the focus of this section, namely, that inflation was "low" before 1973--albeit unstable. It then rose systematically until the late 1970s and early 1980s, reaching a plateau of around 23 percent, around which it has hovered since. On the other hand, economic policy, as reflected in the evolution of nominal variables, such as the money supply (upper right), the nominal growth rate of government expenditures (lower left), and the nominal rate of devaluation (lower right) did not seem overly concerned with this behavior, and played an essentially accommodative role.

It is worthwhile to illustrate exactly how unique the situation was. In examining the inflationary experience of 67 countries in the post-World War II (WWII) era, in the region and in the OECD, a recent paper concludes that this type of experience is perhaps unique. ^{2/} A basic stylized fact about post-war inflation is that most countries experienced "low" inflation

^{1/} See Caballero (1989) for an overview of modern economic history in Colombia.

^{2/} These figures, based on IMF and Summers-Heston data, are contained in Carrasquilla (1992).

Chart 1

Data on Colombia

1955-93

Source: Central Bank of Colombia

in the 1950-73 period. 1/ In the 1973-84 period (during the oil price and associated shocks), on average, it rose, and thereafter through the 1980s, inflation exhibited one of three patterns--declining, rising, and stable levels of inflation. A first group of countries (OECD, for example) was able to reduce inflation to roughly the pre-1973 levels; a second group saw inflation rise drastically during at least the first half or more of the 1980s, whereas only Colombia was able to maintain inflation at around the 1982 levels. We can think of the process as encompassing an initial common (transitory) shock, followed by three types of policy responses: corrective, accelerative, and accommodative. Of the three approaches, only Colombia seems to have opted for a persistently accommodative regime.

2. The macroeconomics of accommodation

What is the economic reason for the high degree of accommodation in Colombia? Among the plausible ways of summarizing the experience, given the actual data, is that in practical terms what the Colombian authorities were able to achieve in the mid-1970s was a contract in which lower inflation variability was exchanged for a higher level of inflation. How can this be explained in economic terms? The question is all the more interesting given the fact that the usual result in the empirical literature is the opposite: inflation and inflation variability exhibit a positive, not a negative, cross correlation. 2/

For a (negative) trade-off to exist, some combination of underlying structural features must be present, so that incentives consistent with the result are clearly specified. In particular, there are several questions that should be answered. First, why would the authorities desire to enter into the bargain in the first place? Second, why would the private sector accept it? Third, can moderate inflation stem from this incentive structure?

The analysis of inflation begins by recognizing that the phenomenon is essentially a distributive mechanism for channeling resources from some groups in society to others. 3/ This might not always be a simple transfer from the private to the public sector; in more formal terms, the relation between fiscal deficits and inflation is not usually unique in any satisfactory theoretical sense. In more practical terms, one must note the fact that with exactly the same--or much higher--"permanent" fiscal

1/ Although inflation was higher in industrialized nations than in the pre-war era, as shown in Backus, D.K and P.J Kehoe (1992). For a discussion on differences in the type of price adjustment in commodity-based and money-based systems, see Flood and Mussa (1994).

2/ See, for example, the empirical discussion in Edmonds and Jacky (1993).

3/ In addition to the basic transfer, there is also dead-weight loss.

deficits, a number of countries (all OECD countries, for instance) have managed to maintain lower inflation than Colombia. 1/

The lack of a tight relationship between the size of the fiscal deficit and the level of inflation (Chart 2) is not unique to Colombia, nor is it a newly-observed stylized fact. Indeed, the idea that the two variables are linked analytically is based on the notion that a currently-observed fiscal deficit must, at some point in the future and to a significant extent, be monetized. Econometric results obtained in many specific contexts are clear in suggesting that this is not an empirical regularity. King and Plosser (1985), for example, find no evidence in the sense that fiscal deficits have significant power in predicting present or future monetary expansion. Similar, more recent and general results were obtained by authors such as Hafer and Hein (1988) and by De Haan and Zelhorst (1990).

Of course monetization of current deficits is the most direct means by which a fiscal imbalance will trigger or sustain an inflationary process. But, there is a very important quasi-fiscal role for inflation, indeed a factor that proves to be more useful in understanding the accommodation of moderate inflation: the generation of inflation tax revenues. 2/

Chart 3 shows the standard definition of the inflation tax (monetary base multiplied by the rate of inflation) for the specific case of Colombia. As can be seen, the inflationary jump that occurred in the early 1970s was accompanied by a parallel jump in money holdings, resulting in increased seigniorage revenue. Formally, the elasticity of real money demand to inflation was low enough to render the increase in inflation capable of generating new and important taxation revenues. 3/ Ex-post, the motive for the authorities to embark upon this policy is clear.

Now, we can address the initial point raised about the tolerance of moderate inflation in Colombia. The macroeconomic explanation of this accommodation is that the authorities were thereby able to generate a flow of additional inflationary taxation that has been reliable for over 20 years. Measured in net present value, total resources obtained represent a large sustained transfer from the private to the public sector and constitute the basis of the government's (government + central bank) quasi-fiscal activities during the two decades in question.

1/ And with higher ensuing levels of total (domestic + foreign) public debt.

2/ It should be mentioned that a widely held view states that fiscal considerations are not a substantial issue in the explanation of moderate inflation; see, for example, Dornbusch and Fisher (1992).

3/ The average inflation tax rose from 0.77 of GDP between 1951-70 to 2.2 in the period 1972-92--a shift of 1.4 points of GDP per annum. Over 20 years, this amounts to around 28 percent of a given year's total GDP. In contrast, total oil revenues from the Cusiana project (a 10-15 year project have been estimated at around 15 percent of a given year's GDP in net present value.

Chart 2

Colombia: Public Sector Deficit

Source: Central Bank of Colombia

Chart 3

Colombia: Inflation Tax

Source: Central Bank of Colombia

This consistent flow of resources requires an appropriate institutional setting and a receptive private sector. The private sector would have to be willing to make the trade-off between moderate inflation and increased revenues, and would have to assign credibility to the fact that the authorities were seriously committed to the policy, i.e., that they would not produce further inflationary surprises. The institutional setting that satisfies this requirement can be referred to as the foundation of the Colombian stabilization model, which has been in operation since the early to mid-1970s.

To simplify matters, one can think of the Colombian private sector, comprising households and firms, as facing a negotiation with the government, in which policymakers had decided to increase inflation to obtain financing for fiscal and quasi-fiscal projects that they valued positively in their utility function (the defense of the real exchange rate, subsidized credit, etc.). Under these circumstances, private citizens would be motivated to reduce their money holdings as the new inflation rate would erode the real value of their holdings. The fact that this did not occur, and that domestic money retained its basic functional means of payment properties throughout the two decades, implies that the official strategy encompassed elements that motivated private agents to accept the new framework. This acceptance enabled government to meet its fundamental goal of increasing revenues. 1/

Aside from the trivial ex-post argument that when inflation increases to a small enough degree that the cost of currency substitution is greater than the benefit, this experience suggests the following explanations. A revealed preferences argument is one. This is when the private sector exhibits a utility function such that a one-unit reduction in inflation variability is welfare equivalent to a given number of points of higher inflation. Under these circumstances, there is a natural incentive to negotiate a contract with the authorities to reduce variability.

A second explanation is that resources were re-transferred to the private sector through fiscal and quasi-fiscal policies, such as subsidized credit on the part of public financial institutions, and to exporters via the income effect of real exchange rate targeting. In effect, then, higher inflation shifted resources from some subgroups of the private sector to others, with the public sector (government and the central bank) acting as intermediary.

1/ In other words, there was no important currency substitution by which citizens might have evaded the additional tax. Real money and real GDP are cointegrated in Colombia; if one introduces inflation to the error correction equation $dm(t) = f(dy(t), \mu(t-1), \pi)$, with $\mu(t-1)$ the lagged error in the cointegrating equation, π is insignificant ($t=0.63$, for example). Consequently, we can say that the demand for monetary base, overall, has been largely insensitive to inflation. Detrended velocity is also insensitive to inflation.

Another, possibly complementary, explanation is that the contract that was achieved, which included the burden of higher inflation, also implied an exception for a subset of private agents. By means of this incentive to negotiate, taxation might be redistributed in the private sector, for example from the relatively wealthy (property owners, organized labor) to the relatively poor. This incentive signaled that the authorities not only tolerated but sought to promote indexation of nominal contracts, and thus pledged to defend the present real value of income, through specific measures. Through indexation, the burden of higher inflation would be spread across the private sector according to each sector's capital holdings (physical, financial, and human) and ability to index contracts. Several measures were introduced during the period: 1/

(i) The minimum wage, which was fixed from 1969 to 1971, was raised in 1972 by 27 percent, and from 1975 onward it began to increase on a yearly basis. Wages in the official sector behaved in a similar manner.

(ii) Interest rate indexation for mortgage banks was introduced in 1972 through the UPAC mechanism. An indexed financial asset, possessing near-money properties, was thus made widely available. 2/

(iii) Perhaps more importantly, a crawling peg mechanism was put in place in the late 1960s and became a central part of Colombia's macroeconomic policy after 1970, and certainly throughout the 1980s. Frequently, as mentioned above, the rate of crawl was based on explicit targets for the real exchange rate.

The effect of the crawling peg was to obtain support from the private sector (more precisely, from significant subgroups of the private sector) for moderate inflation policies, i.e., for accommodation. This in turn motivated the authorities to keep inflation and inflation variability within the negotiated bounds: indeed, the effect was to put an inflation-based "anchor" in place.

We can summarize by noting that a period of higher inflation was observed after about 1970. For the government, this implied enhanced inflationary finance and for the private sector it implied a more predictable policy and several redistributive mechanisms. The outcome is observable in the data; through the difficult 1980s Colombia kept its debt low, its economy growing, and managed to achieve a degree of macroeconomic stability, which compares well with other countries in the region.

1/ The issue of causality is resolved in the scheme outlined above in the sense that these institutions resulted from the decision to use inflationary finance.

2/ Required reserves on the part of the financial sector increased in tandem with the shift in inflation levels, from 17 percent in 1950-67, to 32 percent in 1975-92. See Barajas (1994).

3. Change of regime

In 1991 a new constitution was established in Colombia, and among its primary economic provisions was the legal independence of the central bank from the government, together with a specific mandate to preserve the purchasing power of money. 1/ In the sense that the constitutional mandate implies reducing inflation from current levels (20-25 percent per annum), the type of contractual arrangement described above becomes institutionally infeasible because in an opinion, which is reflected in the constitution, the private sector in fact had changed the basis of its welfare function and endowed the authorities with a new state of nature in which to operate. 2/

Why the shift in attitude? There are several answers. First, inflation is costly in welfare terms, even when isolated from its effects on growth. Second, inflation has adverse effects on growth and the magnitude of these costs has been increasing.

In the specific case of Colombia, two recent papers are useful in tackling this subject. The first analyzes welfare costs stemming from different steady-state inflation levels, while the second studies the effects of inflation on growth. In both cases, theory and data support the fact that inflation is costly for the Colombian economy. 3/

The first paper (Carrasquilla, et al., 1994b) shows that if steady-state inflation is reduced from a level of 25 percent to a level of 5 percent, there is a welfare gain roughly equivalent to the effect of a once and for all increase in consumption of 12 percent. This is derived with a Sidrausky-type utility function (i.e., including money) in which a constant, relative risk-aversion specification is assumed, and a conventional generalized method of moments estimation of preference parameters is used, in conjunction with quarterly data for Colombia since 1980. The results are in line with recent findings for other countries.

The second paper (Uribe, 1994) shows two results that further establish the rationality for the policy shift. First, there is a negative time series association between factor productivity and inflation. Second, using Kalman filter techniques, the (negative) parameter that links the

1/ Though "coordination with the government" is explicitly emphasized, legal development of the constitutional mandate states that, in case of conflict, defense of the purchasing power of money should predominate.

2/ The change in attitude towards inflation can be thought of as gradual and linked to macroeconomic variables; the important point is that it is written into the constitution.

3/ Additional factors are the following: (i) inflation has increased vis-a-vis trading partners during the late 1980s and early 1990s as most Latin American countries have moved towards lower, in some cases single-digit, inflation; and (ii) liberalization makes more goods and services tradable and enhances adjustment towards inflation levels abroad.

two variables has increased (in absolute value) since the mid-1970s when, as illustrated in Chart 1, inflation experienced an upsurge. In other words, there is a negative structural relation between inflation and productivity, the empirical importance of which seems to respond to the level of inflation. The conclusion is that, from an empirical point of view, gains in competitiveness and welfare would be enhanced by a reduction of inflation to international levels.

At this juncture, several new themes arise in the macroeconomic discussion on Colombia. Perhaps the most important issues are:

(i) How will the lost seigniorage be compensated for in the future? 1/ What fiscal and quasi-fiscal expenditures will be sacrificed? What taxes will be raised? One prompt response has been to reduce the degree of real exchange rate targeting and other quasi-fiscal endeavors and thus eliminate the costs associated with this policy approach. 2/

(ii) Under what conditions are anti-inflationary policy and structural reform consistent short-run objectives?

(iii) What should the intermediate (nominal) policy target be for money, the exchange rate, and the interest rate?

As the issues become more crucial, their resolution becomes more pressing, especially given the fact that the economy continues to be subjected to various important shocks. In the next section, we will examine the nature of the shocks and the authorities' policy response to them. The recent introduction of exchange rate bands will be seen as a convenient mechanism for coming to terms with the issues in the macroeconomic context described.

III. The Nature of Shocks and Policy Responses

1. A basic description

The hypothesis of this paper is that there has been an anti-inflationary shift in preferences in Colombia since mid-1989 and that the subsequent adoption of exchange rate bands is a result of this shift. Contemporaneously, Colombia's economy has been subjected to shocks that have tended to appreciate the real exchange rate and the new band system has facilitated the adjustment process. A brief discussion of the shocks

1/ Current rates of 2.2 percent of GDP are notoriously above international standards and money demand does not seem to exhibit unitary elasticity to inflation, a figure closer to 0.1 (in absolute terms) seems more appropriate; thus a reduction of inflation will imply reduced seigniorage.

2/ Steiner, et al. (1992), show that the inflation tax in Colombia was used in financing the accumulation of foreign exchange reserves in 1989-91.

will help explain the behavior of the exchange rate within the band system.

Innovations include an "endowment" shock consisting of important oil discoveries; 1/ large, and to a certain extent, exogenous capital inflows; 2/ and shifts in the expenditure functions of both the private and public sectors. The following stylized facts summarize the macroeconomic manifestations of these shocks:

(i) The current account has slipped from a surplus of some 4.5 percent of GDP in 1991 to a deficit of around 4.5 percent of GDP in 1994. The capital account has more than compensated for this shift, while private savings are currently at a historic low. 3/

(ii) By some estimates, between 1991 and 1994 asset prices in real terms rose by an average of over 20 percent a year. 4/

(iii) The real exchange rate has appreciated by some 20 percent between late 1990 and September 1994. 5/

(iv) The stock of loans from the financial to the nonfinancial private sector has risen in real terms by an average of nearly 20 percent during the 1992-94 period.

2. Explanatory factors

There are three basic interrelated processes that explain the recent macroeconomic dynamics in Colombia: liberalization of trade and financial barriers; social and political factors; and the expected wealth effect. The first of these concerns trade and financial barriers, which were at least partially lifted between the end of 1989 and early 1990. At that time, trade was liberalized to a significant degree: quantitative restrictions were eliminated and the average tariff rate (+ VAT) went from 60 percent to 25 percent. With regard to financial barriers affecting credit and liquidity, the following developments should be mentioned:

1/ It has been estimated that the size of this shock in present net value is equivalent to around \$10 billion, or an increase of about 15-20 percent of GDP in 1993.

2/ The argument that capital inflows are partly exogenous stems from work by Calvo, Leiderman and Reinhart (1993).

3/ While final data are not available, it is not unreasonable to assume that private savings are currently below 10 percent of GDP.

4/ Estimates taken from Carrasquilla, et al. (1994a), which include residential housing and equity shares.

5/ This result is quite independent of the way the real exchange rate is measured. A PPP-based index implies the same result whether the PPI or the CPI is used as a deflator, and they both give very similar results to a tradables/nontradables relative price index.

(i) The domestic financial sector was deregulated, in the sense of promoting a more competitive environment. Nonbanking financial institutions were allowed to undertake banking-type activities.

(ii) The capital account was liberalized to a significant degree, although taxes on foreign debt contracted continue to be levied.

(iii) The labor market was made more flexible and mandatory severance pay was eliminated for new workers. 1/ By allowing firms to negotiate outstanding severance obligations with older workers, important incentives to offer liquid claims were created. Although no formal estimates exist, it is thought that an important part of the workforce traded severance rights for liquidity. 2/

Further, after constraints on the behavior of private agents were lifted in the late 1980s and early 1990s, the private sector was then better able to express its preferences. In practical terms, this is equivalent to an increase in the intertemporal subjective rate of discount, with fixed nominal interest rates, in that its expression is an increase in current private sector expenditures. 3/

The second interrelated process refers to social and political factors ("idiosyncratic" shocks), which in Colombia have implied a drastic increase in public sector expenditures. In the January-August 1994 period, for example, total central government expenditures had grown by 70 percent over the same period in 1993; in real terms, this is a 46 percent increase. Legal mandates, partly stemming from the new constitution, have placed a burden on government in the sense of assigning it new expenditures. For example, transfers to the local governments were increased, whereas responsibilities for specific activities were not. 4/

1/ Severance pay in Colombia included an obligation on the part of firms to add to the stock (1-month's pay for each year worked) of all wage increases. If a worker has worked 10 years, for example, and current wage is W_0 , a wage increase of x percent in year 11 will imply an adjustment in the stock of xW_0 times 11, in fact imputing to the first (and all subsequent) year(s) on the job the current wage increase! Obviously, firms have a great incentive to purchase this right from the worker.

2/ In the central bank, for instance, this was the case for over 90 percent of older workers. This must not be taken as representative of the national trend, although it is suggestive of the quantitative importance of the issue; further scrutiny of national trends is needed.

3/ In a simple 2-period problem, where income (y) is received in period 1 only, the first order condition is $U'(C_1)/U'(C_2) = 1/1+\delta$, with δ the discount rate. Hence, if δ increases, C_1 increases. If savings receive interest, the relation is not changed.

4/ For an account of Colombia's local government finance and the implications of recent legislation, see Correa and Steiner (1994).

A political business cycle factor must also be given consideration, as the period 1993/94 was the last year of an administration generally considered as being liberal, and there has been some anecdotal evidence linking public sector expenditures to the winding-down phase of this government. 1/ At the same time, Colombia has faced a difficult internal security problem, and police-cum-justice expenditures have been among the most dynamic items in the recent spending boom.

The third component concerns an expected wealth effect. Colombia's private sector appears to foresee increases in future income--a classic example of this effect. It has shown up in surveys and polls and, most importantly, in the expenditure data. The basic stylized fact is the following: the marginal propensity to spend out of current GDP has tripled. This increase can be hypothesized as stemming not only from objective factors, but also from more subjective "hysteresis"-type effects. The former refers to the oil discoveries and the more recent shift in coffee prices, while the latter is derived from the observed (initial) shifts in public sector expenditures and from the liberalization process which has generated an expansion of credit and liquidity.

3. Macroeconomic policy

From the standpoint of stabilization policy, the 1989-94 period has to be divided into two basic subperiods. These are before and after the central bank became fully independent during which monetary anchoring was gradually gaining in importance.

a. Central bank independence

Before discussing specifics, it is worthwhile to briefly refer to the discussion on central bank (CB) independence in the case of Colombia. 2/ The theoretical and empirical literature on central bank independence is very extensive by now. 3/ It is a relatively well understood proposition that the potential benefits stemming from CB independence refer to the broader theme of stabilization policy under conditions where government credibility and public expectations are in harmony. Private sector

1/ With simple regression analysis, I personally found no strong evidence in support of this assertion. Coefficients using expenditures in real terms, in growth rates and in relation to GDP and a dummy for change of administration as a regressor, are negative with low significance (t values of -0.2). A salient "dummy", rather, is the 1990-94 administration, which elevated government expenditure to an unprecedented extent. However, the conventional wisdom is so much in favor of the hypothesis that without a serious study, I hesitate to disregard the notion.

2/ Junguito (1994) presents a careful discussion of the issues from the Colombian perspective.

3/ See, above all, the influential treatise by A. Cukierman (1992), which includes theoretical as well as empirical discussion. Also, see Fisher (1994).

expectations and the credibility of a government's anti-inflationary policy statements and programs are crucial to their rate of success.

Briefly, the argument begins by positing a Friedman-Phelps-type of expectations-augmented Phillips curve and a Barro-Gordon critique of optimal discretionary policy. In other words, the argument starts with an analytical framework in which a prominent normative conclusion is the defense of "rules" as opposed to "discretion" in the management of monetary policy.

The degree to which rules are accepted and believed by private rational citizens has important institutional elements. For example, a government that can issue domestic non-indexed debt would be less credible as an anti-inflationary institution than an independent central bank that does not. This is because it makes sense for the government to inflate in order to reduce the real debt burden. If, as the evidence shows, institution of an independent CB is conducive to reducing inflation (Cukierman, 1993) and given the benefits of doing this, its implementation is an important component of the structural reform process in Colombia.

b. Monetary shifts

The main monetary policy decisions can be described in the following terms. Throughout 1990 and in the early part of 1991, monetary policy was based on widespread sterilization of capital inflows, brought about through sharp increases in interest rates on domestic debt issued by the central bank. The monetary authority (a government body) decided to have the central bank issue debt notes in order to offset the monetary effect of the capital flows. Total domestic currency central bank debt rose from less than 1.5 percent of GDP in mid-1989 to over 7 percent of GDP in late 1991. Chart 4 shows debt as a fraction of the monetary base. Interest rates on these notes, on the other hand, rose to levels of over 20 percent in ex-post real terms.

Unfortunately, the nominal exchange rate lacked the required degree of flexibility so that, in effect, what the authorities were doing was inconsistent in the context of capital mobility. An early attempt to defend the real exchange rate through nominal devaluation (1990-91), while at the same time defending a high nominal interest rate policy, was seen as unsustainable by the private sector and further motivated capital inflows, as agents (correctly) perceived an upcoming appreciation.

The newly-independent central bank took two decisions. First, it drastically reduced the degree of activity in conventional sterilization policy and began operating a system in which debt was issued in dollar terms. Second, in this context, the central bank decided to abandon the crawling peg system and adopt a transitory, relatively complex exchange rate regime, in which the needed flexibility was attained.

Chart 4

Colombia: Monetary Developments

Central Bank Domestic Debt as a
Fraction of Monetary Base

M1 and M2 Annual Growth Rates

Source: Central Bank of Colombia

The decision to abandon active sterilization shows up clearly in Chart 5. Concurrently with the upward shift in money growth rates, interest rates declined to practically half their initial levels, or from over 40 percent in 1991 to around 22 percent in 1993. Total central bank debt quickly began to fall, from 7 percent of GDP in 1991 to a level of 3 percent by mid-1994. The fundamental reason why this decision occurred was the excessively high cost to benefit ratio of sterilization policy as a whole; simply put, at 40 percent nominal interest rates, debt represented yearly costs of around 2.5 percent of GDP, while theory and data were suggesting that its gross merits were questionable, at best. 1/

On the other hand, the decision to abandon the crawling peg had an immediate effect on the level and the variability of the nominal exchange rate. Chart 5 shows the annual and annualized quarterly rate of nominal devaluation. Clearly, nominal devaluation fell, from levels of over 35 percent in 1990 to negative values as soon as the central bank was made independent. Second, flexibility of the nominal exchange rate is enhanced to an important degree, as shown in the annualized higher frequency data.

The way in which this was put into effect is a two-stage progression towards nominal exchange rate bands. 2/ In the first stage, the central bank decided to sterilize by issuing dollar-denominated one-year debt (instead of high-powered money) in exchange for foreign reserves. Private citizens would give foreign exchange to the central bank and receive a one-year bond (denominated certificado de cambio, or CCAMB) with which they could:

- (i) wait until maturity and receive the future "redemption" exchange rate; 3/
- (ii) sell it to the central bank for 87.5 percent of the current redemption rate; and
- (iii) go to the market and receive the market exchange rate.

The market exchange rate would at all times lie between the "redemption" rate (announced daily and relevant for maturing CCAMBs) and 87.5 percent of that rate, which was the commitment on the part of the

1/ See, for instance, Calvo (1993).

2/ There was a brief period (4 months) during which the CB issued 3-month bonds.

3/ Call E_r the redemption rate of exchange, which is defined daily by the monetary authority, and call E_m the market rate. Then $E_r(t+1)$ is the rate at which the agent can redeem the bond one period from now when it matures, and $E_m(t)$ lies somewhere between $E_r(t)$ and $0.875E_r(t)$. On the other hand, $E_r(t+1)$ can be thought of as: $E_r(t+1) = E_r(t)[1 + e^E]$ with e^E the expected rate at which the authorities are to devalue the redemption rate. The price of the bond will, through arbitrage, depend upon domestic interest rates and the expected rate of devaluation, subject to the predefined bounds.

central bank. As the "redemption" (or so-called "official") rate continued to be devalued along the previous path, the nominal exchange rate was--for all practical purposes--revalued on the order of 5 percent, while interest rates fell; 90-day deposit rates are shown in Chart 6.

In the second stage, initiated in January 1994, the authorities decided to implement explicit exchange rate bands and eliminate the CCAMB mechanism. This is an important decision because it really states two policies: the first relates to the nature of sterilization, and the second to the nominal exchange rate itself. Sterilization would henceforth take place directly in the money market, not in the foreign exchange market, as had been the case since 1991, while the nominal exchange rate would be allowed more room to appreciate.

By these actions, the central bank was making clear to the public that it had shifted to a money-based operating scheme, and was implementing a more flexible exchange rate regime in support of this decision. 1/ On the other hand, the authorities decided that disinflation would be gradual so as to keep the monetary targets consistent with this gradualism. Currently, money targets are based on M1 and are roughly in line with the desired nominal GDP growth, in the range of 20-30 percent. 2/

c. The Colombian exchange rate band

There are three observable dimensions to an exchange rate band: its location (or central rate), its width, and its devaluation rate. The adoption of an exchange rate band implies specific decisions on the manner in which the three are defined. In Colombia, the specific decisions taken in January 1994, were the following:

(i) The central rate on the day the system began (January 25) was equal to the market rate of the previous day. At the outset, there was no administrative decision to affect the nominal exchange rate in either direction, though monetary aggregates were in excess of what was deemed consistent with gradual disinflation.

(ii) Around this central rate--call it $C(t)$ --bands were defined thus: $[0.93C(t), 1.07C(t)]$. The width of the band, therefore, is equal to 15 percent. 3/

1/ This is in clear contrast to the 1990-91 period, when the government decided to tighten monetary policy without exchange rate flexibility, in the context of high capital inflows and neutral fiscal policy.

2/ This, together with the crawling nature of bands, reflects the fact that the policy aims at a gradual reduction of inflation. Moreover, the authorities have not been strict in adhering to the money targets. Money growth has surpassed the desired rates throughout the year.

3/ This is roughly the size of the exchange rate bands in Chile and Israel. It is also the size that was finally adopted in the European exchange rate mechanism (ERM) following the crisis of 1992.

Chart 5

Recent Devaluation of the Colombian Peso

Source: Central Bank of Colombia

Chart 6

Colombia: Interest Rates and Exchange Rates

Interest Rate Differentials
90-Day Paper: Colombia-United States

Real Exchange Rates:
PPP and Tradables/Nontradables Index

Interest Rates
Average on 90-day deposits

Source: Central Bank of Colombia

(iii) The rate at which the band as a whole is to be devalued has been equal to 11 percent per annum since the beginning. The bounds for the next 10-day period are announced each day. 1/

Second, aside from observable characteristics, the band system encompasses several other features. From a policy perspective, two are of special interest: rules for intra-marginal intervention by the central bank, including conditions on special operations with the public sector, and the criteria to be used in an eventual realignment of the band as a whole. 2/

In Colombia, the band system allows for central bank intervention in the foreign exchange rate market. 3/ Since the system's inception, this intervention has been modest and has taken two basic forms: operations with the public sector and market intervention. As regards public sector operations, intervention has aimed at trying to insulate the process of exchange and interest rate determination from relatively large public sector capital account transactions. 4/ Market intervention, on the other hand, has attempted to shield the nominal exchange rate from shocks. 5/

Third, in relation to the criteria for a possible realignment, during the initial phase of the band system, the data show that this discussion is more pertinent in the sense of suggesting the possibility of a stabilization-oriented appreciation (SOA), instead of a competitiveness-oriented depreciation (COD), as is the usual case in a country exhibiting higher inflation than its partners. Inflation remains high and, despite high growth in money and credit, the nominal exchange rate has not shown a consistent tendency to depreciate. In a purely monetary model of the exchange rate, this is prima-facie evidence that the real exchange rate

1/ For a commitment in the context of a crawling band, this is a short period by international standards. In Chile, the period is one month, while in Israel, the period is one year. See Helpman, Leiderman and Bufman (1993).

2/ The inability the basic Krugman (1991) model to explain the empirical behavior of an exchange rate within a band (see Flood, Rose and Mathieson (1990)) has been attributed, among other factors, to intra-marginal intervention (see Dominguez and Kenen (1992)).

3/ This includes intervention in the spot and forward markets. It also allows the central bank a choice between direct or "open" intervention, or for "veiled" intervention through a financial intermediary.

4/ The capital account of the public sector exhibits a small surplus and this form of intervention has thus far been zero-sum.

5/ An example is the sale of rights to use a range of the electromagnetic spectrum for cellular communication. Given the purchasers incentive to devalue, in order to reduce the peso-equivalent of obligations to the government, the central bank was, during the time, willing to sell foreign exchange in order to offset a speculative drive of this sort.

is adjusting to (real) shocks. 1/ If nothing else, the discussion above suggests that whatever criteria are defined, they should encompass both realignment possibilities.

The evolution of the bands and the behavior of the nominal exchange rate in the market are shown in Chart 7. The prominent feature is the significant degree to which the data are skewed the lower part of the band. There can be two causes for this: a fundamental real appreciation, and an increase in nominal interest rate differentials. Interest rate differentials and a measure of tradable to nontradable prices are shown in Chart 6. 2/ Differentials are not substantially different from their historic levels, when devaluation was roughly in line with inflation (with the exception of the 1990-91 episode), whereas a historically high real appreciation is quite evident. Real appreciation seems to explain the recent behavior of the nominal exchange rate within the band.

As a consequence of the monetary pressures induced by the behavior of the exchange rate in regard to the lower bound of the target zone, on December 12, 1994 the band was realigned upwards (the central rate was appreciated) by 7 percent. In addition, the rate of crawl was increased to 13.5 percent per annum. The new band is also shown in Chart 7.

To summarize this section, we have discussed the nature of shocks and outlined the type of policies that were put into effect. As interpreted here, exchange rate policy shifted from the "initial conditions"-type of adjustment to an eclectic money-based policy mix. During the initial conditions stage (1989-91), there was inconsistent real exchange rate targeting, which accelerated inflationary pressures, while in the later stage (1992-94), the fundamental change was the introduction of exchange rate bands.

IV. How Big Has the Policy Shift Been?

A convenient way of summarizing the basic scenario facing the Colombian authorities would be the following: there is the need to reduce inflation, while at the same time to consolidate structural reform, in the context of external shocks which tend to appreciate the real exchange rate. In order to solve this problem, we have to coordinate the activities of two agents --the government and the central bank. We can formalize the issue in the following manner. The authorities have two objectives: the first is the defense of a "target" real exchange rate (e^*), viewed as a proxy for

1/ For example, if e is the nominal exchange rate and E measures expectations, with $e = m + e^E$, high growth of money (m) implies a nominal devaluation, unless there is an expectation of an upcoming nominal appreciation. With rational expectations, the source of this expectation has to be the real sector in this type of model.

2/ Domestic interest rate = market rate for 90-day deposits; foreign rate = 90-day CD. The data is monthly.

CHART 7
BANDS OF THE COLOMBIAN PESO 1991-94

Source: Central Bank of Colombia

structural reform, and the second is the reduction of inflation (π). Its simplified loss function can be written as:

$$L(t) = \alpha(t) [e(t) - e^*]^2 + \pi(t)^2 \quad (1)$$

in which $e = E/P$ is the real exchange rate, E the nominal exchange rate and P the price level. In this simple expression we capture the duality of objectives which as noted has characterized policy-making in Colombia. 1/ The parameter $\alpha(t)$ captures the "weight" the authorities assign to the real exchange rate target and thus measures the effective anti-inflationary independence of the central bank. The larger this parameter is, given a deviation of the RER from the "desired" level, the more inflationary will be the result.

The crucial point is the following: When the new central bank begins to operate, $\alpha(t)$, the weight given to defending the real exchange rate is "high", but once the new CB is in operation, $\alpha(t)$ falls in a possibly gradual manner. How can we lend some empirical content to this hypothesis? This is a difficult task, among other reasons, because the loss function is unobservable and the change is very recent. We can, however, attempt to approximate an early conjecture with some data.

To begin, we assume that there is an equilibrium real exchange rate, which we call ϵ . Furthermore, real exchange rate dynamics are characterized by an equilibrium tendency. Inflation, on the other hand, is an adjustment mechanism; i.e., inflation will rise when there is a deviation from the equilibrium. Finally, the real exchange rate can be affected in the short run by nominal exchange rate policy.

The initial state is defined by the pair $[\epsilon_0, \pi_0]$. At time 1, the authorities contemplate affecting the nominal exchange rate in a magnitude given by μ , while attempting to optimize on (1). Under these assumptions, we can model the time t real exchange rate as:

$$e_t = \delta e_{t-1} + (1-\delta)\epsilon + \mu_t \quad (2)$$

where we have assumed, for simplicity, that the equilibrium real exchange rate is fixed. 2/ Inflation at time t , on the other hand, can be expressed as:

1/ A broader presentation of the issue, as applied in the case Colombia is given in Carrasquilla (1993). A similar loss function is used in Cukierman, Kiguel and Leiderman (1993) in order to study the optimal width of the exchange rate band.

2/ The results are not changed if one assumes that the RER changes and that ϵ measures the shifting equilibrium rate. The important thing is that e^* differs.

$$\pi_t = \bar{\pi} + \theta(e_{t-1} - \epsilon) \quad (3)$$

If we assume a once and for all devaluation at time 1, difference equations (2) and (3) have the following solutions:

$$e_t = \epsilon + \delta^{t-1}\mu \quad (4)$$

$$\pi_t = \bar{\pi} + \theta\mu \left[\frac{\delta}{1-\delta} \right] \quad (5)$$

The initial nominal devaluation will depreciate the real exchange rate in the short run, but equilibrium is reestablished in the long run. 1/ Since we have assumed a "long-run" inflation rate, it is convenient to assume that there is a long-run rate of nominal devaluation equal to this long-run rate of inflation. Given the fact that the price level is simply the difference between the nominal exchange rate and the real exchange rate, then it is true that: 2/

$$\theta = (1-\delta) \quad (6)$$

Problem (1) can be interpreted as a dynamic problem in which the present value of all future flows is optimized. More precisely, we can rewrite (1) in extended form, using (2)-(6), and obtain: 3/

$$\begin{aligned} L(0) = & 0.5\alpha[(\epsilon+\mu)-e^*]^2 + 0.5\bar{\pi}^2 \\ & + \beta[0.5\alpha[(\epsilon+\delta\mu)-e^*]^2 + 0.5[\bar{\pi}+(1-\delta)\mu]^2] \\ & + \beta^2[0.5\alpha[(\epsilon+\delta^2\mu)-e^*]^2 + 0.5(\bar{\pi}+(1-\delta)\mu(1+\delta))] \\ & + \dots + \beta^{T-1}[0.5\alpha[\epsilon+\delta^{T-1}\mu]^2 + 0.5[\bar{\pi} + \mu\delta]^2] \end{aligned} \quad (7)$$

From equation (7) we can assume a baseline scenario in which $\mu=0$. If the initial exchange rate is equal to the equilibrium real exchange rate, then total losses are a function of the present value of the difference

1/ When, as assumed, $0 \leq \delta \leq 1$.

2/ From the definitions, $\pi(2) = P(2) - P(1) = E(2) - E(1) + (1-\delta)\mu$, with E the nominal exchange rate and P the price level. Interpreting $E(2) - E(1)$ as equal to long-run inflation, then the equivalence between equation (5) and the above at time period 2 implies equation (6).

3/ We can multiply by 0.5 to simplify the mechanics without affecting the results.

between the two and of the weight parameter α . More specifically, the baseline losses amount to:

$$L_B = \left[\frac{0.5\beta}{1-\beta} \right] [\alpha(\epsilon - e^*)^2 + \bar{\pi}^2] \quad (8)$$

If a nominal devaluation is implemented, losses change in two respects. First, losses derived from perceived exchange rate misalignment are reduced, and second, losses stemming from inflation increase. Assuming, again, that the initial real exchange rate is in equilibrium, differentiating (8) implies a first order condition (in a T-period horizon):

$$\frac{dL}{d\mu} = \sum_{j=0}^T \beta^j [\alpha [(\epsilon - e^*) + \delta^j \mu] \delta^j + [\bar{\pi} + (1-\delta)\mu I(j)]] = 0 \quad (9)$$

where $I(j)$ is the T-dimensional vector product $Q'z$, with Q partitioned such that $Q_i=0$ for all $i>j$ and $Q_i=1$ for all remaining cells, while $z = [1, \delta, \delta^2, \delta^3 \dots \delta^{T-1}]$.

The optimal solution for a one-shot devaluation derives from (9) and will be a nonlinear function $\mu^* = \mu[\alpha, \beta, \delta; \epsilon, e^*, \bar{\pi}]$. To visualize, let us derive the solution in a 2-period setting. We obtain:

$$\mu^* = \frac{(e^* - \epsilon) [\alpha(1+\beta\delta)] - \bar{\pi}(1-\delta)}{\alpha(1+\beta\delta^2) + (1-\delta)^2} \quad (10)$$

As expected, if the equilibrium rate ϵ is lower than the desired rate e^* , a one-shot devaluation will occur. Its size depends on the parameter vector. Specifically, we obtain the following relations:

$$\frac{d\mu^*}{d\alpha} = (e^* - \epsilon) \left[\frac{\beta\delta}{\alpha} \right] (\alpha + \beta\delta^2) + \frac{(1-\delta)\bar{\pi}}{\alpha^2} \quad (11)$$

$$\frac{d\mu^*}{d\beta} = (e^* - \epsilon) [2(1+\delta)\beta\delta^2 - \frac{\delta^2}{\alpha}(1-\delta)\bar{\pi}] \quad (12)$$

$$\frac{d\mu^*}{d\delta} = (e^* - \epsilon) \beta [(1+\beta\delta^2) + 2\delta(1+\beta\delta)] + \frac{1}{\alpha} \bar{\pi} [1 + 3\beta\delta^2 - 2\beta\delta] \quad (13)$$

$$\frac{d\mu^*}{de^*} = -\frac{d\mu^*}{d\epsilon} = \frac{\alpha(1+\beta\delta)}{\alpha(1+\beta\delta^2) + (1-\delta)^2} \quad (14)$$

Equation (11) states that optimal devaluation rises with the weight given to misalignment within the optimization problem. Equation (12) states that as the discount factor rises, optimal devaluation changes as a function of two factors which, in turn, change in opposite directions with the speed of macroeconomic adjustment in the economy, i.e., with parameter δ .

Recall the fact that "excess" inflation (i.e., observed net of long-run inflation) in period t is an inverse function of the speed by which the real exchange rate adjusts to the equilibrium (equations (3) and (6)). Given the fact that adjustment is faster the lower is δ , the important fact implied by equation (12) is that there is a critical speed of adjustment beyond which the relation between optimal devaluation and the rate of intertemporal discount becomes negative. If there is no adjustment ($\delta=1$), the relation achieves a maximum. As δ falls to zero, i.e., as adjustment increases and inflation becomes higher in order to achieve this end, then the relation is lower. At a critical point, explained by the fact that higher inflation implies higher intertemporal costs, it becomes negative.

Equation (13) states that for all plausible parameter values, as the speed of macroeconomic adjustment increases (δ falls), optimal devaluation falls. Indeed, it is composed of two terms, the first of which is positive and the sign of the second depends on the difference $(1+3\beta\delta^2 - 2\beta\delta)$ which, for (β, δ) between zero and one, is positive.

Equation (14) states that as misalignment is reduced (either by increases in ϵ or by reductions in e^*) optimal devaluation falls.

The degree to which the authorities are committed to combating inflation must be reflected in their preference structure. More specifically, a change of regime of the type we study in this paper, will be translated in the model above in a reduction of α and/or a reduction in e^* . In turn, the model predicts that changes in the stated direction in either of these variables will imply a reduction in the optimal one-shot devaluation.

The observed reduction in nominal devaluation that has occurred in Colombia's band system shows up clearly in Chart 5 above. In the model, this empirical observation is consistent with the stated hypothesis, implying the fact that the new institutional setting has established a tougher stance on inflation.

If the model is relevant, we can also make predictions regarding the behavior of inflation itself given the change in regime. Incorporating the solution for optimal devaluation in the 2-period model (10) in the inflation equation (3), we obtain:

$$\pi_2 = \bar{\pi} + (1-\delta)\mu^*(\alpha, e^*) \quad (15)$$

so that the reduction in optimal devaluation will imply lower inflation. Again, this is a stylized fact of the recent period, as can be seen in the data depicted in Chart 8.

Summarizing, we have argued that Colombia's policy stance has become more anti-inflationary due to shifts in preferences. This idea has been modeled and simple empirical procedures reveal that the model's implications, under the maintained hypothesis, are (at this early stage) consistent with the data. Some aspects deserve discussion, and the model could be expanded. First, real exchange rate shifts may stem from fiscal policy and a coordination issue would arise. Formally, a new equation:

$$\epsilon = \epsilon(f) \quad (16)$$

where line f is the fiscal stance, can be introduced in the model. If the real exchange rate reflects competitiveness, fiscal policy will have a fundamental role in assuring the consistency between structural reform and stabilization.

Second, exchange rate policy might be thought of as the smoothing of temporal real shocks, rather than an attempt at modifying real exchange rate levels. In this case, we would be given a sequence of real exchange rates $[\epsilon_0, \epsilon_1, \dots]$ and thus a sequence of misalignments and would have to choose a sequence of devaluations. Though formally equivalent, the specific solution is much more complex.

V. Concluding Remarks

This paper has sought to present a case study in which exchange rate bands are introduced as a consequence of important shifts in the objectives of stabilization policy, within a context of moderate inflation and stable growth. In formal terms, there are changes in the parameters of the authorities' utility function, reflecting shifts in societal preferences, while at the same time the state of nature in which they operate is subjected to important real innovations.

The approach we have taken is to define the initial conditions as a contract, by which the authorities and the private sector have established rules of behavior. We have called this the Colombian stabilization model. The incentive to adopt this contract on the part of authorities was higher seigniorage, which is measurable ex-post and an important source of revenue. On the part of the private sector, we have offered three explanations which relate, first, to the welfare benefits of a reduction in inflation variability, and second, to intrasectoral resource transfers in the context of an institutional setting that makes further inflationary surprises difficult.

The paper argues that this contract was rendered infeasible by rational preference changes and decisions that are reflected in the new constitution, as well as by parallel decisions to liberalize the economy. The most recent

period (1991-94) has been active in the stabilization policy front and this can be interpreted as an effort to adapt the policy framework to the modified state of nature.

In the last three years, the Colombian authorities have dispensed with their stabilization model, which was endowed with an internationally-unique degree of moderate inflation. They have instead shifted towards a target-zone regime with an independent central bank that is committed to the defense of lower and upper bounds. Though the approach has been gradual and the policy is eclectic, it is interpreted as a shift towards a monetary-based scheme of macro-policy.

At the same time the new policies were being implemented, the economy was being subjected to shocks that appreciated the real exchange rate and inflated asset prices to a significant extent. The shocks have included shifts in domestic expenditure functions, natural resource discoveries, and partially exogenous capital inflows. These inflows were the initial stimulus for trade and financial liberalization and public sector expenditure, while the presence of low interest rates propagated the shocks. As exchange rate policy has shifted more clearly towards a monetary anchor, interest rates have increased to an important extent, while the nominal exchange rate has achieved enhanced flexibility.

The Colombian experience contrasts with other recent cases in that bands were not adopted in the context of an ongoing disinflationary process. Rather, the Colombian bands are viewed as a mechanism or an initial condition for disinflation. The ultimate success in obtaining the combined policy objectives of lower inflation and sustainable growth-oriented structural reform depends upon fiscal policy to a deeper extent than under the previous stabilization model, in which seigniorage was high. In contrast to previous periods, fiscal policy discussions may have to contemplate issues of efficiency and privatization, aside from the conventional tax and expenditure decisions.

Chart 8

Colombia: Recent Inflation: CPI and Core Component

Source: Central Bank of Colombia

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