SEMINAR

on

Management of Volatility, Financial Liberalization and Growth in Emerging Economies

ECLAC Headquarters, Santiago
Conference Room II
April 24-25, 2003

THE CAPITAL ACCOUNT AND REAL MACROECONOMIC STABILIZATION: CHILE AND COLOMBIA

Ricardo Ffrench-Davis and Leonardo Villar

April 30, 2003
Draft for comments only

THE CAPITAL ACCOUNT AND REAL MACROECONOMIC STABILIZATION: CHILE AND COLOMBIA*

Ricardo Ffrench-Davis and Leonardo Villar**

Abstract

In 1995, when contagion from the tequila crisis was spreading in Latin America, both Chile and Colombia were exempt from contagion and presented high rates of economic growth. Many analysts attribute this positive performance to the fact that both had undertaken prudential measures to avoid excessive exposure to short term capital flows and pressures towards excessive real exchange rate appreciation: Both countries were using a reserve requirement on short term foreign indebtedness, crawling-bands, and other instruments for reducing domestic vulnerability to capital flows.

The parallelism between Chile and Colombia continued after the Asian crisis. In this period, despite the fact that short-term debt represented only a small share of foreign debt in both countries, vulnerability to the international financial crisis was high. In both, real interest rates rose sharply in 1998 and GDP growth was negative in 1999.

The similarities between Chile and Colombia, however, do not go much farther. During the 1990s, GDP growth rates were very high in Chile while in Colombia they were below historical standards. Chile had fiscal surpluses and high private savings, while in Colombia there was a rapidly increasing fiscal deficit and falling domestic savings. This paper presents a comparative analysis of the macroeconomic policies of Chile and Colombia during the 1990s, in particular the exchange rate regimes, the capital account regulations, and the gestation and management of financial crises.

* Paper prepared for the Seminar on *Management of Volatility, Financial Liberalization and Growth in Emerging Economies*, organized by ECLAC with the support of the Ford Foundation, ECLAC Headquarters, Conference Room II, Santiago, Chile April 24-25, 2003.

** Ffrench-Davis is Principal Regional Adviser of ECLAC and Professor of Economics of Universidad de Chile. Villar is Co-Director at the Board of Directors of Banco de la República of Colombia and Professor of Economics of Universidad de los Andes. Opinions expressed herein are exclusively of the authors and not of the institutions in which they work.

Contents

INTRODUCTION

In 1995, when contagion from the tequila crisis was spreading to almost all countries in Latin America, Chile and Colombia seemed to have the proper safeguards against financial volatility. Both countries were exempt from contagion and presented high rates of growth in that year, without significant signs of financial distress. Many analysts attribute this positive performance, to a large degree, to the fact that both countries had undertaken prudential measures in order to avoid too much exposure to short term capital flows. In particular, both countries were at that time using a reserve requirement on short term foreign indebtedness and several other instruments addressed to reduce domestic vulnerability to capital flows. Also, authorities in Chile and Colombia had effectively worked against the pressures of capital inflows towards excessive real appreciation of their domestic currencies.

The parallelism between Chile and Colombia continued to be present after the Asian and the Russian crises of 1997 and 1998. In this period, however, the results were not so positive. The central banks of both countries had been intervening in the foreign exchange markets through crawling currency bands for many years. In 1998, those bands became strait jackets from which it was extremely difficult to get rid of without losing credibility and without exposing the exchange markets to destabilizing dynamics. Despite the fact that short-term debt represented only a small share of total foreign debt in both countries, vulnerability to the international financial crisis was high in those years. Both in Chile and in Colombia, real interest rates rose sharply in 1998 and GDP growth was negative in 1999.

The similarities between Chile and Colombia, however, do not go much farther. During the nineties, GDP growth rates were very high in Chile while in Colombia they were below historical standards. Chile had fiscal surpluses during most of the decade while in the case of Colombia there was a rapidly increasing fiscal deficit. In Chile, private savings as a share of GDP were among the highest in the western hemisphere while in Colombia they presented a very negative trend and reached extremely low levels by historical national standards.

It may be said, thus, that the macroeconomic outcomes of Chile and Colombia were quite different but still, their response to the international financial crises of 1995 and 1998-99 shared several common elements. This may be due to the fact that both countries used similar instruments to regulate capital inflows and foreign exchange markets. This makes the comparative analysis of the two economies particularly attractive.

This paper has four sections. Section 1 is aimed to provide the reader with a broad view of the macroeconomic frameworks of Chile and Colombia during the nineties. Section 2 describes the evolution of both exchange rate regimes. Section 3 discusses the rationale of capital account regulations and includes a description of the policy instruments that were adopted in each country to regulate capital flows. Section 4 presents some concluding remarks.

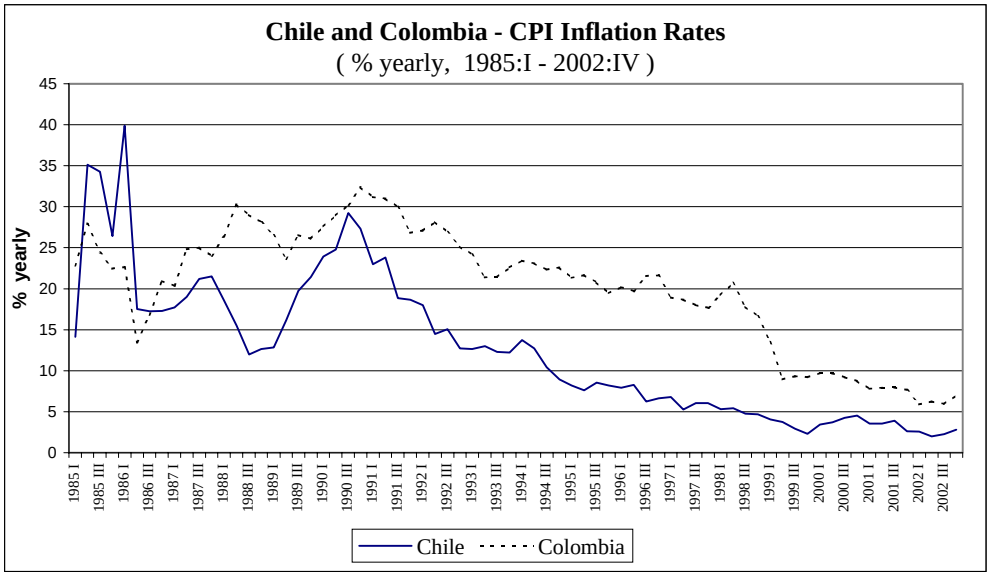
1. Macroeconomic environments of Chile and Colombia during the nineties[1]

a) Inflation and the role of central banks

The instruments used to regulate capital flows and foreign exchange markets along the 1990s were rather similar in Chile and Colombia. Even more generally, the central bank institutional arrangements and policies had many common elements in this period. Both countries had a long tradition of relatively --although not excessively-- high inflation rates, which had created strong inertia in the price setting processes. Both countries, also, created quite autonomous central banks. And, both central banks tried to avoid shock treatments and rather chose a gradual approach to the process of disinflation (Restrepo, 1999; Zahler, 1998).

Figure 1 presents the evolution of the CPI annual inflation rates. In average, those rates were quite similar in Chile and Colombia during the last few years of the 1980s. Between 1985 and 1989, they averaged 20.4% in the Chilean case and 24.1% in Colombia. In both countries, the inflation rate started a steady process of reduction in the early 1990s, which was however more rapid in Chile than in Colombia. Chile reached one-digit rates of inflation in 1994, while Colombia did in 1999. As we will see in section 2, the large capital inflows that dominated most of the nineties created pressures towards the appreciation of domestic currencies and helped the central banks in the process of reducing inflation. Still, neither of these countries used exchange rate shock treatments, namely "hard pegs", in order to reduce inflation. On the contrary, they managed to reduce inflation while liberalizing their exchange rate regimes, moving from the old crawling–peg systems towards crawling-bands, and then to floating schemes.

Figure 1



Source: Chile: IMF. Colombia: Banco de la República.

[1] Annex 1 shows the relative sizes of both countries: Colombia has a population and a GDP at current prices 2.8 times and 1.2 times those of Chile, respectively, but a GDP per capita that is only 2/3 that of Chile and 1/6 that of the USA (at World Bank PPP prices).

b) Economic activity

There were deep differences in the behavior of economic activity in Chile and Colombia during the nineties that reflected the contrasting macroeconomic frameworks of these countries.

In the Chilean case, there was a deep crisis in 1982-83, with a 13% drop in GDP and a severe financial crisis. As a consequence, a large gap between effective and potential GDP appeared in 1982 and persisted until the late 1980s, which discouraged capital formation and the growth of potential GDP. However, effective GDP started to recover since 1986, with a gradual reduction of the gap, and its disappearance in 1989. Between 1990 and 1997, both effective and potential GDP grew vigorously in parallel, with an average yearly rate of more than 8% Dynamism of the economy slowed down in 1998 and a mild recession --a drop in GDP of 1%-- was observed in 1999. Since 2000, effective GDP started to grow again but at a rate far below the levels that were observed before 1998, averaging 3% in the first three years of the new century. In any case, the yearly average growth between 1990 and 2002 was 5.7% (see Table 1). Despite the fact that this average was negatively affected by the recession of 1999 and the slow-down afterwards, the average rate of economic growth since 1990 is much higher than that of the two previous decades, and duplicates the 2.9% recorded in the 1973-89 period of the Pinochet regime (see Ffrench-Davis, 2002b, ch.1).

TABLE 1

CHILE AND COLOMBIA: GDP GROWTH RATES, 1974-2002

	CHILE	COLOMBIA
1974-81	3.3%	4.6%
1982-84	-3.9%	2.0%
1985-89	6.7%	4.4%
1990	3.7%	4.3%
1991	8.0%	2.0%
1992	12.3%	4.0%
1993	7.0%	5.4%
1994	5.7%	5.1%
1995	10.6%	5.2%
1996	7.4%	2.1%
1997	6.6%	3.4%
1998	3.2%	0.6%
1999	-0.8%	-4.2%
2000	4.2%	2.7%
2001 $_{p}$	3.1%	1.4%
2002 $_{p}$	2.1%	1.7%
Average 1991-2002	**5.7%**	**2.4%**

Source: Chile : Central Bank of Chile. Colombia: DANE.
p/ Preliminary

Colombia also experienced a boom period by the mid-1990s. It was however much milder and shorter than in Chile. Colombian GDP growth was relatively high only between 1993 and 1995, when it averaged 5.3% yearly. For the rest of the 1990s, it was well below the historical standards. Moreover, the recession in 1999, with a drop of 4.2%, was much deeper than in Chile and the recovery in more recent years has been slower. As a result, *per-capita* GDP in 2002 was still below that in 1994. The annual GDP growth rate between 1990 and 2002 averaged only 2.4%. This figure compares very unfavorably with the Chilean figure already mentioned. It also reflects a very poor behavior by Colombian historical standards. As illustrated in Table 1, even during the period of the Latin-American debt crisis, between 1982 and 1989, Colombia attained a higher average growth rate. Actually, in the 1980s Colombia exhibited the higher GDP growth in Latin America.

c) Fiscal balances

The outstanding behavior of economic activity in Chile during most of the nineties took place in an environment of fiscal surpluses. As shown in Table 2, until 1997 the central government expenditure as a share of GDP was kept relatively constant –at around 20% of GDP–. In average, there was a fiscal surplus of 2% of GDP. Since 1998, government expenditure rose gradually by three percentage points of GDP, reflecting increases in social expenditure as well as a counter-cyclical fiscal policy. Even so, the deficits of both the central government and the consolidated non-financial public sector were very moderate, notwithstanding the tax revenue foregone due to a gap between effective and potential GDP and a depressed price of copper.[2]

[2] Since 2000 the government has been working with an scheme of structural fiscal budget estimated with a "normal" price of copper and tax proceeds as if the effective GDP were the "potential" one.

TABLE 2

CHILE AND COLOMBIA: GOVERMENT EXPENDITURE AND DEFICIT, 1990-2002

(Shares of GDP in current pesos) [1]

	Central Goverment Expenditure		Central Goverment Surplus (+) or Deficit (-) [2]		Non-Financial Public Sector Surplus (+) or Deficit (-) [2]	
	Chile	**Colombia**	**Chile**	**Colombia**	**Chile**	**Colombia**
1990	20.2%	9.6%	0.8%	-0.8%	1.2%	-0.6%
1991	20.6%	10.6%	1.5%	-0.2%	1.5%	0.0%
1992	20.3%	12.4%	2.1%	-1.7%	2.5%	-0.2%
1993	20.5%	12.3%	1.8%	-0.7%	2.1%	0.3%
1994	19.9%	12.8%	1.6%	-1.4%	1.9%	0.1%
1995	18.6%	13.6%	2.4%	-2.2%	2.4%	-0.3%
1996	19.6%	15.7%	2.1%	-3.6%	1.6%	-1.7%
1997	19.9%	16.3%	1.8%	-3.7%	0.8%	-3.3%
1998	21.3%	17.0%	0.4%	-4.9%	-0.6%	-3.7%
1999	22.6%	19.2%	-1.4%	-5.9%	-1.5%	-4.1%
2000 $_{p}$	22.4%	19.3%	0.1%	-6.0%	-0.6%	-4.2%
2001 $_{p}$	23.5%	21.2%	-0.3%	-5.9%	-0.7%	-4.3%
2002 $_{p}$	23.0%	21.0%	-0.8%	-5.6%	n.d.	-4.0%

Source: Chile: Dirección de Presupuesto (DIPRES) and Central Bank of Chile. Colombia: DNP - CONFIS (Cash basis) and DANE.

1/ GDP figures at current pesos have been adjusted to make old data compatible with the methodology adopted in 1996 and 1994, respectively.

2/ Does not include privatizations

p/ Preliminary

In contrast with Chile, the poor performance of economic activity in Colombia along the 1990s coincided with an unprecedented increase in government expenditure and fiscal deficits. The Colombian tradition of prudent fiscal policy was broken since the beginning of the decade. Central government expenditure, that before 1990 had been close merely to 10% of GDP for more than three decades, increased to 21% in 2002 (similar to the Chilean level). Several analysts have explained this unprecedented increase in public spending as a consequence of the Constitutional reform of 1991, which accelerated the process of fiscal decentralization and incorporated into the Constitution several new rights of the Colombian citizens that should be covered with public resources. As the increase in expenditure was not matched by an equivalent increase in public revenues, the central government fiscal deficit rose from less than 1% of GDP in the early 1990s to almost 6% of GDP between 1999 and 2002. In turn, the consolidated non-financial public sector, which had a surplus until 1994, presents a deficit over 4% of GDP since 1999.

d) Savings and Investment

The contrasting performance of economic activity and fiscal accounts in Chile and Colombia implied a very different behavior of savings and investment in each country. With an economy persistently operating at full employment of installed capacity, high rates of GDP growth and outstanding fiscal surpluses, savings and investment rates in the Chilean case were in the nineties notably above historical standards. As shown in Table 3, fixed capital formation in Chile reached historical peaks in the 1990s, averaging 28.5% in 1991-98 (in 1986 prices). This figure contrasts with 19.9% during the last quinquenium of the Pinochet era (1985-1989) and with an even lower average in the prior years. As could be expected, the crisis of 1999 implied a significant decline in investment. Even so, fixed capital formation as a share of GDP between 1999 and 2002 was well above its level of the 1980s.[3]

TABLE 3

CHILE AND COLOMBIA: GROSS FIXED CAPITAL FORMATION, 1986-2002
(Shares of GDP at constant prices)

	Chile		Colombia	
	Constant prices of 1986	**Constant prices of 1996**	**Constant prices of 1975**	**Constant prices of 1994**
1985 - 1989	19.9%		15.8%	
1990	24.2%		14.0%	
1991	22.4%		12.9%	
1992	24.7%		13.9%	17.9%
1993	27.2%		18.0%	21.8%
1994	27.4%		20.7%	23.3%
1995	30.6%		20.2%	22.3%
1996	31.0%	26.4%	18.5%	21.6%
1997	32.2%	27.4%		20.4%
1998	32.2%	27.0%		19.0%
1999	26.9%	22.2%		13.0%
2000	26.6%	23.0%		12.6%
2001 p		22.9%		13.8%
2002* p		22.7%		14.0%

Source: Chile: Central Bank of Chile and IMF-IFS. Colombia: DANE -DNP
p/ Preliminary.

*/ For Colombia, projection from National Planning Department.

Fixed investment in Colombia presented large swings, with a significant increase until the mid-1990s and a rapid decline thereafter. However, even during the boom period, between 1993

[3] It is estimated that potential GDP grew 7% until the arrival of the negative shock brought by the Asian Crisis, and did adjust downward to 4% thereafter (see Ffrench-Davis, 2002b, ch. 1).

and 1995, the Colombian levels of fixed capital formation as a share of GDP were much lower than in Chile. In addition, the magnitude of the drop that took place in Colombia with the crisis was dramatic. Since 1999, fixed investment stayed below 14% of GDP. These low levels of investment will certainly make it much more difficult for Colombia to recover high and sustainable rates of economic growth in the near future.

Table 4 presents the national savings rates of Chile and Colombia as shares of GDP in current pesos.[4] The figures suggest that the savings rate went down by about five percentage points of GDP between 1990 and 1995 and by nearly ten additional percentage points of GDP during the second half of the decade. In other words, it is quite clear that the Colombian savings rate plummeted in a dramatic way during the 1990s.[5] In the Chilean case, in contrast, the savings rate in the 1990s was systematically higher than in the 1980s.

TABLE 4

CHILE AND COLOMBIA: GROSS NATIONAL SAVINGS, 1986-2002
(Shares of GDP at current prices)

	Chile		**Colombia**	
	Methodology 1986	**Methodology 1996**	**Methodology 1975**	**Methodology 1994**
1985-1989	16.5%		21.5%	
1990	23.2%		21.4%	
1991	22.3%		22.7%	
1992	21.5%		19.0%	
1993	20.9%		19.5%	
1994	21.1%		18.6%	23.0%
1995	23.8%		16.9%	23.0%
1996	21.2%	23.1%	12.8%	18.3%
1997	21.6%	23.1%		16.2%
1998	21.2%	21.8%		15.3%
1999	21.8%	21.0%		13.4%
2000 p	21.9%	20.6%		13.8% *
2001 p		20.0%		12.6% *
2002 p		21.0%		14.6% *

Source: Chile: Central Bank of Chile and IMF-IFS. Colombia: DANE - DNP.
p/ Preliminary.
***** Preliminary estimates by the National Departament of Planning.

[4] In both countries, National Accounts at different base years give very different ratios.

[5] As far as the increase in public spending in Colombia was not matched by an equivalent increase in taxes, it directly reduced public savings. The increase in taxes, in turn, reduced private disposable income and private savings. Private savings may have been reduced also as a consequence of the relaxation of liquidity constraints because of the new access to foreign financing, the financial reform, the severance payments reform and the abolition of double taxation on the distribution of corporate dividends. Additionally, the effects on relative prices of durable consumption goods after the opening up of the economy and the expectations of an oil boom after the discovery of oil reserves in 1993 probably contributed to further explain the drop in the savings rate during the first half of the 1990s. The reduction in GDP growth, in turn, may help to explain the fall in savings ratios during the second half of the decade. See several papers published in Sánchez (1998). Interestingly, nearly all these factors may contribute to explain the drop in domestic savings in Chile in the 1970s.

e) Financial sector

An outstanding contrast between Chile and Colombia during the nineties has to do with the behavior of the financial sector. In the Colombian case, the reduction in domestic savings and the rise in investment during the first half of the nineties were accompanied by an impressive financial boom. Outstanding credit of the financial sector rose from around 24% of GDP at the beginning of the decade to 40% in 1997. During the subsequent crisis this figure went down dramatically back to 25%, while the quality of the portfolio of the financial system deteriorated substantially (Table 5).

TABLE 5

CHILE AND COLOMBIA: FINANCIAL SECTOR, 1990-2001

	Outstanding Credit/GDP		Non performing Loans / Outstanding Credit	
	Chile	**Colombia**	**Chile**	**Colombia**
1990	64.7%	24.8%	2.1%	3.6%
1991	58.3%	22.7%	1.8%	3.9%
1992	56.5%	24.4%	1.2%	3.0%
1993	60.5%	28.4%	0.8%	2.0%
1994	55.1%	31.9%	1.0%	2.3%
1995	50.2%	35.5%	0.9%	3.5%
1996	52.8%	37.3%	1.0%	4.7%
1997	54.6%	39.6%	1.0%	4.9%
1998	59.8%	37.8%	1.4%	8.2%
1999	66.7%	33.9%	1.7%	11.1%
2000	65.4%	27.3%	1.7%	9.1%
2001	69.4%	25.3%	1.6%	8.3%

Source: Chile:Central Bank of Chile, Banks and Financial Institutions Superintendence. Colombia: Banco de la República.

In the Chilean case, in contrast, there was a moderate domestic credit boom during the second half of the nineties and the deterioration of quality of the loan portfolio during the recent crisis was extremely mild. One main reason behind this strength is the strict prudential supervision in the financial system, built after the generalized collapse of the banking sector in 1983-86 as a result of the debt crisis. Thus, while non-performing loans as a share of outstanding credit reached 11% in Colombia in 1999, they did not surpass 1.7% in Chile[6].

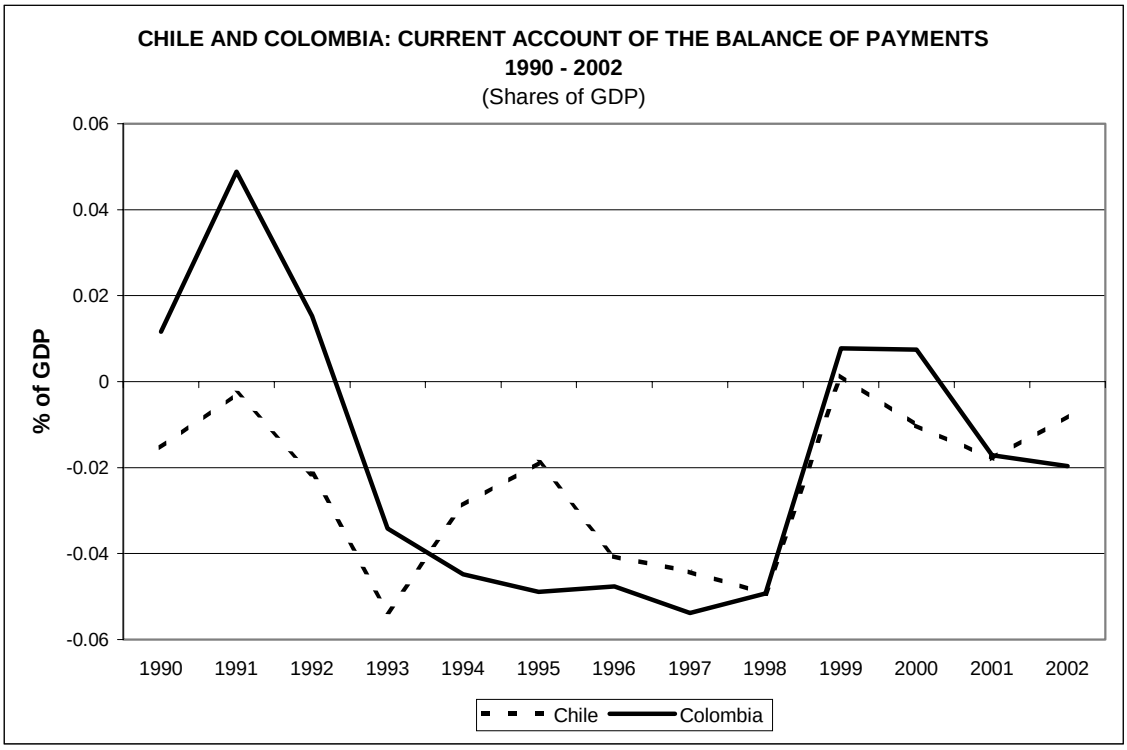
[6] There is heterogeneity in the definition of non-performing loans. In Chile it refers to the installments of loans overdue for more than 90 days. In Colombia, the definition changed several times along the nineties.

f) Foreign Savings and the Current Account

Domestic savings in both Chile and Colombia were complemented with foreign savings in order to finance investment. The current account deficits exhibited in the balance of payments were significant, reflecting the ample availability of resources for emerging economies in the international capital markets between 1991 and 1997.

Despite the similarities, the paths followed by the current account deficits were different in each country. In the Chilean case, probably as a consequence of very active regulations on capital inflows, to which we will refer later, the current account deficit was kept under control during the first half of the decade. In 1993, due to a sharp drop in the copper prices, the deficit went up to 5.4% of GDP. In general, however, the current account deficits were below 3% of GDP until 1995, averaging 2.4% in the 1990-95 period (see Figure 2). Only after the tequila crisis, the current account deficits in Chile rose to less sustainable levels, close to 5% of GDP between 1996 and 1998. As we will see later, this coincides with the period in which the regulation of capital inflows became less active.

Figure 2



Source: Chile: Central Bank of Chile. Colombia: Banco de la República.

In the Colombian case, in contrast, the process of deterioration of the current account was particularly acute during the first half of the decade. Between 1991 and 1994, a current account surplus of 4.9% of GDP was transformed into a deficit of 4.5% of GDP, coinciding with a

process of capital flows liberalization. After 1994, the current account deficit was kept around 5% of GDP until 1998.

The drop in international liquidity after the Asian and the Russian crises implied drastic adjustments in the current account deficits. In 1999, such adjustments represented 5.0 and 5.7 percentage points of GDP in Chile and Colombia, respectively. As we will see in the next section, the paths followed by the current account balances of Chile and Colombia during the 1990s were matched by the behavior of their real exchange rates.

2. Exchange Rate Regimes.

During most of the 1990s, the exchange rate regimes of Chile and Colombia were dominated by the currency bands, which in both countries were dismantled and replaced by floating regimes only in 1999. This section shows that those regimes shared many common elements, although each one of them had some idiosyncratic aspects.

a) Chilean exchange rate regime

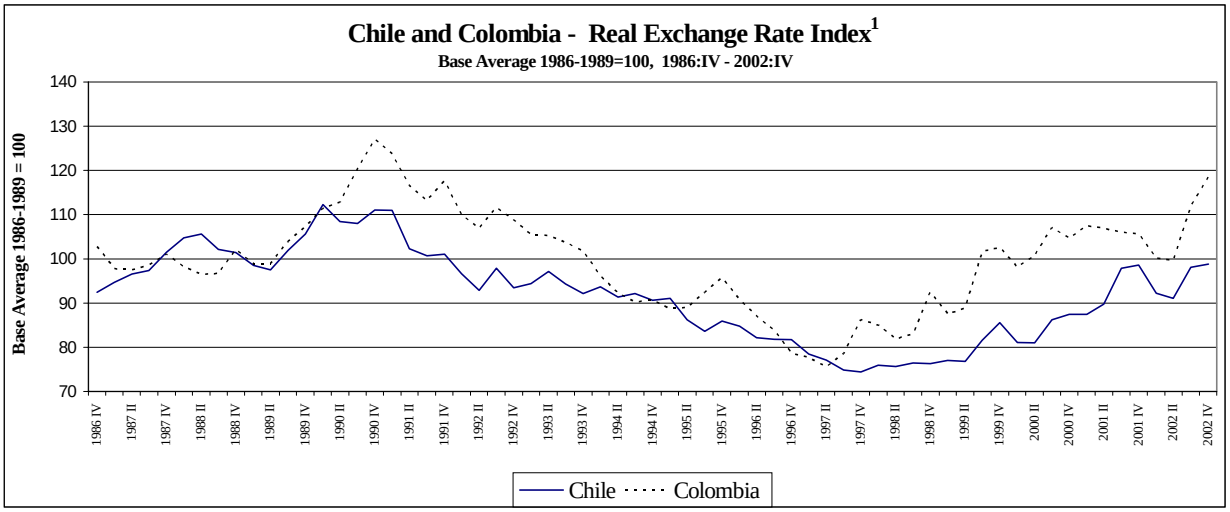
Chile introduced a currency band much earlier than Colombia. The Chilean currency band was introduced just after the crisis of 1982-83, with a minor width. Since the beginning, the upper and the lower bounds of the band were devalued daily, according to an estimate of net inflation. Discrete nominal devaluations, however, were added at various junctures, serving to achieve the notable real depreciation of 130% between 1982 and 1988. In 1989, moreover, the band was widened to ±5%, allowing for an orderly and not traumatic depreciation of the peso, which was required to compensate for the rise in imports associated to a sharp increase in economic activity in 1988-89.

The evolution of the foreign exchange regime since 1990 reflected the purpose of the central bank to regulate the surge in capital inflows. Since June 1991, as we will see in the next chapter, an unremunerated reserve requirement was established on foreign loans. In addition, a tax on domestic loans for operations of up to one year was extended to foreign loans. It was in this context that the currency band was widened in January 1992, to ±10%. In contrast with what had happened three years earlier, the widening of the band in this case was addressed to allow for some additional appreciation of the peso. Moreover, in June 1992, the dollar was replaced by a basket of currencies as the currency standard for the exchange rate. Replacing the dollar with the basket meant greater stability for the real exchange rate as perceived by exporters and, more generally, by producers in the tradable sectors. At the same time, this introduced greater uncertainty in the peso-dollar exchange rate, thereby reducing incentives for interest rate arbitrage and short-term capital movements (Ffrench-Davis and Tapia, 2001, p. 87). Remember that, by this time, capital inflows were very large and it was already clear that the Chilean economy was booming. As we will see in the next section, the objective of deterring interest rate arbitrage was being simultaneously addressed through the reserve requirement on capital inflows, thus providing space for an active counter-cyclical monetary policy. In the following years, capital inflows continued and there was some additional real exchange rate appreciation. It was however moderate, implying an average rate of real appreciation of 2.5% per year between

1989 and 1995.[7] Consistently, as said, the current account deficit between 1990 and 1995 averaged only 2.4% of GDP.[8]

Following the tequila crisis, the behavior of the Chilean economy was so strong that expectations of appreciation and capital inflows were greatly reinforced after 1995. The Central Bank kept accumulating significant amounts of international reserves with the exchange rate at the bottom of the band until the end of 1997. In practice, during that period, the bottom end of the band acted as a sort of crawling-peg regime, with the market rate being determined by the central bank purchases. Even so, the Chilean peso appreciated 20% in real terms between March 1995 and October 1997, much faster than before the tequila crisis (see Figures 3 and 4).

Figure 3



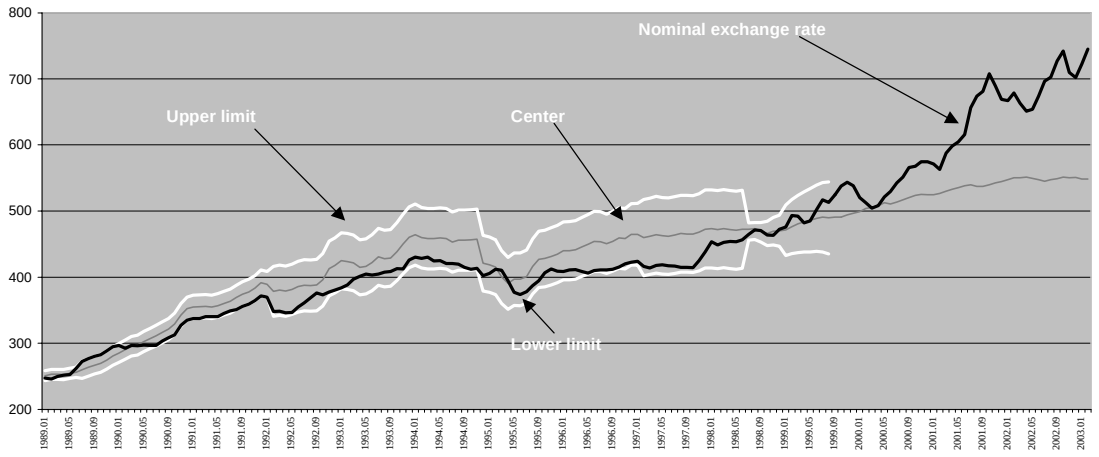
Source: Chile: Central Bank of Chile; Colombia: Banco de la República

1/ Average real exchange rate with main trading partners, computed with CPI. A higher real exchange rate indicates a more deppreciated domestic currency.

[7] Figures of the Central Bank that measure external inflation on the basis of wholesale prices. ECLAC figures provide a lower estimate of appreciation –an annual average of 1%-- because uses CPI indexes for measuring external inflation.

[8] Appreciation of the real rate was "equilibrating" in the sense that it was consistent with the net increases of productivity in Chile, as the sustainable external deficit suggests. Keeping a low current account deficit was explicitly among the objectives of the exchange rate policy of the Central Bank in that period (see Zahler, 1998).

Figure 4
Chile: Currency bands and nominal exchange rates, 1989-2003
(CH$/US$)



Source: Authors' calculations based on official data from the Central Bank of Chile.

In this period, between 1995 and 1997, several parameters of the band were adjusted in order to allow for some additional appreciation of the peso and to reduce monetary pressures from the accumulation of foreign reserves. Since November 1995, the rate of nominal depreciation of the band was designed to allow for a 2 percent real appreciation per year, based on the assumption that Chilean productivity growth would be more rapid than that of its trading partners. In addition, the external inflation used to calculate the referential exchange rate was overestimated, which generated considerable additional revaluation. Furthermore, in early 1997, the band was broadened from ±10% to ±12.5% in order to allow for an additional appreciation (see Ffrench-Davis and Tapia, 2001, pp. 95-96).

Theoretically, a currency band is a mechanism that allows for exchange rate flexibility within the limits of the band (Williamson, 1996, p. 114). As had happened before, however, the broadening of the Chilean exchange rate band in 1997 was a mechanism to allow for further appreciation of the peso and to reduce monetary pressures. When the exchange rate expectations shifted in Chile in late 1997, following the Asian crisis, the Central Bank started to sell abundant reserves to avoid a depreciation of the exchange rate even within the lower half of the exchange rate band in order to prevent a rise in the inflation rate.

The anti-inflationary bias of the Central Bank interventions in the foreign exchange market became even more evident in mid-1998, when the band was drastically shortened, right at the moment of greatest uncertainty, in order to send a signal that the authorities would not give in to pressures in the market towards devaluation. This measure implied that the macroeconomic adjustment process that was needed as a consequence of the drastic decline in the terms of trade and of the shortage of capital flows would have to be led by interest rate hikes and monetary

contraction.[9] Then, the strategy chosen by the authorities of the Bank was more consistent with a fixed exchange rate regime than with a currency band system. Naturally, credibility in the new band rapidly deteriorated. It was widened again at the end of 1998 and then suspended in September 1999 in order to allow for the exchange rate to adjust freely, now in the context of strongly depressed domestic absorption.

Most of the depreciation in the real exchange rate in Chile in recent years took place after the dismantlement of the currency band. By mid-2002 the real rate had returned to the average level of 1994. This highlights that the band had been led to an unsustainable range in 1996-97. Actually, in the last 24 months (2001.4-2003.3), where the real exchange rate has been around the level of 1991-94, the difference between the nominal exchange rate and the "center of the band" (still published by the Central Bank) has averaged 25%. Thus, it was clear that the center of the band had become an "outlier" price, leaving no space inside the band to make feasible the necessary exchange rate adjustment.

b) Colombian exchange rate regime

As in Chile, the Colombian peso experienced a notable real devaluation during the 1980s, which was required by the shortage of foreign savings dominating that decade. The devaluation of the Colombian peso was managed within the traditional crawling-peg regime that had been introduced since 1967 and lasted until 1991. In contrast with Chile, however, an important characteristic of the Colombian regime in that period was that it avoided any discrete jump in the exchange rate. Even in 1985, when nominal devaluation was almost 50%, it was instrumented through small and continuous daily movements.

In 1989, Colombia decided to depreciate its real exchange rate even further in order to compensate for the decline in coffee prices after the collapse of the International Coffee Agreement and to prevent negative effects of the opening up of the economy on the trade balance and on the domestic production of tradables.[10] However, this strategy rapidly proved inconsistent with the contractionary monetary policy that the central bank, was trying to undertake in order to curb inflationary pressures (see Villar and Rincón, 2003).

As in Chile, large capital inflows and pressures towards appreciation of the peso dominated during most of the nineties, until mid-1997. Most of the adjustments in the Colombian exchange rate regime were introduced in order to manage those pressures.

[9] The Central Bank response to the crisis has been an issue of debate. On the one hand, authorities state that an adjustment in the exchange rate would have caused both pressure on prices and costs associated to currency mismatches in large non-tradable firms. On the other, Ffrench-Davis and Tapia (2001) point out that these goals were overrated and achieved at the expense of an excessive adjustment in the productive sector. Corbo and Tessada (2002) estimate a VAR model for Chile and conclude that i) the defense of the exchange rate in January 1998 was well justified by potential inflationary costs and, ii) however, a devaluation in mid-1998 would have not represented an inflationary risk.

[10] The purpose was to outweigh the impact on the real effective exchange rate of the sharp reduction in tariffs and the abolition of quantitative controls (Ocampo and Villar, 1992).

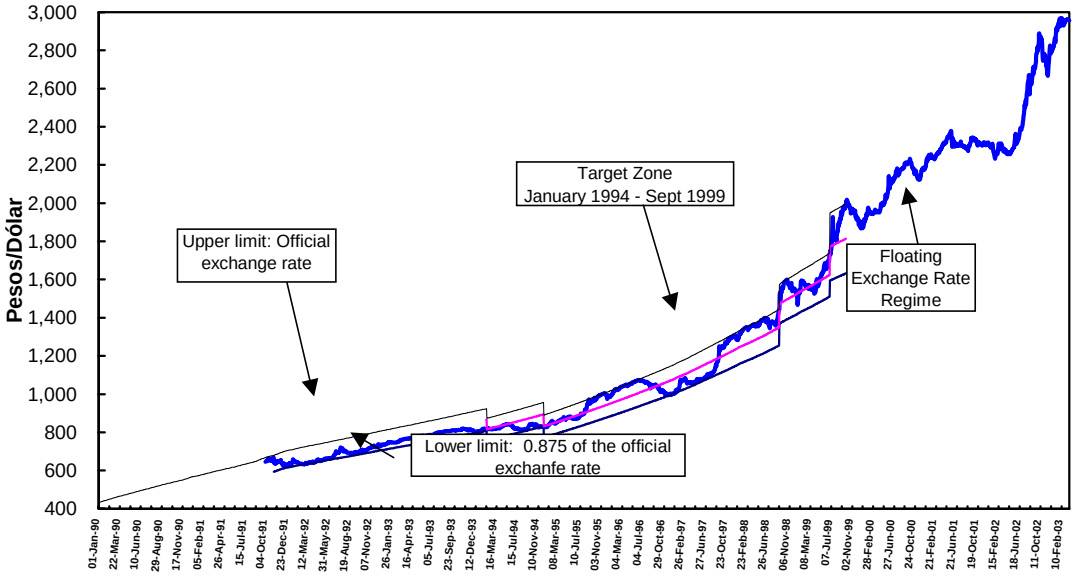
In June 1991, the traditional crawling-peg regime was modified in a substantial manner. The Banco de la República would exchange dollars for dollar-denominated bonds, the "Certificados de Cambio", which could only be redeemed at the "official exchange rate" after a given maturity. The exchange rate would be in practice determined by the secondary market for those bonds. The new regime, which was in place until January 1994, implied a nominal appreciation of the Colombian peso, which marked an important shift in the policy strategy that had been in place during almost a quarter of a century.[11] During this period, there was a drastic relaxation in monetary policy addressed to reduce domestic interest rates and to discourage foreign capital inflows attracted by interest rate arbitrage. However, between 1991 and 1994, the real depreciation of the peso that had taken place in 1989 and 1990 was entirely reversed (see above Figure 3). In January 1994, the Banco de la República decided to discontinue the mechanism of the "Certificados de Cambio" and introduced an explicit exchange rate band system (Urrutia, 1995). The amplitude of the band was set at ±7%. The center was the current level of the market exchange rate the day in which the decision was taken and it increased every day at a predetermined crawling rate. In December 1994, however, the exchange rate band was shifted downwards as a consequence of the increase in long-term capital flows and of the expectations of additional inflows of foreign exchange associated to the development of recently discovered oil camps.

The currency band established in December 1994 was kept without important changes until September 1998. During more than three years and a half, therefore, it helped to reduce the medium-term instability of the exchange rate in an effective manner (see Figure 5).[12] For instance, the upper limit of the band helped to avoid an extreme depreciation during the first half of 1996, when there were speculative pressures related to the process against President Samper for allegedly illegal resources in his presidential campaign. Also, few months later, the lower bound of the band helped to avoid extreme appreciation of the peso when it became clear that President Samper would stay in office and large inflows were coming into the country, associated with the privatization of important public companies.

[11] The maturity of the "Certificados" was initially set at 90 days. Three months later, in September 1991, it was raised to one year, which implied an additional nominal appreciation of the peso.

[12] As discussed below (section 3a), the medium-term instability of the exchange rate to which we refer here differs from the short-run exchange rate volatility. As traditionally measured, the short-run volatility of the exchange rate did not change significantly between the period of the currency band and the free floating period that came later. See Rowland (2002), p. 14 and graph 3.3.

Figure 5
COLOMBIA : Currency Bands and Nominal Exchanges Rates
January 1990 - March 2003



Source: Banco de la República

Later on, after the Asian crisis had exploded, in the final months of 1997 and during the first half of 1998, the role of the currency band was much more controversial. The exchange rate had depreciated and was hitting the upper limit of the band, so the central bank was forced to sell large amounts of foreign exchange while implementing a highly contractive monetary policy. Several analysts have argued that the costs of the adjustment process that took place in that period would have been lower in the absence of the currency band. The counterfactual does not exist and there is no definitive answer against or in favor of this argument. Nonetheless, it is important to have in mind that, due to the slope and of the amplitude of the band, the depreciation of the Colombian peso was quite substantial. The peso price of the dollar by mid-1998 had depreciated by about 8% in real terms, without any change in the currency band mechanism (see Figure 3, above). Also, it is very important to have in mind that the dangers of an overshooting of the nominal exchange rate, with sizeable inflationary and destabilizing effects, were particularly large in that period. Not only because of the imbalances that characterized the Colombian economy, particularly in the fiscal front, but also because of the noticeable political uncertainty around the presidential elections of mid-1998.

The upward shift in the currency band was decided in September 1998 when a new government was in office and a macroeconomic program for 1999 had been completed and gained some credibility. By that moment, it was also clear that the drop in capital inflows to Latin America as a consequence of the Asian and Russian crises was profound and long-lasting. After a short-lived overshooting, the new currency band worked smoothly during the last quarter

of 1998 and the first quarter of 1999. The Central Bank stopped losing reserves and the domestic interest rate experienced a relatively rapid downward trend.

In the second quarter of 1999, the financial crisis, the deeper than expected recession and the further deterioration of the fiscal accounts, damaged the credibility in the macroeconomic program and new pressures towards a devaluation appeared. In June, the band was again shifted upwards and its amplitude was widened from ±7% to ±10%. Simultaneously, the government and the central bank announced that they had agreed to design an IMF backed program in order to recover confidence from the international financial community. By late September, immediately after the agreement with the IMF was reached, the currency band was dismantled. Having been shifted twice in less than a year, its credibility had eroded. Also, at the international level, the initial success of other Latin-American countries with their new floating regimes (notably Brazil in February and Chile in early September) had created strong pressures against the band system, both in the market and in the multilateral financial institutions. This facilitated the appearance of speculative attacks, even though most analysts considered that the real exchange rate in Colombia was already close to its long-run equilibrium level. Interestingly enough, this was verified *ex-post de facto*. Since the currency band was abolished, the exchange rate fluctuated inside the (would have been) dismantled band during more than two years, despite the fact that the domestic interest rate experienced a very rapid decline.

In practice, therefore, the real depreciation of the peso that took place as a consequence of the crisis was instrumented in the Colombian case within the currency bands system.[13] Subsequently, between September 1999 and May 2002, the real exchange rate fluctuated around the levels reached at that time (Figure 3 above). After May 2002, the contagion from the Brazilian crisis and a higher degree of uncertainty on the sustainability of the Colombian foreign debt, led to an additional real depreciation of the peso, which was reinforced by the end of the year with the effects of the Venezuelan crisis.

The exchange rate regime that has been in place in Colombia since the last quarter of 1999 is a floating regime in the sense that one of its basic principles is that the central bank does not target any specific nominal or real exchange rate. It contemplates, however, two very transparent and publicly known mechanisms for central bank intervention: (i) The first one allows the central bank to buy or sell international reserves through *put* or *call options* that are auctioned in limited amounts of foreign exchange at the end of each month. This mechanism has been used mainly to buy international reserves and to recover the international liquidity indicators that Colombia had before the 1998/99 crisis. Since February 2003, however, given the rapid pace of depreciation, the Banco de la República has also used the call options in order to mitigate pressures on the exchange rate that may risk the attainment of the inflation target. (ii)The second mechanism is addressed to reduce extreme short-run volatility of the exchange rate and consists of additional auctions of *put* or *call* foreign exchange options which are triggered whenever the market exchange rate deviates in an 'unusual' manner from its own 20-day moving average.[14] In practice, exchange rate short-run volatility has been low and these

[13] By the third quarter of 1999, before the currency band was dismantled, the real exchange rate had already recovered the levels of the late 1980s.

[14] An 'unusual' deviation was initially defined as a 5% deviation and since December 2001 was redefined as a 4% deviation.

trigger conditions have only taken place in the second half of 2002, when contagion from the Brazilian crisis implied a rapid depreciation of the peso.

c) Common and contrasting elements of the exchange rate regimes in Chile and Colombia

From the above description, it is possible to highlight some common and some contrasting features of the exchange rate regimes that Chile and Colombia had in the 1990s:

(i) The currency bands were the instruments used in both countries in the middle of a gradual process of liberalization of their foreign exchange markets, which went sequentially from the crawling-peg to the crawling-bands and to floating regimes.

(ii) During most of the 1990s, central bank interventions in both Chile and Colombia implied large amounts of international reserve accumulation. In this sense, the currency bands worked in practice as limits against appreciation of the exchange rate and not as anti-inflationary devices.

(iii) As accumulation of international reserves, led by the capital surges to emerging economies, created monetary pressures and quasi-fiscal costs of sterilizing monetary intervention, it became more difficult for the central banks to resist the market pressure for appreciation. It was evident that giving up to those pressures would contribute to reduce further inflation. That is why the currency bands were widened and shifted downwards in several opportunities. In this sense, both central banks were forced to give-up to the pressures from a large supply of external funding, allowing for a sizeable appreciation of the real exchange rate during most of the decade in Colombia and in the second half in Chile.[15]

(iv) The degree of flexibility of the foreign exchange market in the inner part of the bands proved to be much lower in Chile than in Colombia. This is so not only because of the fact that the exchange rate stayed much time at the bottom of the band (in 1990-91 and 95-97), but because of the very active and biased intraband interventions (that were observed particularly in 1997 and 1998). In contrast, an outstanding characteristic of the Colombian currency band was a remarkable flexibility of the exchange rate inside the band, in which the Banco de la República only intervened with small amounts of resources in order to reduce short-run volatility. The different degrees of flexibility of the exchange rate regimes of Chile and Colombia are also mirrored in the fact that both the accumulation of international reserves between 1990 and 1997 and the losses in 1998 and 1999 were much larger in Chile than in Colombia (see below, Table 6). This suggests that the Chilean central bank was more active in trying to stabilize the exchange rate market than the Colombian one.

(v) Both in the Chilean and in the Colombian cases, the limits of the currency bands seemed to be more efficient to control pressures towards currency appreciation

[15] Between 1992 and 1994, Chile managed to avoid a strong appreciation of the peso but had to pay a rather high quasi-fiscal cost.

than towards currency depreciation (see Ffrench-Davis, 2003, pp.14-15). Maintaining the credibility in the upper limit of the band when the market rate was creating upward pressures became extremely costly in terms of international reserves losses and of domestic interest rate hikes. This has to do with the fact that the dilemma for a central bank is more difficult to solve when it faces a speculative attack against the upper limit of the currency band than when the attack is against the bottom boundary. In the second case, if the central bank gives in to the pressures of the market, either by shifting or by widening the band, the band obviously looses some credibility but the credibility in the central bank as a guardian of the purchasing power of the domestic currency is enhanced. In contrast, giving in to pressures against the upper limit of the band may not only demolish the credibility in the band but badly damage the credibility in the anti-inflationary commitment of the Central Bank. The problem mentioned in the previous paragraph may be closely linked to the fact that the currency bands do not only restrict the ability of the market to set the exchange rate in any given date but have an explicit or implicit pre-announcement on the limits within which the exchange rate may float in the future (as a macro signal to resource allocators). This pre-announcement becomes a strait jacket and reduces the flexibility of the central bank to introduce changes without loosing credibility. The pre-announcement is perhaps the feature of the currency bands that makes them more prone to speculative attacks. It is likely that a day-to-day currency band without pre-announcements would have been much easier to manage in 1998 and 1999.

(vi) An interesting feature of currency bands in Chile and Colombia is the fact that they disappeared almost simultaneously, in September 1999. Several other currency bands that existed in Latin-American countries and elsewhere disappeared also between 1998 and 2000. A reason for this simultaneity may be the one mentioned in the previous two paragraphs: that the currency bands were useful in periods of foreign exchange accumulation or stability but not in periods of strong pressures towards currency depreciation. However, the simultaneity in the dismantlement of currency bands may also say a lot about IMF preferences and fashions in the international financial community.

(vii) The floating regime introduced in Chile and Colombia after dismantling the currency bands does not imply absence of central bank intervention.[16] What they have in common is the assumption that the central bank cannot target specific levels of neither the nominal nor the real exchange rates. Still, the central banks may have some room to alter the short-term foreign exchange market through their interventions, which in turn may be discretionary or follow publicly known rules. While Chile has exerted discretion in intervening the market, Colombia is following strict rules since 1999. In any case, the experiences of Chile and

[16] Colombia has accumulated more than US$ 2.5 billion since it entered into the floating regime. The Chilean central bank accumulated reserves in 2000 and 2002 but lost almost US$ 600 million in 2001 (see Table 7).

Colombia show that the optimal exchange rate policy is far from leaving the exchange rate determination to the short-termist markets.[17]

3. Capital account regulations.

a) The rationale for capital account regulations

The rationale for capital account regulations arises from the hypothesis according to which a full liberalization of the capital account in a developing economy, instead of contributing to avoiding macroeconomic disequilibria, is likely to 'trap' domestic policies into short-term bias and non-sustainable macroeconomic equilibrium (Ocampo, 1999, ch. 5; Ffrench-Davis and Ocampo, 2001).

The exchange rate regimes of Chile and Colombia, as described, provide a clear example of the difficulties created by foreign capital flows to macroeconomic policies. Capital flows greatly reduce the autonomy of domestic economic authorities to jointly manage the real exchange rate and the real interest rate, even in the short and medium run. Large capital inflows tend to reduce both the exchange rate and the interest rate while capital outflows tend to increase them both. As far as capital flows to developing economies have been proved to be highly pro-cyclical, the real exchange rate and the real interest rate become highly pro-cyclical too.

A distinction should be made between two different types of volatility of the exchange rate: (i) the short-term volatility, which is supposed to provide good signals to the market and discourage short-term capital flows, and (ii) the medium term instability, which leads the exchange rate to move in a given direction, providing "wrong certainties" to the market and encouraging short-term, medium-term and even long-term capital flows that look for exchange rate gains and not for differences in real productivity. Private capital flows led by mid-term volatility usually have strong and costly pro-cyclical biases.

As a general rule, the purposes of the type of capital account regulations that have been used both in Chile and in Colombia are threefold.

First, they try to enhance the ability of monetary and exchange rate policies to act in a counter-cyclical way. When capital inflows are very large, they push the domestic demand into a boom and lead to a deficit in the current account. Under those circumstances, the capital account regulations are addressed to discourage capital inflows in order to mitigate pressures towards lower real interest rates -which would artificially reinforce the aggregate demand boom- and towards a real appreciation of the domestic currency -which would increase the current account deficit.

Second, capital account regulations are addressed to reduce the vulnerability of the domestic economy to sudden changes in the international financial environment. This explains

[17] Ffrench-Davis (2003), p. 12. See also Edwards (2002), who argues that "it is perfectly possible that the optimal policy (…) is one where the central bank intervenes from time to time" (p.17). Those interventions, also, may be consistent with an inflation targeting regime which does not imply "fear of floating".

the emphasis of those regulations in reducing the share of short-term and liquid liabilities in total capital flows and in imposing limits on the net uncovered foreign exchange positions of the domestic economic agents.

Third, capital account regulations enhance the ability of a country to use foreign savings as complementary to domestic savings and not as substitutes for them. Again, this explains the emphasis of those regulations in reducing the share of short-term capital, which usually finances consumption, *vis-à-vis* long-term capital, which usually finances productive investment.

b) Reserve Requirement on Capital Inflows: A Price-based Capital Account Regulation

The most famous mechanism of capital account regulation used in both Chile and Colombia during the nineties is the reserve requirement on capital inflows. It was introduced in Chile in 1991[18] and in Colombia in 1993. As we will see, the height of the requirement and several details of its operation changed along time and were different in each country. The regulations used in both countries, however, shared three very important characteristics: (i) they were not quantitative controls but price-based regulations (ii) they affected capital inflows and not capital outflows and (iii) they were designed to have more impact on short-term than on long-term capital flows.

As any price-based mechanism, the reserve requirement on capital inflows was not intended to block the way for those inflows, but to discourage them at the margin, *placing sand on their wheels*. In order to make capital inflows more costly, two key elements were present both in Chile and in Colombia as complements to the reserve requirement: first, restrictive policies on any type of dollarization of deposits in the domestic financial system; second, strict prudential regulations on the net foreign exchange position allowed to financial intermediaries. These two elements together guaranteed that the domestic financial intermediaries could provide foreign exchange denominated loans only when they were funded with foreign credit and subject to the reserve requirement. At the same time they inhibited the domestic financial system from becoming a major actor in the speculation in favor or against the peso.

The introduction of a non-remunerated reserve requirement in Chile in June 1991 was explicitly addressed to provide more breath and autonomy to monetary policy (Zahler, 1998, p.69). The deposit of the reserve requirement was initially equivalent to 20% of foreign loans and had to be kept for a minimum of 90 days and a maximum of one year, according to the time frame of the operation. In May 1992, it was raised to 30% and the term of the deposit was raised to one year, independent of the maturity of the loan, which increased the bias against bringing short-term capital into the Chilean economy. In July 1995 was extended to the purchase of Chilean stocks (secondary ADRs) by foreigners.

Although the objective of regulating capital flows continued to be present in Chile after 1996, the attitude of policy-makers was much less pro-active. Despite the fact that there was a significant surge of capital inflows in 1996 and 1997, the authorities failed to accommodate the height of the reserve requirement to the increased supply of funding. The surge clearly weakened

[18] In the 1970s Chile also applied a price-based restriction on capital inflows. However, it was ineffective given a huge spread between the domestic and international cost of money. See Ffrench-Davis (2002b, table V-5).

the fundamentals of the Chilean economy: the current account deficit increased, the exchange rate appreciated much faster and the stock of liquid foreign liabilities grew (Ffrench-Davis and Tapia, 2001, p.91). When the Asian crisis began in late 1997, therefore, the fundamentals of the Chilean economy were much weaker than they had been during the tequila crisis of 1995. This fact certainly contributed to increase the magnitude of the crisis of 1998 and 1999 when, as we will see, private capital outflows were quite large, including funds of the domestic private social security institutional investors (see, section 3g below). The reserve requirement was reduced from 30% to 10% in June 1998 and then to 0 percent in September.

Inspired by the Chilean experience, the Colombian reserve requirement on capital inflows was decreed in September 1993, coinciding with the final steps of a process of dismantling administrative capital controls that had started in 1991. The size of the reserve requirement was high enough to make it prohibitive in practice. Exemption made for trade financing, the requirement applied to any "short-term" foreign loan. "Short-term" was initially defined as less than 18-month maturity but this term was raised in March and August of 1994 to three and five years, respectively.[19]

In 1996, when the exchange rate was at the most depreciated limit of the currency band and the central bank was loosing reserves, the minimum maturity of the foreign loans to be exempted from the reserve requirement went down to three years.

After the huge increase in international reserves that took place in the last part of 1996, the Colombian government issued in January 1997 a State-of-Emergency Decree which, among other measures, established an explicit Tobin tax on all capital inflows (trade financing included) in addition to the reserve requirement regulated by the central bank. The Decree was declared unconstitutional in March 1997 but the central bank rapidly increased the reserve requirement again.

In May 1997, the Colombian central bank introduced several changes in the reserve requirement system, making it simpler and more similar to the Chilean one. A flat deposit in local currency (instead of a dollar denominated deposit) was required for all loans, independently of the maturity. The minimum maturity was thus abandoned but, as in the Chilean case, the new mechanism still implied that the tax equivalent of the deposit was lower the longer the maturity of the corresponding loan. Initially, the size of the reserve requirement was 30% of the foreign loan and had to be kept during 18 months. This numbers were reduced in January and again in September 1998 as a response to the weakened capital inflows. Between September 1998 and May 2000, the reserve requirement was only 10% of the foreign loan and had to be kept during 6 months. In June 2000, the reserve requirement was reduced to zero. Authorities stated, however, that this was not necessarily the end of the mechanism. It was only a resetting of the parameters, and the mechanism could be used again if needed to confront renewed capital surges.

Besides the similarities among the Chilean and the Colombian reserve requirement instruments to deter capital inflows, it seems clear that Chile used them more proactively during the first half of the nineties than after 1995. In contrast, Colombia used them more proactively in the second half of the decade. It is very important to notice that when the Colombian authorities

[19] A history of the reserve requirement on capital inflows in Colombia is summarized in Ocampo and Tovar (1999).

introduced the mechanism in September 1993, they were at the same time dismantling the quantitative controls on capital inflows that had been in place in this country since 1967. In this sense, the introduction of the reserve requirement on capital inflows in Colombia in the first half of the nineties may be interpreted as a step towards financial liberalization, which clearly was not the case in Chile.

c) The behavior of non-FDI private capital flows and the debate on the effectiveness of private capital account regulations

The behavior of non-FDI private capital flows is presented in Table 6 (column e) and shows significant common elements in Chile and Colombia. Most notably, those flows were highly positive for several years until 1997 and became highly negative in both countries during the crisis of 1998/99.

In the Chilean case, these flows averaged more than US$ 2.4 billion yearly between 1990 and 1997 and did not have extreme swings during that period. Even in 1995, when the tequila crisis was taking place, they amounted to US$ 2.0 billion. In contrast, between 1998 and 1999 they implied a net outflow of around US$ 8 billion in the biennium. Capital outflows had a pause in 2000 but were high again in 2001.

TABLE 6

CHILE AND COLOMBIA: CAPITAL FLOWS AND CURRENT ACCOUNT FINANCING, 1990-2002
(US$ Millions)

	a. Current Account	b. International Reserves Accumulation	c. Net Direct Foreign Investment	d. Net Foreign Credit to Public Sector [1]	e. Other Flows of Private Capital = b - a - c - d
A. CHILE					
1990	-485	2,121	654	-222.0	2,174
1991	-99	1,049	697	-955.1	1,406
1992	-958	2,344	538	42.2	2,723
1993	-2,553	173	600	-357.0	2,483
1994	-1,585	2,919	1,672	-313.8	3,146
1995	-1,345	741	2,205	-2,085.5	1,967
1996	-3,083	1,122	3,681	-1,540.3	2,064
1997	-3,660	3,320	3,809	-244.3	3,416
1998	-3,918	-2,165	3,144	448.2	-1,839
1999	99	-644	6,203	-416.0	-6,531
2000	-766	337	-348	-173.0	1,624
2001	-1,192	-596	3,045	0.4	-2,449
2002	-553	199	1,139	1,344	-1,732
B. COLOMBIA					
1990	544	610	484	-45	-373
1991	2,347	1,763	437	-347	-675
1992	876	1,274	745	-56	-292
1993	-2,221	464	865	-158	1,978
1994	-3,669	199	1,298	-1,224	3,795
1995	-4,524	2	712	1,388	2,425
1996	-4,632	1,721	2,784	856	2,714
1997	-5,748	277	4,753	1,146	126
1998	-4,852	-1,390	2,032	1,469	-40
1999	671	-315	1,336	647	-2,969
2000	619	870	1,905	614	-2,268
2001	-1,414	1,217	2,333	1,484	-1,186
2002 p	-1,607	138	1,158	388	199

Source: Central Bank of Chile, Banco de la República.
p/ Preliminar
1/ Chile: Includes Central Bank's operations and excludes operations by the state-owned commercial bank (Banco del Estado). In 2002 the figure corresponds to the change in the stock of public debt. Colombia: Corresponds to the net loans to public sector plus the net investment in bonds issued by the public sector.

In the Colombian case, private non-FDI capital inflows became important only after 1992. During the initial years of the decade, net capital flows were negative, reflecting perhaps the existence of direct controls which were more effective to discourage inflows than to restrain outflows. As already mentioned, most administrative controls on capital flows were dismantled between 1991 and 1993, coinciding with the introduction of the Chilean-like reserve requirement on capital inflows. Private non-FDI capital flows were highest in Colombia between 1993 and 1996, when they averaged US$ 2.7 billion per year. As in Chile, they were high even in 1995, when they amounted to US$ 2.5 billion, despite the tequila crisis. The reduction in this type of

capital inflows took place in 1997, probably because of an increase in the costs of the reserve requirement on capital inflows introduced at the beginning of that year, before the Asian crisis started. In 1998 they were very small but still positive and starting in 1999, they became highly negative.

Based on these figures, it appears easy to doubt on the effectiveness of the reserve requirement that was used to regulate capital inflows. Both in Chile and in Colombia, net capital inflows were highest precisely during the periods in which that regulation was being used. The easy conclusion, however, is not necessarily the correct one. The coexistence of large capital inflows and the reserve requirement may reflect a policy reaction function in which the introduction of capital regulations is caused by the large supply of capital inflows.[20] That was, evidently, the sequence in both cases.

Moreover, as argued by Cordella (1998), the total supply of capital and hence the amount of capital inflows may even increase as a response to regulations that are effective in reducing the vulnerability of the economy to short-term capital flows. An example may be what happened with the Chilean and the Colombian economies after 1995. The fact that the vulnerability of these two economies proved to be very low during the tequila crisis may help to explain the increase in the supply of capital that took place in 1996 and 1997. On the other hand, if the prudential regulation of inflows attains more sustainable real macroeconomic balances, that tends to encourage capital formation and complementarity of foreign and domestic savings; thus, larger net inflows are consistent with macroeconomic sustainability (Ffrench-Davis, 2003).

In any case, it is clear that the regulations on capital inflows used in Chile and Colombia were not able to avoid the large net capital outflows that took place in the final years of the 1990s and the beginning of the new century. The evaluation of the effectiveness of those regulations in this context becomes extremely complex. Our hypothesis may be summarized as follows: the reserve requirement was useful and effective as a temporary policy tool during the boom of capital inflows. Its effectiveness may be seen from two different perspectives. First, as a *short-run macroeconomic policy*, it enhanced the ability of the domestic authorities to act in a counter-cyclical way and to deal with the trade-offs between exchange rate and monetary policies. Second, as a *liability-flows policy*, it was effective in reducing the short-term component of capital inflows. On the other hand, however, the reserve requirement and, more generally, the type of policies adopted by Chile and Colombia, were not effective to deal with a major and lasting crisis as the one observed after 1997 in those two countries. This is not a reason to discard the temporary use of this type of policies under new capital surges, but to stress the need of other complementary regulations. In particular, the experiences of Chile and Colombia since 1998 highlight the need for more strict controls on the behavior of the stocks of foreign-exchange denominated assets and liabilities. In other words, those experiences show the need for better *asset and liability stock policies*. In addition, in the Colombian case, it is clear that the large growing fiscal imbalances that took place since the mid-1990s implied a rapid increase in the country's foreign exchange liabilities and made it much more difficult to manage the crisis period.

[20] Cardoso and Goldfajn (1998) successfully test this hypothesis for the Brazilian case.

d) The reserve requirement as a short-run macroeconomic policy tool.

In evaluating the effectiveness of the reserve requirement on capital inflows as a macroeconomic policy tool, most analysts have focused on the effects of this regulation on the volume of total capital inflows. Empirical results on this topic are mixed.

Some econometric studies for both Chile and Colombia failed to find effects of the reserve requirement on the total volume of capital inflows, even though they found an effect on the composition of flows.[21] Those studies argue that there is a high substitution between capital inflows of different maturities which implies a compensatory increase in long-term inflows when the reserve requirement induces a reduction in the short-term ones. From there, they conclude that this type of price-based regulation on capital inflows do not have any of macroeconomic impact.

Other recent studies, however, obtain very different results. Le Fort and Lehman (2000) show that, in the Chilean case, the reserve requirement did have an effect on the total volume of private capital inflows, once the effects of interest rate differentials and the evolution of supply of funds are well taken into account. Similarly, Ocampo and Tovar (1999) find that the reserve requirements in Colombia "were effective in reducing the volume of capital inflows, both due to the increased costs of shorter-term borrowing and to the discrete effects of regulations, associated to the imperfect substitution of borrowing at different maturities" (p. 29).

A paper by Villar and Rincón (2003) takes a different perspective to evaluate the effectiveness of the reserve requirement as a macroeconomic policy tool. This paper argues that the econometric results on the effectiveness of this type of regulation on the volume of capital inflows may be subject to criticism: they do not solve the simultaneity problem that arises from the fact that those regulations affect the domestic interest rates, which in turn affect capital inflows. The papers mentioned in the previous paragraphs obtain partial equilibrium results: given the differential between domestic and foreign interest rates, a tax on capital inflows reduces their volume. The tax, however, should increase the domestic interest rate and it is likely that its total effect on the volume of capital inflows will be ambiguous when this channel is taken into account.

Following Villar and Rincón, the effectiveness of the reserve requirement as a macroeconomic policy tool should be evaluated from the perspective of its impact on the domestic interest rates and the real exchange rate and not exclusively on the total volume of capital inflows.[22] Their econometric work show indeed that, in the Colombian case, the reserve requirement was a useful macroeconomic policy tool in a period characterized by large capital inflows, excess aggregate demand, pressures towards domestic currency appreciation and large current account deficits. This tool facilitated a counter-cyclical policy, allowing the domestic authorities to increase the domestic interest rates *vis-à-vis* the foreign interest rate and hence

[21] For the Chilean case, critical evaluations are developed in Valdés-Prieto and Soto (1998) and De Gregorio, Edwards and Valdés (2000). For the Colombian case, see Cardenas and Barrera (1997).

[22] This view is consistent with the rationale for capital controls presented by McKinnon and Pill (1996), who argue that they are a useful tool in order to increase domestic interest rates and to discourage the "over-borrowing syndrome".

reducing aggregate demand without creating additional pressures towards domestic currency appreciation.

Chile, in 1992 offers one quite illustrative case of the contribution of the reserve requirement to macroeconomic stability. Then, the USA, with a rather low interest rate, was further reducing it in order to face domestic recession, while Chile experienced some overheating and large supply of external funds. The response of Chile was to increase the reserve requirement, thus making space for monetary policy; that allowed Chile to raise its domestic interest rate with net stabilizing effects on aggregate demand.

We can conclude, therefore, that the reserve requirement was a useful macroeconomic policy tool. However, it must be stressed that, as any other macroeconomic policy addressed to affect interest rates and the exchange rate, it is essentially a short-term policy instrument.[23]

e) The reserve requirement as a liability policy: Flows policies vs. stock policies

Empirical studies in both Chile and Colombia coincide in showing that the reserve requirement on capital inflows helped to keep a relatively long maturity of private foreign debt in the nineties.[24] From this point of view, this was an effective tool as a *liability policy*. With a long-term maturity of foreign debt, a sudden stop in the supply of capital flows towards emerging markets has a much lesser impact on those markets as far as the refinancing needs are lower. When the tequila crisis spread over most Latin-American countries in 1995, the maturity structure of foreign debt in Chile and Colombia was perceived as a significant strength of these economies and helped to make them almost immune to the crisis.

However, a high average maturity of private foreign debt is not a sufficient safeguard against a strong and long-lived shortfall in the supply of capital flows. The experiences of Chile and Colombia in 1998-99 suggest that, when the economy receives that type of shock, what was originally contracted to be long-term debt may become shorter-term debt by the decision of the debtors. The debtors, indeed, reduce the rate of renewal of old debts and buy dollar-denominated assets to hedge their positions. Also, under the pressure of weak economic activity and expectations of devaluation, they may be allowed to prepay their foreign currency liabilities before maturity, as actually happened in Colombia.[25]

Table 7 presents the evolution of the stocks of foreign debt in Chile and Colombia. The figures help to highlight the very rapid increase in the private sector foreign debt that took place along the nineties in both countries, though from moderate initial levels. The rapid process of private debt accumulation marked a deep contrast between the period of the tequila crisis and the

[23] As already discussed, the "short-term", in this respect, can refer to several years, associated to the extent of the capital surge or dryness.

[24] For the Colombian case, see Cárdenas and Barrera (1997) and Ocampo and Tovar (1999). For the Chilean case, see De Gregorio, Edwards and Valdés (2000), Le Fort and Lehman (2000) and Schmidt-Hebbel, Hernández and Gallego (1999).

[25] Since 1997, the Banco de la República of Colombia allowed private debtors to prepay long-term liabilities (which had not deposited the reserve requirement on short-term capital inflows), provided that half of the original maturity had elapsed. From this point of view, the maturity structure of private foreign debt became less important for the balance of payments stability than the maturity structure of public debt.

1998-99 crisis. At the end of 1994, when the tequila crisis was starting, total private debt was US$ 12.3 billion in Chile and US$ 8 billion in Colombia. Only four years later, at the end of 1998, these numbers had more than doubled. Although the short-term component of these debts continued to be low, the huge increase in total private debt surely made the foreign exchange balance sheet much more vulnerable to the crisis.

TABLE 7

CHILE AND COLOMBIA: INTERNATIONAL RESERVES AND DEBT STOCKS, 1990-2002
(US$ Millions)

	Foreign Private Debt		Foreign Public Debt	Total Foreign Debt [1]	International Reserves
End Of:	Short term [2]	Long Term			
A. CHILE					
1990	1,398	4,235	11,792	17,425	6,710
1991	1,135	4,675	10,554	16,364	7,638
1992	3,027	5,592	9,623	18,242	9,742
1993	2,999	7,167	9,020	19,186	10,252
1994	3,339	9,004	9,135	21,478	13,740
1995	2,816	11,419	7,501	21,736	14,783
1996	2,285	15,531	5,163	22,979	15,805
1997	678	20,935	5,088	26,701	18,274
1998	1,012	24,965	5,714	31,691	16,292
1999	911	27,374	5,827	34,112	14,946
2000	2,153	28,802	5,522	36,477	15,110
2001	1,677	30,596	5,759	38,032	14,400
2002	2,261	30,937	7,197	40,395	15,351
B. COLOMBIA					
1990	1,409	1,113	15,471	17,993	4,595
1991	1,184	981	15,171	17,335	6,500
1992	1,612	1,250	14,416	17,278	7,728
1993	2,587	2,046	14,254	18,887	7,932
1994	3,213	4,806	14,718	22,737	8,104
1995	3,920	6,880	15,540	26,340	8,453
1996	3,151	11,572	16,394	31,116	9,939
1997	3,436	14,191	16,785	34,412	9,908
1998	3,002	14,891	18,787	36,680	8,740
1999	2,267	14,267	20,199	36,733	8,103
2000	2,315	13,207	20,610	36,132	9,006
2001	2,729	12,838	23,471	39,038	10,245
2002 p	3,193	11,260	22,779	37,232	10,844

Source: Central Bank of Chile, Banco de la República.

p/ Preliminar

1/ Colombia: Includes financial leasing transactions.

2/ Refers to transactions originally contracted for one year or less

Behind the behavior of private foreign debt during the nineties there is a rapidly growing currency mismatch in the private sector balance sheets. Both firms and households increased their foreign exchange denominated liabilities without a corresponding increase in foreign exchange denominated assets. Households and firms producing in the non-tradable sectors became highly indebted in foreign currency during the period in which the peso was expected to appreciate, which suggests that the reserve requirement on capital inflows was not binding enough. Only when the crisis of 1998-99 exploded and the Chilean and the Colombian peso started to depreciate, the private sectors in both countries started to look eagerly for hedging instruments, which at that moment reinforced the pressures towards depreciating the domestic currencies. The regulations that had been in place in both Chile and Colombia failed to prevent this from happening. Those regulations were not strong enough to discourage the financial intermediaries passing currency mismatches through to their clients. Then, when the peso actually depreciated, they had to pay a significant cost. In the Colombian experience, to some degree, the financial crisis of 1999 was explained by the sudden increase in the peso value of foreign liabilities due to the peso depreciation. Prudential regulation should have prevented this from happening by reflecting these risks in the balance sheets of the banks that used to lend to clients with this type of currency mismatch. In the case of Chile, real devaluation was delayed thus giving time to private firms to reduce foreign debt with cheap dollars, at the expense of the Central Bank balance sheet.

One main problem with the type of regulations that were used in Chile and Colombia is that they act on the flow of new foreign exchange liabilities and not on the stock of liabilities. We may say then that those *liability-flows policies* should be complemented with *liability-stock policies*. Those stock policies should be primarily based on prudential regulation and supervision, imposing very stringent regulatory provisions to the banks lending to households and firms with large foreign currency mismatches.[26] In addition, as suggested in Ocampo (2002), they could be reinforced with tax provisions applying to foreign currency liabilities. For instance, deductions for interest payments on international loans could be restricted to firms with foreign exchange revenues and up to the amount of those revenues.

f) Foreign Portfolio Investment

While foreign direct investment (FDI) was entirely free in both Chile and Colombia since the beginning of the 1990s[27], these countries maintained restrictions on foreign portfolio investment as a complementary policy to the reserve requirement on foreign loans.

Chile kept a one-year minimum stay for any foreign portfolio investment up to May 2000. Also, as already mentioned, since 1995 the reserve requirement was applied to the purchase of Chilean stocks by foreigners (secondary ADRs). Still, foreign portfolio investment in equity played a very pro-cyclical role, as can be seen in Table 8. Colombia applied a less

[26] Villar and Rincón (2003). Ocampo (2002) argues that the main problem with this option is that it may encourage non-financial agents to borrow directly abroad. In Chile most of the debt by non-financial firms was owed directly abroad. However, losing access to the domestic financial system may be very costly for any firm or household.

[27] In the Chilean case, however, there was a one year minimum stay before capital repatriation of foreign direct investment was allowed.

restrictive regulation. ADRs were not subject to the reserve requirement on capital inflows and foreign portfolio investment in equity was freely allowed, provided that it was done through special purpose funds administered by financial institutions with residence in Colombia. Moreover, in order to accelerate the process of deepening the domestic capital markets for public debt, Colombia facilitated foreign investment in fixed interest securities in 1996. This purpose was certainly met during 1996 and 1997, before the crisis exploded. The stock of foreign investment in domestic public debt went from zero in 1995 to more than 400 million by March 1998. Less than one year later, however, this amount had gone back to almost zero. Therefore, foreign portfolio investment in fixed interest securities, which was liberalized in order to facilitate public financing, reinforced the pro-cyclicality of foreign investment in equity.

TABLE 8

CHILE AND COLOMBIA: NET FLOWS OF FOREIGN PORTFOLIO INVESTMENT IN EQUITY, 1990-2002.

(LIABILITIES) 1/

(US$ Millions)

End of:	Chile	Colombia
1990	367	0
1991	24	5
1992	338	66
1993	561	145
1994	1,109	478
1995	-248	165
1996	700	292
1997	1,720	278
1998	580	47
1999	524	-27
2000	-427	17
2001	-217	-42
2002 p	-317	18

Source: Central Bank of Chile, Banco de la República.
1/ ADRs and Investment Funds
p/ Preliminary

g) The role of domestic institutional investors in the foreign exchange markets

The stronger impact that the crisis of the final years of the 1990s had on the Chilean and the Colombian economies, compared with the impact of the tequila crisis, may be explained in part by factors already mentioned: the more appreciated exchange rates, the stronger and longer reduction in the supply of funds, the higher stock of debt and the higher exposure to volatile portfolio investment. An additional relevant factor may have been the role that major domestic institutional investors started to play in the foreign exchange markets during the second half of the 1990s.

Initially, the restrictions on the activity of domestic institutional investors in the foreign exchange markets were an essential part of the policy framework in which Chile and Colombia introduced the reserve requirement on capital inflows. However, the trend towards financial liberalization that dominated the international economy in the nineties implied that some of these restrictions were gradually relaxed in the second half of the decade. This relaxation made it more difficult to avoid sudden capital outflows and portfolio reallocations as the ones that took place between 1997 and 1999, when the Asian and the Russian crises exploded. The effectiveness of the reserve requirement on capital inflows to reduce the financial vulnerability of both Chile and Colombia was therefore diminished by such relaxation.

The clearest example of this process of relaxation was related with the portfolio investment regime applied to the private pension funds. These funds became very important actors in the domestic capital markets in both countries. Paradoxically, their role in the foreign exchange markets was promoted during the second half of the nineties, when the authorities in both Chile and Colombia considered that the effects of foreign capital inflows could be partly compensated by capital outflows originated by these institutional investors. They were then allowed to invest larger shares of their portfolios in foreign currency, expecting that they would play a counter-cyclical role. In practice, however, the role of these funds was highly pro-cyclical. They did not invest much in foreign currency during the period prior to the Asian crisis, in which there were expectations of domestic currency appreciation. Instead, after the Asian crisis exploded, they took advantage of their more relaxed regulation in order to rapidly reallocate huge amounts of their portfolios into foreign currency securities, then reinforcing the demand for foreign currency and the pressures towards depreciation in a very pro-cyclical way. Hence, as argued in Ffrench-Davis and Tapia (2001), the attempt to use a more relaxed regulation on the pension funds proved not to be successful in order to encourage capital outflows and counteract capital inflows. On the contrary, that attempt induced a higher degree of vulnerability of the foreign exchange markets and a reduction in the degrees of freedom of domestic monetary policies (see also Ocampo, 2002; Zahler, in this volume).

h) Public capital flows and FDI

The reserve requirement and most of the other instruments addressed to discourage capital inflows were applied to both private and public agents. In practice, however, they mostly affected private capital flows as far as public decisions are not driven by price-based incentives. Net public capital flows ultimately depend on the size of the fiscal deficit, on the share of foreign funds in total financing and on the portfolio decisions taken by the government on the composition of its assets and liabilities.

As mentioned in section 1, the behavior of fiscal accounts in the nineties was entirely different in Chile and Colombia. While Chile kept an average fiscal surplus of nearly 2% of GDP, Colombia experienced large and growing fiscal deficits during the last part of the decade. This implied that while public financing was not an issue in Chile, it certainly was in Colombia.

Table 6 (above) highlights the contrast between Chile and Colombia on this matter. Until 1994, both countries could use their fiscal surpluses counter-cyclically, reducing their public

external debt in a period of large inflows of private capital. In the Chilean case, this continued to be true in the following years. Most notably, in the biennium 1995-96, net foreign credit to the public sector was negative in US$ 3.6 billion, partially outweighing the effects of private inflows.

In Colombia, in contrast, there were net inflows of foreign credit to the public sector since 1995. Due to the size of the public sector deficit in Colombia, those flows became quite large, averaging US$ 1.1 billion between 1995 and 2001. Between 1995 and 1997, those flows acted pro-cyclically, reinforcing the pressures created by private capital inflows towards the appreciation of the Colombian peso.[28]

The impact of the Colombian fiscal deficit on capital flows did not only show up through foreign credit to the public sector. We already mentioned that foreign portfolio investment in Colombia was closely linked with the development of a public debt market, which in turn was urgently needed to finance the government deficit. In addition, the behavior and the characteristics of FDI in Colombia were largely influenced by the size of that deficit. This implied an important contrast with Chile.

Data in Table 6 (above) shows that net flows of FDI were higher in Chile than in Colombia. The yearly averages between 1990 and 2001 were US$ 2.2 billion and US$ 1.6 billion, respectively. The difference among the two countries in terms of FDI in Greenfield projects was even larger than suggested by these figures, which implies that the contribution of FDI to increase domestic capital formation and productivity was much higher in Chile. Indeed, until 1998, there was a clear positive relationship between FDI and gross capital formation in that country. Such relationship was lost in 1999, when most FDI became related to mergers and acquisitions, instead of greenfield projects (see Ffrench-Davis, 2002a, p. 15). Still, it is interesting to notice that FDI played a counter-cyclical role in Chile in 1999 with respect to other private capital flows.

In contrast with Chile, FDI in Colombia corresponded mostly to privatizations and to investment in the oil sector. On the other hand, the international trend of intense processes of mergers and acquisitions (M&A) reached Colombian economy. This implied that its relationship with domestic capital formation in the country was extremely week and that FDI played a pro-cyclical role. The period in which FDI was highest --1996 through 1998, according to Table 6--, corresponds with a rapidly declining ratio of gross fixed capital formation in the economy as a whole (see Section 1, Table 3). When we look at data, we can see that M&A operations accounted for 58% of total gross FDI in that period (UNCTAD, 2002). A large part of FDI in Colombia was in practice an instrument of public deficit financing. This source of public financing almost disappeared after 1998. Also, the natural cycle of investment in the Cusiana oil

[28] Paradoxically, after 1997 net inflows of foreign credit to the public sector behaved again as stabilizers of total foreign financing. They, indeed, help to explain the fact that in 1998 the reduction in international reserves was much smaller, and that in the following years the recovery of those reserves was much faster in Colombia than in Chile. In that sense, the existence of larger fiscal deficits in Colombia, provided that they were properly financed abroad, helped to reduce the vulnerability of the Colombian economy to the changes in the mood of international financial markets.

web implied a rapid decline of FDI after 1998, which reinforced the pro-cyclicality of total FDI with respect to other private capital flows.

4. Concluding remarks

Chile and Colombia seemed to have done things right when the tequila crisis arrived in 1995, as far as they kept growing and had no signs of financial distress. After the Asian and the Russian crises, however, both Chile and Colombia were heavily affected. Does this mean that the capital account regulations that these countries had in place did not work? Was this the result of a badly designed exchange rate regime? Of course, any single answer to these questions would be extremely simplistic. From the analysis above we can extract the following conclusions:

1. The type of capital account regulations that were used both in Chile and Colombia did work successfully in reducing the share of short-term capital inflows in total capital inflows.

2. Also, they allowed monetary policy to increase the domestic interest rates relative to foreign interest rates, without increasing the pressure to further overvalue the domestic currencies. This was a positive outcome in the period of the boom of capital inflows, as far as it allowed monetary policy to be less pro-cyclical, and contributed to more sustainable real macroeconomic balances.

3. However, the reserve requirement was not able to discourage a rapid process of foreign debt accumulation and a deterioration of the current account of the balance of payments during the second half of the nineties that was financed mainly with long-term capital inflows.

4. Also, during the second half of the 1990s there was some liberalization of the rules applied to both foreign portfolio investment and investment of domestic institutional investors in foreign currency securities, which created a more pro-cyclical environment for the management of the crisis of 1998-99.

5. In the Colombian case, the fiscal deficit contributed to make things worse during the second half of the nineties. It implied that long-term external financing entered into the country to finance non-productive governmental activities. The government directly contracted a large part of foreign debt but long-term private debt and FDI also contributed to finance the fiscal deficit through the privatizations that the government undertook in that period. This did not happen in the Chilean case, which exhibited a large fiscal surplus until 1998. In Chile, the government was able to use foreign public debt as a counter-cyclical policy.

6. A first lesson that can be drawn from the comparison between the Chilean and Colombian experiences has to do with the importance of fiscal austerity in periods of

large capital inflows. The ability of governments to undertake counter-cyclical fiscal policies critically depends on what they do during the boom periods. With fiscal surpluses, the government can partially outweigh the effects of private capital inflows by reducing its public debt during the boom periods, as Chile actually did until 1997. Also, if there is a developed market for domestic public debt, substitution of domestic debt for foreign debt may be a good mechanism to reduce pressures towards appreciation in periods of large capital inflows.

7. Still, the fact that Chile suffered so much in the crisis of 1998-99 suggests that fiscal restraint is not enough and that private capital flows introduced too much vulnerability. A lesson may be that the type of capital account regulations that were used in Chile and Colombia were not efficient enough as liability-stock policies. Even with a low exposure to short-term debt, capital outflows may be very large when the domestic residents are able to invest abroad and long-term debtors can pre-pay their liabilities. Even so, it may be mitigated with some controls on the net foreign exchange position of the financial intermediaries, of the main institutional investors (like private pension funds) and, equally important, of the households and firms. Prudential regulation of the financial sector should require banks to reflect the risks that are implicit in lending to households or firms with important currency mismatches between their assets and their liabilities. Those mismatches could also be punished through tax provisions. For instance, tax deductions for interest payments on foreign loans could be restricted to foreign currency revenues.

8. The exchange rate regime may have played a role in aggravating the effects of the reversal in capital flows that took place in 1998-99. The exchange rate bands that were in place in Chile and Colombia along most of the 1990s were useful arrangements for a transition period between fixed exchange rate regimes (with crawling pegs) and floating regimes. The currency bands, however, were more efficient to deal with pressures towards currency appreciation than with pressures towards currency depreciation. The credibility problems that were created by the bands led the authorities to restrict the exchange rate flexibility and to undertake very contractionary monetary policies during the crisis. The lack of exchange rate flexibility was much more evident in Chile than in Colombia.

REFERENCES

Agosin, M. and R. Ffrench-Davis (2001), "Managing capital inflows in Chile", in S. Griffith-Jones, M.F. Montes and A. Nasution (eds.), *Short-Term Capital Flows and Economic Crises*, Oxford University Press/WIDER, London and New York.

Cardoso, Eliana and Ilan Golfajn (1998), "Capital Flows to Brazil: the Endogeneity of Capital Controls", *IMF Staff Papers*: *45*, pp. 161-202, September.

Cárdenas, Mauricio and Felipe Barrera (1997), "On the effectiveness of capital controls: The experience of Colombia during the 1990s", *Journal of Development Economics*, Vol. 54.

Corbo, Vittorio and José Tessada (2002), "Growth and Adjustment in Chile: A Look at the 1990s", in N. Loayza and R. Soto (eds.), *Economic Growth in Chile: Sources, Trends, and Cycles*, Central Bank of Chile, Santiago.

Cordella, Tito (1998), "Can Short-Term Capital Controls Promote Capital Inflows?", *IMF Working Paper, WP/98/131*, September.

De Gregorio, José, Sebastián Edwards and Rodrigo Valdés (2000), "Controls on Capital Inflows: Do They Work?", *NBER Working Paper 7645*, Cambridge, Mass.

Edwards, Sebastián (2002), "The Great Exchange Rate Debate After Argentina", *NBER Working Paper 9257*, October.

Ffrench-Davis, Ricardo (2003), "Financial Crises and National Policy Issues: An Overview", in R. Ffrench-Davis and S. Griffith-Jones (eds.), *From Capital Surges to Drought*, Palgrave, London.

_____ (2002a), "La Inversión Extranjera en Chile", *Mimeo*, ECLAC, November.

_____ (2002b), *Economic Reforms in Chile: From Dictatorship to Democracy*, University of Michigan Press, Ann Arbor.

_____ and José Antonio Ocampo (2001), "The Globalization of Financial Volatility: Challenges for Emerging Economies", in R. Ffrench-Davis (ed.), *Financial Crises in ´Successful´ Emerging Economies*, ECLAC and Brookings Institution Press, Washington, D.C.

_____ and Heriberto Tapia (2001), "Three Varieties of Capital Surge Management in Chile", in R. Ffrench-Davis (ed.), *Financial Crises in ´Successful´ Emerging Economies*, ECLAC and Brookings Institution Press, Washington, D.C.

Le Fort, Guillermo and Sergio Lehmann (2000), "El Encaje, los Flujos de Capitales y el Gasto: Una Evaluación Empírica", *Working Paper 64*, Central Bank of Chile, Santiago.

McKinnon, Ronald and Huw Pill (1996), "Credible Liberalizations and International Capital Flows: The 'Overborrowing Syndrome', in T. Ito and A. Krueger (eds.), *Financial Deregulation and Integration in East Asia*, Chicago, Il., Chicago University Press.

Ocampo, José Antonio (2003), "Capital Account and Counter-Cyclical Prudential Regulations in Developing Countries", in R. Ffrench-Davis and S. Griffith-Jones (eds.), *From Capital Surges to Drought,* Palgrave, London.

_____ (1999), *La Reforma del Sistema Financiero Internacional: Un Debate en Marcha*, Fondo de Cultura Económica/CEPAL, Santiago de Chile.

_____ and Camilo Tovar (1999), "Price-based Capital Account Regulations: The Colombian Experience", *Serie Financiamiento del Desarrollo*, ECLAC, Santiago de Chile, October.

_____ and Leonardo Villar (1992), "Trayectoria y Vicisitudes de la Apertura Económica Colombiana", in *Pensamiento Iberoamericano,* No. 21, Special edition, Madrid.

Restrepo, Jorge Enrique, (1999), "Reglas Monetarias en Colombia y Chile", in *Archivos de Macroeconomía,* No. 99, Departamento Nacional de Planeación, Bogotá, January.

Rowland, Peter (2002), "Uncovered Interest Parity and the USD/COP Exchange Rate", in *Borradores de Economía*, No. 227, Banco de la República, Bogotá.

Sánchez, Fabio (1998), comp., *El ahorro en Colombia: evolución y comportamiento global y sectorial*, Tercer Mundo Editores y Departamento Nacional de Planeación, Bogotá.

Schmidt-Hebbel, K., L. Hernández and F. Gallego (1999), "Capital Controls in Chile: Effective? Efficient?", *Working Paper 59,* Central Bank of Chile, Santiago.

UNCTAD (2002), *Foreign Investment Report 2002*, United Nations, Geneva.

Urrutia, Miguel (1995), "El Sistema de Bandas Cambiarias en Colombia", *Notas Editoriales, Revista del Banco de la República*, Vol. LXVIII, No. 807, Bogotá, January.

Valdés-Prieto, Salvador and Marcelo Soto (1998), "New Selective Capital Controls in Chile: Are They Effective?", *Empírica 25(2).*

Villar, Leonardo and Hernán Rincón (2003), "The Colombian Economy in the Nineties: Capital Flows and Foreign Exchange Rate Regimes", in A. Berry (ed.), *Critical Issues in Financial Reform: A View from the South*, New Brunswick, N. J., Transaction Publishers.

Williamson, John (1996), *The Crawling Band as an Exchange Rate Regime: Lessons from Chile, Colombia and Israel*, Institute for International Economics, Washington, D. C..

Zahler, Roberto (2003), "Pension Funds and Macroeconomic Stability in Emerging Economies: the case of Chile", Mimeo, ECLAC.

_____ (1998), “The Central Bank and the Chilean Macroeconomic Policy in the 1990s”, *CEPAL Review*, No. 64, April.

ANNEX 1
COMPARATIVE ECONOMIC SIZES OF CHILE AND COLOMBIA, 1989-2002

	Current GDP (US$)		Current per capita GDP (US$		Population (Mill)		GDP per capita, PPP (current US$)		
	ECLAC		ECLAC		ECLAC		(World Bank)		
	Chile	Colombia	Chile	Colombia	Chile	Colombia	Chile	Colombia	United States
1989	27,547	46,053	2,138	1,343	12.9	34.3	4,930	4,712	23,113
1990	30,323	40,274	2,315	1,152	13.1	35.0	4,981	4,840	23,447
1991	34,650	41,240	2,601	1,156	13.3	35.7	5,414	4,945	23,630
1992	41,882	44,141	3,092	1,214	13.5	36.4	6,130	5,212	25,071
1993	44,474	50,863	3,230	1,372	13.8	37.1	6,513	5,432	25,955
1994	50,919	79,936	3,639	2,114	14.0	37.8	6,983	5,728	27,162
1995	65,216	92,503	4,589	2,400	14.2	38.5	7,783	6,108	28,284
1996	68,568	97,147	4,755	2,473	14.4	39.3	8,290	6,236	29,266
1997	74,736	106,671	5,111	2,664	14.6	40.0	8,740	6,185	30,123
1998	79,619	98,513	5,372	2,414	14.8	40.8	8,796	6,024	30,655
1999	71,809	86,301	4,782	2,076	15.0	41.6	8,790	5,878	32,158
2000	76,486	83,208	5,028	1,966	15.2	42.3	9,417	6,059	34,142
2001	68,387	83,595	4,440	1,941	15.4	43.1	9,754	6,202	34,888
2002	65,699	82,441	4,213	1,881	15.6	43.8			
1999-2001	72,227	84,368	4,750	1,994	15.2	42.3	9,320	6,046	33,729
2000-2002	70,191	83,081	4,560	1,929	15.4	43.1			

Sources: ECLAC and World Bank.