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CAN SWAPS SOLVE THE DEBT CRISIS? LESSONS FROM THE CHILEAN EXPERIENCE

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1 INTRODUCTION

Debt swaps have been touted in recent years as a possible solution to the debt crisis of developing countries. Among the highly indebted developing nations, Chile has implemented the largest debt-swap program relative to size of total debt. During the three and a half years ending in December 1988, Chile retired the equivalent of $4.2 billion in debt by means of formally approved swaps, an amount equal to 29 percent of the country's total medium- and long-term liabilities to commercial banks at the time the program started in 1985. Of the total retired, roughly half corresponded to debt repurchases and half to debt-equity swaps of various sorts. In addition, so-called "informal operations" (operations not officially approved by the Central Bank) retired approximately $2 billion of debt. Enthusiasts of debt-swap schemes argue that Chile provides a model for other debtor countries.

Does the relatively large debt reduction achieved by Chile mean that the country's debt problem is essentially solved? Can the Chilean experience be translated into a policy recipe for other highly indebted countries? This paper answers negatively on both counts.

Chile's foreign liabilities, like those of many developing countries, increased dramatically during the second half of the 1970s and the early 1980s. Following the balance-of-payments crisis and ensuing depression of 1982-83, and as a combined result of the crisis and the real devaluation of the Chilean peso, the country's external debt climbed to over 100 percent of GDP. This stock of debt could not be serviced with available resources, and Chile was forced to undertake both a drastic adjustment and a restructuring of its external obligations. Since the beginning of 1985, the country's external position has strengthened significantly. The international environment has im-

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proved, and there has been good response from nontraditional exports and from import substitution. Inflation and the budget deficit have both remained low, and the macroeconomic scene is one of the most tranquil in Latin America. Nonetheless, the debt problem persists in both its balance-of-payments and fiscal manifestations.

At the end of 1988, Chile's total external debt was still $19 billion, or about 90 percent of GDP. Whereas public debt owed to banks has been falling, debt to official creditors has risen substantially. During 1988, Chile was able to service this debt without additional "new money," while simultaneously managing to achieve economic growth at a rate exceeding 7 percent. This performance cannot, however, be safely extrapolated into the indefinite future. Chile enjoyed extraordinarily advantageous terms of trade in 1988, with the price of copper (still by far the country's largest export) peaking at over $1.60 per pound in December, roughly twice the level of most medium-term forecasts. In addition, Chile benefited from the "retiming" clause in its most recent restructuring agreement, which extended the interval at which interest payments are made from 6 to 12 months and thus effectively postponed the payment of $400 million in interest (2 percent of GDP) to the early 1990s. Various projections for the current account in the next five years show growing deficits, which are unlikely to be financed fully by foreseeable capital inflows. Therefore, Chile remains a candidate for debt reduction, in spite of its debt-swap program and its orthodox economic management.

Debt swaps have failed to solve Chile's debt problem for two reasons. First is the sheer magnitude of the problem. Even a swap program relatively large by regional standards is destined to reach its natural limits well before it can achieve the amount of debt reduction necessary to set the balance of payments on a sustainable path. Debt repurchases are limited by the stock of private or public foreign assets available, and debt-equity swaps are limited by the amount of attractive equity available.[1] Second is the size of the discounts obtained. Especially where debt-equity swaps are concerned, a sizeable chunk of the market discount has been captured by foreign investors and intermediaries, thus limiting the net debt reduction obtained. In addition, beginning in 1990, foreign investors will have the right to repatriate

[1] The bounds set by domestic financing possibilities are also crucial, as we show below.

profits from their newly acquired equity holdings. This privilege will significantly burden the current account of the balance of payments.

The external debt burden has been partly replaced by a growing stock of domestic debt. The ability to issue such debt has relieved Chile of the need to use money creation to finance swaps. As a result, the program has not been associated with renewed inflationary pressures, as has arguably been the case in other countries. Such swaps, however, can be fiscally expensive. Typically, domestic financing carries higher interest rates and has shorter maturities than does external financing. To the extent that the discounts captured by the government fail to offset this difference in interest rates, debt swaps do little to alleviate the fiscal pressure created by the need to pay interest on a large public debt. That pressure has not caused macroeconomic disequilibrium in Chile because the other components of the budget (noninterest spending, tax revenue) have been managed very cautiously. Furthermore, a generally stable economic environment has contributed to keeping domestic interest rates low relative to those observed elsewhere in Latin America, thus minimizing the budgetary burden of the additional domestic borrowing.

These considerations suggest why, from a fiscal point of view, the Chilean model is both infeasible and, in some senses, undesirable for other debtors. The option of issuing domestic debt is, for practical purposes, unavailable to countries in which: (1) ratios of domestic debt to GDP are already very high; (2) the average maturity of domestic debt is extremely short (overnight for most Brazilian government bonds, for instance); and (3) real rates of interest, however computed, far exceed world rates. Some, if not all, of these conditions hold for all of the major Latin American debtors (Sanginés, 1989; Rodríguez, 1989; Carneiro and Werneck, 1989; Velasco and Larraín, 1989). If bond financing is not available, moreover, money creation is the only option, and no responsible economist would want to recommend schemes involving further monetary growth to countries already in the grip of hyperinflation or with underlying inflation rates so high they may already exceed the revenue-maximizing rate.[2]

This study uses the Chilean experience to elaborate on these themes. A central aspect of the analysis is the distinction between public and private debt and the relation of each to the debt-reduction mechanisms used. In particular, we analyze the current schemes for the repurchase

[2] See, for example, Rodríguez (1989) for estimates for Argentina.

and capitalization of the two sectors' debt and attempt to ascertain their different fiscal and balance-of-payments effects. The discussion is organized into five chapters following this introduction. Chapter 2 provides a brief background on the accumulation of Chile's debt, the evolution of the debt-reduction schemes, and the results achieved to date by those schemes. Chapter 3 focuses on private debt and the mechanisms used to reduce it, with the dividing line drawn between formal and informal schemes—those established by the Central Bank to reduce debt and those resulting from direct negotiations between debtors and creditors outside the formal mechanisms. Chapter 4 turns to the public sector, drawing the distinction between debt-equity swaps and indirect repurchases of official debt. Chapters 5 and 6 discuss, respectively, the macroeconomic and balance-of-payments effects of the debt-reduction schemes. The domestic financing of debt repurchases and the role of the parallel exchange market in providing foreign assets for indirect buybacks are considered in Chapter 5, along with the connection among debt-equity swaps, investment, and growth. Balance-of-payments considerations discussed in Chapter 6 include the liquidity effects of swaps, the relationship between interest payments saved and remittance obligations incurred, and some projections for the Chilean current account. Sundry conclusions and generalizations are drawn together in Chapter 7.

2 THE EVOLUTION OF CHILE'S DEBT

The Process of Debt Accumulation[1]

Chile's debt today has its origins in the heavy private-sector borrowing begun in 1975. During the second half of the 1970s, Chile experienced a recovery from the steep recession of 1972-75, a recovery that gave way to a boom from 1979 to 1981.[2] This boom was principally financed with foreign loans, which permitted an unsustainable expansion of private expenditure for both consumption and investment. External debt increased as a consequence of the surge in the domestic demand for credit. In addition, dollar loans were made particularly attractive by the fixed-exchange-rate policy pursued between 1979 and 1982, which rendered those loans comparatively cheap for as long as that policy was credible.[3]

Changes in capital-account restrictions during the late 1970s helped to precipitate the borrowing spree. In the early stages of the military government (1973-77), access by Chilean banks to external credit had been practically limited to the financing of foreign trade. Open access to external loans was a reality only for the nonfinancial private sector, which accounted for over two-thirds of external loans between 1975 and 1978. The exercise of this option was limited in practice to a small group of companies that, by virtue of their size or lines of business, had direct relations with foreign banks. Restrictions on external borrowing by banks were gradually lifted, then sharply relaxed in mid-1979. For example, banks were originally limited to a total stock of foreign debt not larger than their capital base. This ceiling was gradually raised to 225 percent of the capital base by April 1979 and was effectively eliminated in April 1980. The only remaining quantitative constraint on the banks' external liabilities was that their overall debt-to-capital ratio could not exceed a twenty-to-one limit.

The relaxation of restrictions on the capital account, at a time when international loans were abundant, is mirrored by the behavior of the

[1] This section is partly based on Larraín (1990).

[2] On the causes of the boom, see Barandiarán (1983).

[3] Empirical estimates, using Bayesian methods, suggest that the policy was credible until late 1981. See Lagos and Coloma (1987).

external debt. The country's total foreign liabilities were constant in net terms—that is, after deducting international reserves—and showed little variation in gross level between 1975 and 1977. The situation changed somewhat in 1978, when Chile contracted $1.4 billion in external credits, and it changed even more markedly between 1979 and 1981, the period of the boom. The evolution of Chile's external debt is shown in Table 1.

The division of external borrowing between the public and private sectors is striking. In sharp contrast to the experience of other Latin American countries, such as Argentina, Brazil, Mexico, and Peru, the private sector accounts for more than 100 percent of the increase in Chile's net foreign debt during this period. Net public debt declined in every year between 1975 and 1980, particularly in 1979-80.

Because gross foreign public debt rose during the 1975-80 period, it is clear that the borrowing was used to build up international reserves. This performance of the public sector was made possible by the sharp fiscal reform begun in 1974; an overall deficit exceeding 30 percent of GDP in the early 1970s gave way to a consistent surplus between 1976 and 1981. It was also a natural consequence of an economic policy guided by the desire to minimize the role of government in the economy.

In contrast to this conservative public stance, the private sector took ample advantage of the capital-account liberalization and the liquidity of international markets. Private borrowing was mostly done through commercial banks, which intermediated between the international financial centers and the Chilean economy. As Table 1 shows, banks increased their foreign obligations by a mere $500 million between 1975 and 1978, the years when most foreign loans were contracted by the nonfinancial private sector, but then went on to borrow $6 billion during the next three years. By 1981, over 65 percent of Chile's external debt was owed by the private sector, with two-thirds of that portion owed by commercial banks. This unsustainable expansion of private foreign liabilities came to an abrupt end in early 1982, even before the outbreak of the debt crisis in the developing countries, as external creditors reevaluated the situation of the country.

Although capital flight absorbed a substantial portion of the borrowing by other Latin American countries, it played a very minor role in Chile's experience. From 1975 to late 1979, foreign borrowing by the private sector was reflected mainly in an accumulation of reserves by the Central Bank, not in an accumulation of private claims on foreigners. Later, in 1980-81, it went to finance the unsustainable path of

TABLE 1

PUBLIC- AND PRIVATE-SECTOR GROSS FOREIGN DEBT, 1975-88

(*in millions of U.S. dollars, with percentage of total in parentheses*)

	Public Sector					Private Sector				
	Financial		Nonfinancial		Total	Financial		Nonfinancial	Total	
Year	Central Bank [a]	Banco del Estado	Treasury [b]	Public Enterprises		With Public Guarantee	Other Banks			Total Foreign Debt
1975	1,004	166	1,656	1,655	4,481 (84.7)	21	154	632	807 (15.3)	5,288
1976	1,030	121	1,615	1,479	4,245 (81.1)	30	168	790	988 (18.9)	5,233
1977	953	94	1,550	1,686	4,283 (76.3)	46	309	975	1,330 (23.7)	5,613
1978	1,135	274	1,491	2,108	5,008 (71.4)	48	660	1,295	2,003 (28.6)	7,011
1979	1,276	252	1,287	2,351	5,166 (59.6)	76	1,453	1,968	3,497 (40.4)	8,663
1980	1,070	314	1,196	2,534	5,114 (45.6)	72	3,497	2,524	6,093 (54.4)	11,207
1981	577	397	1,068	3,403	5,445 (34.9)	69	6,629	3,448	10,146 (65.1)	15,591
1982	843	778	1,133	3,850	6,604 (38.5)	62	6,703	3,790	10,555 (61.5)	17,159
1983	2,983	877	1,129	3,597	8,586 (47.6)	1,815	4,195	3,441	9,451 (52.4)	18,037
1984	4,454	1,386	1,276	3,879	10,995 (55.9)	2,130	3,469	3,065	8,664 (44.1)	19,659
1985	5,442	1,356	1,990	4,028	12,816 (62.4)	2,348	2,786	2,579	7,713 (37.6)	20,529
1986	5,757	1,296	2,614	4,016	13,683 (65.7)	3,408	1,463	2,275	7,146 (34.3)	20,829
1987	6,375	1,078	2,993	4,110	14,556 (70.5)	3,276	737	2,091	6,104 (29.5)	20,660
1988	5,243	926	3,512	3,521	13,202 (69.6)	2,812	456	2,490	5,753 (30.4)	18,960

SOURCE: Central Bank of Chile, *Boletín Mensual*, various issues

[a] Including Central Bank debt to the IMF.

[b] Tesorería General de la República.

private spending, which produced huge current-account deficits. The most comprehensive study of capital flight available for Chile concludes that there were, in fact, unregistered private capital inflows in the 1975-81 period (Arellano and Ramos, 1987). Capital flight was important in 1982-83, when approximately $1 billion left the country. Thus, capital flight accounts for about 5 percent of the country's foreign debt, a modest figure by Latin American standards.

The Strategy of Debt Reduction

In the midst of the generalized debt crisis of 1982 and of considerable instability in Chile's domestic policies, it became apparent to the Chilean authorities that no voluntary lending would be available to cover the projected foreign-exchange shortfalls. Indeed, by the end of 1982, Chile faced amortization and interest payments that could not be met using the country's own resources. Chile was therefore forced into a process of debt rescheduling and restructuring.

Since 1983, the basic Chilean strategy has been to cooperate with foreign creditors. Chile's negotiators have sought and obtained extensions of repayment periods, the repricing of old and new credits, commitments of new money to cover the payments gap, and the retiming of interest payments. The country has, so far, stayed current on its debt service. Agreements with banks have always been preceded by International Monetary Fund (IMF) programs, and the banks have relied primarily on the IMF to monitor the country's performance and adjustment efforts. Since 1985, the World Bank has also been involved in this process. The conditions of IMF and World Bank programs have been in substantial congruence with the economic policies of the Chilean authorities.

Discounts on Chilean debt in secondary markets were about 30 percent at the start of the debt crisis. As interest accrued on the full value of debt, and secondary markets valued the debt at less than 70 percent, some debtors had an incentive to repurchase their obligations. These developments induced the Central Bank to provide a regulatory framework for debt reduction, and formal mechanisms were established for this purpose in mid-1985.

The main official debt-reduction schemes are governed by the Law of International Exchange. It provides for indirect repurchases under the general regime of Chapter XVIII (for the use of Chilean residents)

and for capitalizations under Chapter XIX (for the use of foreigners).[4] Two other formal mechanisms have been used, in practice, only to reduce private liabilities. These are operations under Chapter XVIII, Annexes 4 and 5,[5] and capitalizations under Law Decree 600, the Chilean foreign-investment statute (Table 2).

The debt-repurchase mechanism (Chapter XVIII) allows private parties to purchase in the international secondary market debt certificates with maturities exceeding one year and to negotiate their prepayment with the Chilean debtor. Originally, it was intended that the proceeds of these operations would be used to reduce the local debts of the parties buying the debt certificates abroad. This restriction was soon relaxed, however, permitting the use of the proceeds for any purpose. A common operation involves the purchase by an intermediary of a domestic agent's external obligation and resale back to the domestic debtor. This indirect repurchase through an intermediary is a way to circumvent the sharing clause, which prevents a debtor from prepaying its own debt to a particular creditor unless the same prepayment opportunity is offered to all its foreign creditors. The Central Bank controls the volume of these formal debt repurchases through monthly (or bimonthly) auctions of quotas under the Chapter XVIII mechanism.

The debt-capitalization scheme (Chapter XIX) allows foreigners investing in Chile to purchase debt certificates with maturities exceeding one year. The most common case is one in which a foreign investor

[4] Operations carried out under Chapter XVIII are described as "indirect repurchases" to distinguish them from direct repurchases or buybacks by the Central Bank using its own foreign assets. Furthermore, the terms "debt capitalizations" and "debt-equity swaps" (the operations under Chapter XIX) are used as interchangeable throughout this study, in line with common Spanish usage.

[5] Chapter XVIII, Annex 4, allows nationals to capitalize troubled local firms through the conversion of the debt certificates of those firms, bought at a discount abroad. Use of this provision avoids the payment of the Central Bank fee that applies to regular Chapter XVIII operations. In effect, Annex 4 permits domestic investors to engage in debt-equity swaps, but without allowing repatriation rights. This mechanism has been a vehicle for the financial restructuring of domestic firms having foreign debt. Once the board of directors of the affected company agrees to an operation of this sort, each stockholder has an opportunity to purchase the company's external debt and swap it for additional equity (i.e., to capitalize the company) in proportion to the stockholder's share of the existing equity capital. In some cases, this has involved the participation of a large number of small investors. Annex 5 is a repurchase mechanism designed to help local mortgage debtors by allowing them to appropriate part of the secondary-market discount (see Table 2).

TABLE 2

THE FORMAL MECHANISMS OF DEBT REDUCTION

	Debt Repurchases		Debt Capitalizations	
	Chapter XVIII	Chapter XVIII, Annexes 4 and 5	Chapter XIX	Capitalizations D.L. 600
Description	Indirect debt repurchase by nationals.	Annex 4: Repurchase of a company's debt by nationals to capitalize that company. Annex 5: Repurchase of Central Bank debt on behalf of mortgage debtors to reduce their local debts.	Debt-equity swap by foreign investor (debt of a firm different from that in which the investment occurs).	Debt-equity swap by foreign investor (debt of the firm in which the investment occurs).
Restrictions	No access to official exchange market. Necessary to have a quota auctioned by Central Bank. [a] Public agents and private financial firms not allowed to repurchase own debts directly.	No access to official exchange market. Central Bank approval needed on a case-by-case basis (quota not required). Debtors not allowed to repurchase own debts directly.	Central Bank approval needed on a case-by-case basis. Profit remittances only after four years. [b] Capital repatriation only after ten years. [b]	Same as Chapter XIX, but with preferred legal status.

[a] Quotas are auctioned by the Central Bank on a monthly or bimonthly basis. Initially allocated to commercial banks in accordance with their capital holdings, these quotas have, since September 1985, been auctioned among domestic banks. The quota gives the right to repurchase debt through an intermediary.

[b] Conditions are slightly stricter for portfolio investments in mutual funds (Chapter XIX, Annex 2), with profit repatriation permitted only after five years and capital repatriation only after twelve.

acquires the debt of a local firm different from one in which he has an interest. In this case, the foreign investor sells the debt certificate to

the local debtor and uses the proceeds to finance a domestic equity investment. The Central Bank of Chile controls these transactions by authorizing them on a discretionary case-by-case basis. If, however, a foreigner is a creditor of the firm in which he plans to invest, the operation involves a simple debt-equity swap with the domestic firm. These operations (known as Capitalizations D.L. 600) are regulated by restrictions similar to those of Chapter XIX but have a preferred legal status. A brief description of the mechanisms and the restrictions on them is provided in Table 2.

How much debt reduction has this array of mechanisms accomplished? As shown in Table 3, swaps had retired $6.2 billion of Chile's foreign debt by December 1988. Of this total, the formal debt-repurchase and debt-capitalization schemes accounted for $4.2 billion. Informal mechanisms, which govern repurchases and partial forgiveness of debts, accounted for the remaining $2 billion (this latter figure includes the direct buyback of October 1988, which retired $299 million). Total foreign debt declined by only $1.6 billion between the end of 1985 and the end of 1988 (Table 1). Thus, debt accumulation through other channels partly offset the reduction of debt through swaps. Had it not been for the depreciation of the U.S. dollar vis-à-vis the currencies of other industrialized countries in the 1985-87 period, the reduction in dollar debt would have been greater.

The private sector has been the most important user of the debt-reduction schemes, accounting for almost two-thirds of the total reduction in debt. This activity helps to explain the significant decline of private debt since 1985. Taking into account all debtors, the most often used mechanism has been Chapter XVIII. Interestingly, direct operations, partial forgiveness, and other informal operations surpass the value of transactions under Chapter XIX.

TABLE 3

EXTERNAL-DEBT REDUCTION BY DEBTOR AND MECHANISM

(*in millions of U.S. dollars, accumulated by December 1988*)

	Formal Schemes			Informal Schemes			
	Debt Repurchases (Chapter XVIII [a])	Debt Capitalizations (Chapter XIX)	Debt Capitalizations (D.L. 600)	Portfolio Swaps	Other [b]	Total	Percentage of Total
Public Sector	805.7	624.3	0.0	58.6	680.4	2,169.0	(34.9)
Financial	643.3	530.3	0.0	31.5	298.9	1,504.0	(24.2)
Central Bank	464.6	382.4	0.0	26.1	298.9	1,172.0	
Banco del Estado	178.7	147.9	0.0	5.4	0.0	332.0	
Nonfinancial	162.4	94.0	0.0	27.1	381.5	665.1	(10.7)
Private Sector	1,325.2	1,214.7	273.2	77.2	1,161.2	4,051.5	(65.1)
Financial	1,236.0	1,213.5	150.5	70.4	75.0	2,745.4	(44.1)
With public guarantee	441.8	462.4	0.0	31.3	0.0	935.5	
Without public guarantee	794.2	751.1	150.5	39.1	75.0	1,809.9	
Nonfinancial	89.2	1.2	122.7	6.8	1,086.2	1,306.1	(21.0)
Totals by Category	2,130.9	1,839.0	273.2	135.8	1,841.6	6,220.5	(100.0)
Percentage of Totals	(34.3)	(29.6)	(4.4)	(2.2)	(29.6)	(100.0)	

SOURCE: Central Bank of Chile, *Boletín Mensual*, various issues.

[a] Includes Chapter XVIII, Annexes 4 and 5 (see Table 2).

[b] Includes direct repurchases and partial forgiveness; the direct buyback of Central Bank debt is counted here.

3 DEBT REDUCTION BY THE PRIVATE SECTOR

The Decline of Private Debt Since 1982

From 1982 to 1988, a dramatic change occurred in the structure of Chile's foreign obligations. In 1981, the private sector accounted for 65 percent of the country's total external debt, a record among Latin American debtors. By the end of 1988, this figure had been more than reversed, with the public sector accounting directly for almost 70 percent of the total debt (Table 1). This reversal was caused by a number of factors.

First, the country was unable to generate a surplus from the merchandise trade and nonfactor services sufficient to cover interest payments on foreign loans. Until 1987, these sources failed to cover even half of the annual interest payment, approximately $1.9 billion by 1988, and Chile had to resort to foreign borrowing to bridge the gap. Because the private sector has, to a large extent, lost access even to the "involuntary" loans of the post-1982 period, the external gap has been covered primarily by loans to the public sector. In particular, all new money provided by creditor banks has been lent to the Central Bank of Chile, which has therefore experienced the largest increase in foreign debt of all institutions, approximately $4.4 billion, in the 1982-88 period. All in all, the public sector's debt has risen by about $6.6 billion since 1982, while private debt has declined by $4.8 billion.

Second, the relative and absolute decline of private foreign debt has reflected the differential use of debt-reduction mechanisms. Almost two-thirds of debt reduction has been due to private-sector operations.

Third, the public sector has directly absorbed private foreign liabilities, as in the case of the bank intervention of January 1983 discussed below (see also Díaz-Alejandro, 1985, and Velasco, 1988b). A counterweight to this process was the privatization of about $400 million of public debt through the divestiture of five large public enterprises.

The 70:30 distribution of foreign loans between the public and private sectors underestimates, however, the overall share of the public sector in the country's debt burden. As of December 1988, publicly guaranteed debt accounts for an additional 15 percent of total debt, bringing to 85 percent the share of Chile's total foreign debt that is directly or indirectly the responsibility of the state.

This state support came about as a result of a series of bank interventions and closures that took place in January 1983, when the government was forced to guarantee the external liabilities of the troubled banks. The authorities had expected that foreign banks would queue, as would any other creditor, to recover what they could of the almost $4 billion of external debt owed by the banks involved. The foreign banks, however, were unwilling to accept this argument, and the Chilean negotiators were unable to impose it. Therefore, the state took over directly $360 million of debt owed by the liquidated banks and agreed to guarantee the remaining financial-sector foreign debt as it became due. In every subsequent round of reschedulings, the public sector guaranteed a new *tranche* of private debt, with the result that the stock of publicly guaranteed liabilities grew every year from 1982 to 1986 (Table 1).

Up to now, the government has not had to honor its guarantee explicitly. As Ffrench-Davis and De Gregorio (1985) have argued, however, the public sector has in practice borne a substantial part of the cost of private debt by various debt-support programs, without which the guarantee would surely have been invoked. Most important among these programs were preferential exchange rates for dollar debtors, subsidized restructurings of domestic liabilities, and the Central Bank's purchase of bad loans from commercial banks. The overall fiscal cost of these programs is estimated at about $6 billion (Larraín, 1990).

It is important to notice the sharp decline in private debt to foreign commercial banks since 1982. From 1977 to 1982, most of the external credits were obtained from foreign banks. By the end of that period, those credits accounted for 91 percent of the private sector's medium- and long-term external debt. After 1982, when creditor banks engaged in a systematic effort to decrease their exposure, loans outstanding to the private sector declined by over $4.4 billion. By the end of 1988, only $5.7 billion of private liabilities were outstanding, and half of that amount was guaranteed by the state. Of that total, moreover, only medium- and long-term debt to commercial banks, a total of $3.3 billion, is currently available for further debt reduction.

The Importance of Informal Mechanisms

When analyzing Chilean debt-reduction schemes, most or all attention is generally given to those mechanisms formally established for that purpose. This emphasis, however, fails to recognize that about 30 percent of known private transactions are carried out through informal

schemes, a percentage that would certainly increase if all operations were known. The importance of the informal transactions is even greater for countries such as Brazil and Mexico, where they account for roughly 40 percent of all debt conversions—not just those carried out by the private sector.[1]

Since 1982, large secondary-market discounts have given some local debtors an incentive to repurchase directly their foreign liabilities, in a process that is largely beyond the control of the authorities. These direct operations can be accomplished in a number of ways. For example, a domestic debtor can prepay its debt in local currency (allowed by the Law of International Exchange), and the creditor can sell the local currency for dollars in the parallel market and send the dollars abroad. Alternatively, the local debtor can directly repurchase its debt abroad, without giving notice to the Chilean authorities. Although these operations are not entirely illegal, they are not strictly legal either, for they are not specified in the Law of International Exchange.

The information available about these direct, informal operations is incomplete, because forgiveness of debt, direct repurchases, and even direct conversions are grouped as "other" by the Central Bank, with no breakdown available. It appears, however, that some 85 percent of these operations represent direct repurchases at a discount (Fontaine, 1988).[2]

As of December 1988, the total value of private-debt reduction accomplished by these transactions was $1.16 billion, or 18 percent of private liabilities to commercial banks (Table 3).[3] Almost all these operations were concentrated in the nonfinancial sector. This concentration stems from the tight control exercised over financial corporations, which are forced to pay the Central Bank a fee for debt repurchases under Chapter XVIII. Nonfinancial firms are much more difficult to control and thus are better able to avoid payment of the fee.

[1] See DiLeo and Remolona (1989). In both Brazil and Mexico, public enterprises are responsible for the bulk of informal debt-reduction operations.

[2] A less important informal mechanism used to reduce private debt is the portfolio swap. In this operation, a domestic bank exchanges an external asset (i.e., a debt of a foreign company) for the debt of a Chilean entity held by a foreign bank. In this way, gross (but not net) Chilean liabilities are reduced. The total value of these transactions has amounted to less than $80 million.

[3] The base for this figure is the stock of debt as of December 1985, the year the formal mechanisms were started. This base date will be used in the following discussion.

The $1.16 billion figure includes only those operations recorded by the Central Bank, although it is widely recognized that other direct transactions may have occurred beyond the knowledge of the monetary authorities. For example, many "back-to-back" loans were made to Chileans after equivalent deposits were made in lending banks abroad using the offshore funds of the local debtor. Although many of these loans could have been repaid with the offshore deposits, it is very difficult for the Central Bank to know about such transactions.

Private-Debt Reduction through Formal Schemes

The official mechanisms of Chapters XVIII and XIX account for the bulk of private-debt reduction. Repurchases under Chapter XVIII had an accumulated value of almost $1.2 billion as of December 1988, about the same as capitalizations under Chapter XIX. Thus, the two main formal schemes have achieved a direct reduction of 37 percent in private debt. If all formal debt-reduction mechanisms are considered, the sector's debt to commercial banks was reduced by $2.8 billion, or by 44 percent.

The official mechanisms of Chapters XVIII and XIX have been used mainly by private financial debtors (commercial banks), which are tightly supervised by the authorities. Less-regulated agents in the nonfinancial sector have principally used informal schemes, which do not need Central Bank approval or the payment of a fee. At the same time, the restructuring agreements with foreign creditors prevent Chilean banks from repurchasing their debts directly. Thus, it is not surprising that 95 percent of debt reduction by the private financial sector has come through formal schemes. In contrast, almost 85 percent of private nonfinancial operations have been informal.[4]

[4] Although very few Chapter XIX operations have been carried out by the private nonfinancial sector, it would be a mistake to conclude that no capitalization involving private nonfinancial assets has occurred. The figures merely say that no operation under Chapter XIX has involved the reduction of debt by the private nonfinancial sector. Many transactions, however, have implied the redemption of debt by public or private financial institutions, with the proceeds of the operations being invested in the private nonfinancial sector. Thus, the Chapter XIX figures reflect the domestic counterpart of roundabout debt capitalization but not the destination of the investment itself in the majority of the cases.

4 DEBT REDUCTION BY THE PUBLIC SECTOR

Magnitudes and Mechanisms

A number of schemes exist for reducing the 85 percent of Chile's foreign debt that is directly or indirectly in the hands of the public sector. Of this portion, only medium- and long-term public debt to foreign commercial banks has been subject to these operations, and this pattern is likely to continue in the future.

The remarkable increase in public external debt after 1981 appears even more extreme if we consider medium- and long-term obligations to commercial banks. Although creditor banks dramatically reduced their exposure to the private sector after 1981, they could not decrease their loans to the public sector. Nevertheless, the increase in public debt to commercial banks was almost negligible in 1985-87, and a substantial reduction took place in 1988. By the end of that year, public-debt reduction was centered on the $6.8 billion of medium- and long-term debt owed to commercial banks. State-guaranteed private debt added $2.1 billion to this figure.

Two mechanisms have been used to reduce public-sector debt: indirect repurchases and capitalizations. In addition, in October 1988, the Central Bank carried out a direct buyback of $299 million of its own debt, using $160 million in reserves.[1]

The Repurchase of Public Debt at a Discount

Indirect repurchases through secondary markets have reduced public-sector debt by $1.19 billion, or 14 percent of the sector's total liabilities to foreign banks (Table 3). The Central Bank and Banco del Estado have reduced debt primarily through the formal mechanisms of Chapters XVIII and XIX, including $370 million of debt reduced without fee through Annex 5 of Chapter XVIII, which was designed to help local mortgage debtors. Public enterprises have also engaged in

[1] The discussion that follows is concerned exclusively with the two quantitatively most important mechanisms: indirect buybacks and debt-equity swaps. For an analysis of direct buybacks using the government's international assets, see Bulow and Rogoff (1988), Sachs (1988), and the comments by Dornbusch (1988).

informal transactions, however, such as direct repurchases and partial forgiveness of debt.

The discounts obtained have varied for different types of transactions, but the Central Bank has established a set of rules for the repurchase of its own debt in connection with Chapter XVIII operations. It has redeemed its foreign liabilities in peso-denominated long-term bonds that pay interest semiannually and will be fully redeemed at maturity.

Redemptions of old debt have been made at less than par value. Conversions began and were kept at 97 percent of par until September 1987, when the redemption price was lowered, first to 92 percent, and then, a month later, to 88 percent. Not only were the nominal values lowered, but the return on the bonds was directly linked to the average interest rate on peso deposits of 90 to 360 days maturity, the *tasa de interés promedio* (TIP). Thus, the estimated effective redemption price of these instruments[2] decreased from 93 percent of par in mid-1986 to 79 percent in October 1987; in December 1987, however, it climbed back to 85 percent. The downward trend in effective redemption prices during the second half of 1987 reflected the declining value of Chilean debt on secondary markets.

Conversion rates set by the Central Bank do not apply to the rest of the public sector or to private operations. These are established by case-by-case bargaining. The Bank's conditions have set a significant precedent, however, and public and private financial deals are generally set at a redemption price 2 to 3 percentage points above that of the Central Bank.

As shown in Table 4, the average discount on Chilean debt increased from 32 percent in 1985 to over 36 percent in 1987, and to almost 40 percent in 1988. This was distributed among the parties involved in Chapter XVIII operations in four ways: (1) The auction of quotas (*cupos*) by the Central Bank. The Central Bank began Chapter XVIII operations by allocating monthly quotas to local banks in proportion to their capital. This procedure failed to produce any revenue, and, in September 1985, the Bank began to auction the quotas and thus to capture part of the secondary-market discount. From a low of 2.7 percentage points captured on average in 1985, the Bank increased its

[2] The effective redemption price is calculated considering the nominal conversion into domestic bonds and the secondary-market value of the bonds. Thus, if a debt certificate is redeemed with a bond at 95 percent of par value, and the bond trades at 90 percent of its face value, the effective redemption price is 85.5 percent.

TABLE 4

ESTIMATED DISTRIBUTION OF DISCOUNTS ON DEBT REPURCHASES (CHAPTER XVIII) [a]

(*in percentages or millions of U.S. dollars*)

	1985	1986	1987	1988
Formal repurchases (Chapter XVIII)	$115.2	$410.6	$695.8	$909.3
Total estimated repurchases [b]	$190.6	$645.1	$1,079.2	$1,781.4
Total discount from par [c]	32.0	31.2	36.2	39.7
Central Bank fee [d]	2.7	10.9	20.5	16.7
Redemption discount [e]	8.0	9.0	11.5	12.0
Parallel-market premium [f]	11.6	4.9	3.4	8.8
Other [g]	9.7	6.4	.8	2.2

[a] All percentages are year averages, except for 1985, where figures refer only to the second semester (after formal debt-reduction operations began in Chile).

[b] Assuming that 85% of "other" corresponds to direct debt repurchases.

[c] From Vatnick (1988) and Salomon Brothers. Discounts are averages of buying and selling prices for public and publicly guaranteed debt. Thus, they reflect accurately the situation with regard to private financial debt but can serve only as rough estimates of the discounts on private nonfinancial debt.

[d] The value of fees divided by the total face value of formal transactions, including operations under Chapter XVIII, Annexes 4 and 5.

[e] From Aninat and Méndez (1986), Gémines (1986, 1987), Central Bank of Chile, and market sources.

[f] Expressed as a percentage of par value.

[g] Intermediaries' fees and other costs (residual variable).

share to over 20 points in 1987 and to 17 in 1988. (2) Redemption discounts captured directly by debtors. Conversions of debt certificates in local currency were made at less than par value. These redemption discounts increased during the 1985-88 period, from 8 percent in 1985 to approximately 12 percent in 1988.[3] (3) Exchange-rate premiums for offshore assets. Because Chile has not allowed the use of its reserves to finance Chapter XVIII operations, it has had to attract the offshore

[3] No systematic information exists about the discounts obtained on different debt repurchases. The numbers here are rough estimates based on various sources (Aninat and Méndez, 1986; Gémines, 1987). They attempt to measure the average discount for both public and private transactions.

assets of domestic residents. These have been lured back by offering a premium over the official exchange rate. With redemptions being made at the official rate, however, the premium paid to obtain those assets eats up a portion of the discount. Interestingly, the cost of this exchange-rate premium declined in spite of the increased volume of debt-reduction operations—from 11.6 percent in 1985 to 3.3 percent in 1987. In 1988, however, it increased to 8.8 percent, partly because of political uncertainty and of perceived overvaluation of the official exchange rate. (4) Fees and miscellaneous costs. The remainder of the discount has gone to cover intermediaries' fees and other miscellaneous costs. This portion has suffered a sharp decline.

The total discount captured by Chile is the sum of the auction fees paid to the Central Bank and the redemption discount obtained by the debtor. This is indeed what the public sector as a whole captures when a Chapter XVIII operation involves public debt. In 1985, it amounted to less than one-third of the secondary-market discount (10.7 out of 32 percent); two years later, it had reached almost 90 percent of the discount (32 out of 36.2 percent). The share declined to 72 percent in 1988, largely because of an increase in the exchange-rate gap. Taking a weighted average over the four years, Chile has captured about three-quarters of the secondary-market discount on Chapter XVIII transactions.

Two circumstances explain why the country obtains most of the discount on Chapter XVIII operations: the presence of an auction system and substantial competition among intermediaries. The intermediaries purchase foreign debt and sell it to the local debtors for a profit. Suppose that the intermediary buys one dollar of debt abroad at price P', sells it to the debtor at price P, and pays the Central Bank fee (f). Because redemption is made at the official exchange rate (E) and the opportunity cost of the foreign exchange used in the repurchase is the parallel-market rate (E'), the profit (Pr) is

$$Pr = (P - f)E - P'E' \tag{1}$$

Over time, competition among the intermediaries will drive the profit to zero, and thus

$$(P - f)/P' = (E'/E) \tag{2}$$

The redemption premium net of the Central Bank fee will tend toward the parallel-market gap. This has been the case in practice. Whereas a substantial part of the discount went into intermediaries' profits and to other costs in 1985, the portion declined significantly in

1986 and fell to less than 1 percent in 1987; equation (2) holds almost exactly for that year. The market has clearly become increasingly competitive since 1985-86.

Debt-Equity Swaps Involving Public Liabilities

The capitalization of public debt has occurred only through Chapter XIX. By December 1988, as shown in Table 3, the public sector had reduced its debt by $624 million through this mechanism. The figures, however, should receive careful interpretation. They indicate only the total amount of debt reduction in connection with Chapter XIX, not necessarily the amount of privatization through debt-equity swaps. Foreign investors bring in public debt that is traded for long-term public bonds. The investors sell those bonds and use the proceeds for investments in private firms or new ventures. Thus, most of the $624 million represents, in practice, debt-repurchase operations associated with Chapter XIX. To know which real public assets have ultimately been exchanged for Chilean debt, one would have to analyze all investments made through Chapter XIX. The information needed for this analysis is not readily available, but there is evidence that debt-equity swaps have been used to privatize partly public firms through auctions in the stock exchange.

Chapter XIX operations not involving privatization have generally consisted of direct investments in specific firms. In the second half of 1987, however, the legislation was amended to allow debt capitalizations through equity funds that would operate on the stock market. The restrictions on repatriations through these operations are slightly higher than the restrictions on the regular Chapter XIX operations. The main advantages of this sort of portfolio investment for the foreign investor are to reduce the management costs of a direct venture—a substantial barrier for a small investor—and to achieve portfolio diversification.

Capitalization through equity funds can be used to reduce both public and private debt, and the funds, in turn, may invest in both public and private companies, as long as they are listed on the stock exchange. The International Finance Corporation (IFC) and Midland Bank formed such an equity fund in early 1988; as of December 1988, however, transactions amounted to only $30 million.

Once again, the benefits of debt capitalization depend on the amount of the secondary-market discount that is appropriated by the debtor. As noted earlier, the conditions under which foreign debt is exchanged for domestic assets have been clearly established from the

outset for Central Bank liabilities. It redeems its own debt at 100 percent of par and converts it into long-term bonds issued by the Central Bank itself. Foreign investors have been able to choose between two types of peso bonds: (1) dollar-linked bonds, bearing terms and rates similar to those established by successive renegotiations of Chile's external debt. These bonds bear the same interest rate as the original credit during the first six months and a decreasing rate tied to the London Interbank Offer Rate (LIBOR) thereafter. (2) peso-indexed bonds that will be converted to local currency at the official exchange rate; these compensate fully for past inflation and bear a real return tied to the average deposit rate (TIP). Both bonds pay interest semiannually, and the principal is to be redeemed by one payment at maturity. Because the terms of the dollar-linked bonds can be changed by future debt restructurings, they are very risky, and no foreign investor has chosen them. The following discussion is therefore concerned only with the peso-indexed bonds.

Although redemption has always been made at nominal par value, the effective redemption price has been lower. Beginning in May 1986, the peso-linked bonds have carried a discount from the TIP that has ranged from 0.5 percent to 1.5 percent annually. The Central Bank applied the larger discounts to the instruments with the shorter maturity. The authorities have used this device to promote the acceptance of longer-term bonds. The secondary-market price of these bonds declined in the second half of 1987 as a result of the issuance of longer maturities and of steeper discounts. This trend reflected the decline in the value of Chilean debt in secondary markets during the same period, a decline that has increased pressure on the Central Bank to appropriate a higher proportion of the discount.

The effective redemption prices for Chapter XVIII and XIX bonds have been practically the same. From a narrow perspective, it might therefore seem that the public sector should be indifferent between these two mechanisms, but this is not the case. Under Chapter XVIII, the public sector captures the discount implicit in the effective redemption price plus the auction fee. Under Chapter XIX, it captures only the redemption discount, as is analyzed below.

Redemption prices on liabilities other than those of the Central Bank are determined by case-by-case negotiations. As the secondary-market values are very similar for Chilean public debt and private financial debt (which is mostly guaranteed by the state), the conditions set by the Central Bank impose a floor on the effective redemption prices that these other debtors pay.

The distribution of discounts on operations under Chapter XIX, shown in Table 5, is very different from that related to debt repurchases under Chapter XVIII (Table 4). The Central Bank charges no fee for Chapter XIX operations, and the direct redemption discount is quite

TABLE 5
ESTIMATED DISTRIBUTION OF DISCOUNTS ON DEBT CAPITALIZATIONS
(CHAPTER XIX)
(*in percentages*)

	1985	1986	1987	1988
Total discount [a]	32.0	31.2	36.2	39.7
Central Bank fee	0.0	0.0	0.0	0.0
Redemption discount [b]	8.0	9.0	11.5	12.0
Intermediaries' fees [c]	2.0	2.0	2.0	1.8
Subsidy to foreign investor (percentage of par value)	22.0	20.2	22.7	25.9
Subsidy to foreign investor (percentage of dollar investment)	32.4	29.4	35.6	43.0

[a] Year averages, except for 1985, where figures refer only to the second semester.
[b] From Aninat and Méndez (1986), Gémines (1986, 1987), Central Bank of Chile, and market sources.
[c] Estimates based on Aninat and Méndez (1986) and on market sources.

similar to that for Chapter XVIII operations. About two-thirds of the secondary-market discount is therefore captured by the foreign investor; the country captures less than one-third on average, a very modest proportion.[4] The remainder goes to intermediaries.[5] Thus, foreign investors obtain a substantial subsidy of 38 percent on their cash

[4] It has been pointed out that debt-equity swaps have increased the prices of real domestic assets and that part of the discount has thus gone to the owners of the assets. However, this effect is very hard to identify and has never been quantified. It is our perception, though, that increases in the prices of real assets have had much more to do with general economic recovery than with debt-equity swaps.

[5] Aninat and Méndez (1986), and market sources recognize that intermediaries' fees on transactions under Chapter XIX are substantially higher than on transactions under Chapter XVIII. This is partly a consequence of there being no Central Bank fee for Chapter XIX transactions.

investment, a subsidy that grew in 1987 and 1988. It is not surprising, then, that this mechanism should be attractive to foreign banks and firms.

5 DOMESTIC MACROECONOMIC EFFECTS OF DEBT REDUCTION

The Domestic Financing of Debt Swaps

Several options are available for financing swaps of public foreign debt. One possibility is for the government to sell its own public enterprises, and this option has occasionally been used by the Chilean authorities. Another option is for the government to use monetary or tax financing, but the Chilean authorities have chosen not to do so. The preferred form of financing by the Chilean authorities has been through domestic debt, an alternative that shifts the financing pressure onto domestic credit markets. Such a strategy, however, can give rise to several macroeconomic complications.

First, these operations amount to a swap of external debt for domestic liabilities. This has contributed to the accumulation of domestic public debt, a process that began in earnest in 1983 with efforts to bail out domestic banks and private debtors. Table 6 shows the evolution of the domestic debt of both the Central Bank and the nonfinancial public sector. Almost all of this debt is either indexed to the price level or denominated in U.S. dollars. In 1986, the overall stock stood at $9.2 billion, a worrisome 54.8 percent of GDP.[1] It was reduced somewhat in 1987-88, owing mostly to unexpectedly large tax revenues and to substantial monetization during that period. Nonetheless, the outstanding stock is great enough (40.8 percent of GDP in December 1988) to caution against large additional foreign-debt reduction financed by domestic bond issues.

The existing debt has not been a cause of macroeconomic instability, but further debt accumulation could threaten Chile's hard-earned economic tranquility. As the debt-to-GNP ratio rises, the monetization option becomes more attractive or perhaps even inevitable. If the resulting shift to money financing is anticipated by the public, inflation

[1] Accumulation of domestic debt is a common phenomenon in Latin America today. See Velasco (1989).

TABLE 6

DOMESTIC PUBLIC DEBT AND THE DEFICIT, 1980-1988

(*in billions of U.S. dollars with percentage of GDP in parentheses*)

Year	Domestic Public Debt			Public Deficit [a]
	Nonfinancial Public Sector [b]	Central Bank [c]	Total	
1980	2.9 (11.2)	1.1 (4.4)	4.0 (15.6)	(-6.1) [d]
1981	1.6 (4.9)	0.8 (2.4)	2.4 (7.3)	(-0.8) [d]
1982	2.0 (7.9)	0.4 (1.7)	2.4 (9.6)	(3.4)
1983	2.6 (12.9)	3.9 (19.7)	6.5 (32.6)	(3.0)
1984	3.0 (15.6)	4.1 (21.3)	7.1 (36.9)	(4.3)
1985	3.4 (21.3)	6.1 (38.1)	9.5 (59.4)	(2.6)
1986	2.1 (12.5)	7.1 (42.3)	9.2 (54.8)	(1.8)
1987	1.4 (7.9)	7.1 (40.4)	8.5 (48.3)	(0.8)
1988	0.7 (3.8)	6.9 (37.0)	7.6 (40.8)	(0.3)

SOURCES: Central Bank of Chile, *Boletín Mensual* and Balance Sheets; Tesorería General de la República, *Informe General del Tesoro Público*; and Larraín (1990).

[a] Corresponds to the consolidated nonfinancial public sector.

[b] Excludes the Treasury Bond held by the Central Bank, which is an intragovernmental liability.

[c] Gross stock of domestic bonds issued by the Central Bank, including bonds issued as the counterpart to the purchase of the banking system's risky loans (*cartera vendida*).

[d] Negative numbers are surpluses.

may begin rising earlier, for reasons given by Sargent and Wallace (1981).[2]

Second, it is possible that the additional demand for credit coming from the public sector may raise domestic real interest rates and crowd out investment. Suppose a long-term bond is issued in redemption, and recall that, typically, domestic residents are prevented from borrowing in world capital markets. If the supply of bonds increases significantly, the domestic interest rate must rise to clear the domestic market. The government is simply swapping internal for external debt, but this operation is not neutral in the presence of restrictions on capital mobility.

[2] Because the debt is indexed or dollar-denominated, inflationary surprises serve little to erode its real value. Nonetheless, an anticipated inflation tax could be employed to finance interest obligations. See Velasco and Larraín (1989).

Other exogenous and policy shocks, however, have offset the possible impact of swaps on domestic interest rates, so that the experience in Chile has not been unfavorable in this regard. In fact, both short- and long-term interest rates turned sharply downward after debt-reduction mechanisms were put into practice, with short-term real interest rates declining by more than half from June 1985 to December 1986. Even after rebounding in 1987-88, they are still some 40 percent lower than they were in 1985. Medium- and long-term rates have followed a similar, though less pronounced, trend. This tendency can be explained by a series of other developments during the period: (1) the fall in world real interest rates; (2) the decline in the fiscal deficit; (3) the 1984 tax reform, which provided an incentive for Chilean firms to use retained earnings rather than credit; and (4) the growing supply of long-term funds coming from institutional investors. The moderate increase in interest rates during 1987-88 can be attributed mainly to the rise in world rates and to a mild contraction of monetary policy beginning in March 1987, when the authorities feared that the economy was becoming overheated.

A third and final problem that can result from heavy reliance on domestic borrowing to finance debt swaps is the risk of incurring even greater indebtedness. Even if real interest rates are relatively low, as they are in Chile, they are well above world rates throughout Latin America.[3] The fact that countries have been rationed out of international markets must be a central cause of this phenomenon. Credibility problems, associated with stop/go efforts to reduce inflation, must also bear some of the blame. If that is so, then swapping external for internal debt may not only fail to relieve the fiscal problem caused by indebtedness but may even make it worse; the government may be exchanging foreign debt carrying LIBOR for more expensive (and sometimes indexed) domestic debt. This point is developed extensively in Velasco and Larraín (1989).

This is perhaps the chief reason why the Chilean experience is not easily transferable to other countries in the region. Simple calculations suggest that real interest rates are currently so high in the large debtor countries of Latin America as to make swaps fiscally irresponsible. Suppose that a domestic intermediary buys public debt abroad and sells it to the government in exchange for domestic bonds at a discount

[3] This is often the case, even in economies that have not undertaken swap programs and have thus not experienced the problem just discussed.

of b percent of par value. Furthermore, let r^* be the international interest rate that the country has been paying on its external debt and r be the real rate paid on the newly issued domestic debt. Then, the fiscal position will be worsened on impact if $(1 - b) > (r^*/r)$, a condition derived in Velasco and Larraín (1989). Obviously, the larger r and the smaller r^* and b, the less advantageous the exchange is for the government. Table 7 presents estimates of this condition for Argentina, Brazil, Chile, and Mexico using measured real interest rates for the second half of 1988 and observed secondary-market discounts. The calculations suggest that, in the case of Chile, domestic rates were low enough to prevent a fiscal loss, leaving the government indifferent.[4] In the remaining three countries, however, swaps of this sort would have led to a substantial increase in the interest bill faced by the government.

TABLE 7
THE FISCAL EFFECTS OF DEBT SWAPS

	r^* [a]	r [b]	b [c]	$[(1 - b) - (r^*/r)] > 0$
Argentina	0.052	0.429	0.505	[0.495 - 0.121] = 0.374
Brazil	0.052	0.190	0.096	[0.904 - 0.274] = 0.630
Chile	0.052	0.059	0.118	[0.882 - 0.881] = 0.001
Mexico	0.052	0.299	0.118	[0.082 - 0.174] = 0.708

SOURCE: Velasco and Larraín (1989).

[a] r^* = average LIBOR for July through December 1988, plus the 13/16 spread normally charged for Latin American loans, in *ex post* real terms.

[b] r = average annualized real rates of interest on domestic government bonds for July through December 1988, or *ex post* rates where no indexed bonds exist:

Argentina: September 1988 through January 1989; *ex post* rate.

Brazil: rate on overnight Central Bank bills; *ex post* rate.

Chile: rate on long-term indexed Central Bank bonds.

Mexico: rates on 30-day Certificados del Tesoro (CETES); *ex post* rate.

[c] b = average discount captured by the public sector on debt-equity swaps.

The problem can also be viewed from a public-finance perspective. Chile's fiscal situation at the onset of the debt crisis was quite strong.

[4] In other words, no fiscal relief at all would be obtained from the swaps if interest rates were to remain at those levels.

The major restructuring of the public sector after 1973 (drastic cuts in the public payroll, a tax reform, self-financing mechanisms imposed on public enterprises, etc.), together with the reduction of inflation, brought about a persistent consolidated surplus from 1976 to 1981 (Larraín, 1990). In addition, the effect of devaluations was more beneficial to public finances in Chile than in other countries because the government was, and still is, a heavy copper exporter. As a result of the surpluses, the level of public debt was relatively low at the onset of the crisis.

The performance of the budget deficit as a percentage of GDP appears in Table 6. Unfortunately, the only numbers publicly available refer to the consolidated nonfinancial public sector, which includes the general government and public enterprises but leaves out the Central Bank, where most of the external burden rests. The social security reform of mid-1980, the recession that followed, and the increase in real interest payments on the external debt all caused the fiscal position to deteriorate, and deficits reemerged in 1982. The initial strength of the public finances, however, coupled with subsequent fiscal austerity, made it possible to keep the deficit at tolerable levels. As can be seen in Table 8, the burden of interest payments on both foreign and domestic debt has been substantial. Nonetheless, the fiscal deficit declined from 4.3 percent of GDP in 1984 to about 0.3 percent in

TABLE 8

GOVERNMENT INTEREST PAYMENTS

(*as a percentage of GDP*)

	1985	1986	1987	1988
Treasury	1.0	1.2	1.6	2.4
Domestic Debt	0.6	0.4	0.5	1.1
Foreign Debt	0.4	0.8	1.0	1.3
Central Bank	10.1	9.4	7.9	6.3
Domestic Debt	6.6	6.8	5.7	4.1
Foreign Debt	3.5	2.6	2.1	2.2
Total Debt	11.2	10.5	9.4	8.7
Domestic Debt	7.3	7.2	6.3	5.2
Foreign Debt	3.9	3.4	3.2	3.5

SOURCES: Central Bank of Chile, *Boletín Mensual* and Balance Sheets; Tesorería General de la República, *Informe General del Tesoro Público*; Larraín (1990).

NOTE: Numbers are rounded and may not add up to totals.

1988, helped along by unexpectedly high copper prices. Chile's strong fiscal position has permitted external debt service to take place punctually without giving rise to hyperinflation, as happened in neighboring Bolivia and Argentina. It has also cushioned any perverse fiscal effects arising from debt swaps. This fiscal situation is in sharp contrast to that of other major Latin American debtors. With the exception of Mexico, they are all plagued by large and persistent fiscal imbalances and are thus in no position to absorb the possible harmful impact of debt swaps.

Debt Repurchases and the Parallel Foreign-Exchange Market

There are essentially three ways in which a country can obtain the foreign exchange necessary to retire external liabilities: (1) through an international grant earmarked for the repurchase of foreign debt, as in the case of Bolivia, which, with a gift from a group of foreign governments, repurchased over half of its commercial-bank debt at a discount; (2) through the use of international reserves; and (3) through the parallel exchange market.

Option one is beyond the control of a country and extremely unlikely to occur in the case of Chile. Of the remaining two alternatives, only the third had been used in Chile by December 1988, except for the small direct buyback in October of that year. Thus, debt repurchases in Chile have generally implied an increase in the demand for foreign exchange in the parallel market. This has had important repercussions on the price at which agents have been willing to supply dollars through that market.

The parallel market for dollars, dormant during the fixed-rate period from 1979 to 1982, reappeared in strength after the exchange-rate crisis of June 1982, when full convertibility of the Chilean peso came to an end. At the beginning, transactions were either tolerated or ignored by the authorities. Later, the formal enactment of the debt-repurchase scheme was de facto recognition of the parallel market. Stockbrokers, financial firms, and exchange houses are the main operators in this market. According to market sources, traded volume has recently fluctuated between $60 and $100 million per month.

Conceptually, one can consider that all debt-repurchase transactions are financed through the parallel market,[5] which is fed, in turn, by

[5] In the case of a debtor who has used his own assets abroad to redeem his debt, the transaction can be viewed as raising the demand for dollars in the parallel market and

many sources, including private holdings of foreign assets and the various current-account transactions that circumvent official channels. The latter include proceeds from the underinvoicing of exports, the overinvoicing of imports, and the outright smuggling of exports. One of the most significant forms of smuggling involves unregistered gold sales (Garcés, 1987). In addition, certain navigation companies and airlines are allowed to dispose freely of a portion of their foreign-exchange revenues. Tourism, especially in the high season, is also a supplier of parallel dollars.

A reliable estimate of the magnitude of each source is hard to come by but would be very valuable in interpreting the consequence of debt-reduction operations. If the repatriation of capital is the most significant supplier of the parallel market, then the unregistered foreign assets of the private sector are financing debt repurchases. If current-account transactions outside official channels are the most important source, then the country is financing debt repurchases from its international reserves.

Indirect estimates indicate that unrecorded capital inflows have increased since 1985. This is partly the result of the stable economic recovery that began that year and the attraction of a high real exchange rate. It is also the result of a de facto tax amnesty for those who repatriate capital, as the Chilean tax service apparently does not investigate the origins of these funds (Ffrench-Davis, 1987).

One number used to estimate capital repatriation is the value of nonbank deposits held abroad by nationals, an amount estimated at about $3 billion at the end of 1988. These deposits were fairly constant in nominal dollars from the second quarter of 1986 through the end of 1987. Therefore, one can treat the interest income of those years net of the increase in deposits as having been used to repurchase external debt. This would have permitted the financing of roughly one-third of the formal debt repurchases, or almost one-fourth of all debt-reduction operations during the 1986-87 period.[6] During 1988, the increase in deposits exceeded the estimated interest income, so that this source cannot be regarded as having financed any 1988 debt-reduction operations. Nonetheless, the value of nonbank deposits is an imperfect measure of the foreign assets held by Chilean nationals. On the one

raising the supply by the same amount.

[6] This estimate assumes an interest rate of 15 percent for the period from 1986(I) to 1987(IV).

hand, the data on deposits may be incomplete; not all financial centers are covered and only agents reporting residence in Chile are included. On the other hand, the data cover only deposits, not real estate, bonds, stocks, and other assets that Chileans obviously hold in their offshore portfolios. Thus, the foreign exchange remaining to finance debt repurchases must have come from the other external assets of domestic residents or from tourism and foreign-trade leakages.

Have repurchase volumes affected the behavior of the parallel market? The gap between the official and parallel exchange rates consistently declined from the beginning of formal debt-reduction operations in 1985 through the end of December 1987 but rebounded in 1988 in the wake of the presidential plebiscite. Starting at 18 percent in June 1985, this gap declined to an average of 7.1 percent in 1986 and 5.3 percent in 1987. In 1988, it increased to 14.7 percent. It is striking that the initial decline occurred when the volume of debt-reduction operations was increasing significantly. This simple correlation says nothing, however, about the impact these operations had on the exchange-rate premium. To identify that effect, a regression was run for the 1985-87 period, with the following results:

$$g = \underset{(-0.44)}{-0.97} + \underset{(1.56)}{0.035}\ \mathrm{DRO} + \underset{(7.08)}{4.68}\ \mathrm{IRD} \quad R^2 = 0.70 \tag{3}$$

where g is the exchange-rate gap, DRO is the volume of debt-reduction operations, IRD is the interest-rate differential between LIBOR and the TIP, and the numbers in parentheses are t-statistics.[7]

The signs of the coefficients in the above equation are as expected, with the greatest and most significant influence being exercised by the interest-rate differential. When foreign and domestic assets are not perfect substitutes, an increase in LIBOR relative to the domestic interest rate raises the incentive to hold dollars abroad rather than pesos at home, which puts pressure on the parallel market. The volume of debt-reduction operations also exercises a positive influence on the exchange-rate gap; it is significant at a 10 percent level. A number of other difficult-to-quantify elements, such as confidence in the economy and political factors, have surely affected the parallel-market premium as well.

[7] This calculation was made using the exchange-rate rule to measure the exchange-rate gap; the rule adjusts on a monthly basis the peso/dollar parity by the difference between the domestic inflation rate and an estimate of the international inflation rate.

Thus, it seems that the management of debt transactions by the Central Bank has given the Chilean authorities a policy variable with which to influence the exchange-rate gap. The volume of Chapter XVIII operations is controlled through the bimonthly auction of quotas. When, on occasion, the parallel-market premium has increased significantly, the Central Bank has reduced its offer of quotas. Until early 1988, the authorities hinted that they would not allow a gap higher than 10 percent. The levels in late 1987, about half that figure, seemed perfectly tolerable, as they probably caused little disruption in the economy. During most of 1988, however, the gap was above 10 percent (reaching almost 20 percent), an increase that was widely attributed to political uncertainty. The volume of Chapter XVIII transactions was consequently cut and transactions briefly suspended.

Debt-Equity Swaps, Investment, and Growth

Investment in Chile has recovered significantly from the depths of the 1982-83 depression, but it had yet to reach historical averages by the end of 1988. In the 1960s, gross fixed capital formation was 20.2 percent of GDP. After erratic behavior in the 1970s, it stood at 12 percent in 1982, not far above a conservative estimate of the rate of depreciation of the existing capital stock. By 1988, the country was well into recovery, and gross capital formation had risen to 16.3 percent of GDP. Nonetheless, investment performance remains inadequate to sustain long-term growth at 5 percent (Larraín, 1989b, and the references therein).

From 1984 to 1988, Chile experienced an average GDP growth rate of 5.5 percent in spite of the relatively low investment rate. This performance was possible because of substantial unused capacity left by the 1982-83 slump. There are by now, however, increasing signs that capacity utilization has reached its limits in most industrial sectors, so that additional fast growth will require higher investment. In these circumstances, it is only natural to ask what contribution debt-equity swaps have made to capital formation.

Popular belief, encouraged by journalistic accounts, exalts the role of debt capitalization as a significant boost to Chile's investment rate. This perception is misleading and stems from a confusion between the concept of investment in the balance-of-payments accounts and its meaning in the national accounts. The former refers to the net change in the real assets foreigners hold in Chile; the latter refers to capital formation, which is the concept meaningful for growth. Clearly, not all foreign investment recorded in the balance of payments is necessarily

an addition to Chile's capital stock.[8] In many cases, such investment implies only a change in the ownership of existing assets.

Recent research suggests that the contribution of debt-equity swaps to real investment in Chile has been moderate at best. A rough estimate is provided by Ffrench-Davis (1990), who assumes that (for the last four years) deviations of total capital formation from its trend are due to debt-equity swaps. He then calculates the ratio of this "extra" investment to the total value of debt-equity swap operations to determine what portion of such swaps has effectively increased capital formation. The results depend crucially on the trend factor employed. If one assumes that the low rate of capital formation in 1985, the year that swaps started, reflected a stable trend value (admittedly, an unlikely supposition), one finds that 60 percent of swaps have added to the stock of real capital. That provides an upper bound for the estimate. If one assumes instead that investment in the mid-1980s was abnormally low and was due to rise substantially (in line with official projections) even in the absence of swaps, one finds that swaps have made a minuscule contribution: only 5 percent of the total volume of debt swapped for equity corresponds to "extra" capital formation. The true figure is probably somewhere between these extremes, although perhaps closer to the second.

[8] This is true regardless of whether the DFI is financed with cash or through swaps. For more on this distinction, see the next section on the liquidity effects of swaps.

6 BALANCE-OF-PAYMENTS EFFECTS OF DEBT CONVERSIONS

The Liquidity Effects of Swaps

Debt repurchases reduce interest payments to foreign creditors without creating future external obligations.[1] If financed from reserves, however, they clearly do not enhance the short-term availability of foreign exchange. Debt capitalizations, on the other hand, change the time profile of foreign-exchange outflows; interest payments are replaced by a stream of profit repatriations after the fourth year following the debt conversion. Thus, it is argued, swaps have a beneficial liquidity effect.

The liquidity effect, however, is not adequately measured by the computation of interest reduction. After 1982, Chile obtained credits from foreign banks and official institutions primarily to close the interest-payments gap. In fact, the amount of bank lending has normally been calculated as a residual, after all other sources of financing (including the trade surplus) have been applied to cover interest payments. Thus, if debt swaps have reduced interest payments, they have also reduced new financing from foreigners (and may have increased consumption and investment, producing a lower trade surplus).

Available figures confirm this argument. Since the outbreak of the debt crisis, medium- and long-term financing from commercial banks has declined consistently, from $2.1 billion in 1982 to zero in 1987 and 1988. Loans from official sources, moreover, have been fairly flat after an initial increase through 1983 and can also be closely identified with balance-of-payments financing.[2] Thus, although debt swaps have reduced interest payments, the overall supply of foreign credit has decreased, and the trade-balance surplus has increased. A further reduction in interest payments from debt swaps cannot provoke a further decline in bank loans, which are now at zero. Nonetheless, it could cause a drop in credits from official institutions and in short-term loans.

[1] Nevertheless, they do reduce the stock of foreign assets held by Chileans or the stock of international reserves, both of which earn interest.

[2] This is especially true for medium- and long-term loans from commercial banks.

Another common criticism of debt-equity swaps is that they may worsen the liquidity position of the country by allowing direct foreign investment (DFI) made through swaps to substitute for DFI involving fresh capital inflows.[3] Debt capitalizations may simply subsidize foreign investment that would have been carried out anyway. Aside from the cost of the subsidy, the country loses liquidity; it would clearly prefer to obtain foreign exchange that can be used for any purpose, including the discounted repurchase of debt.

Total foreign investment in Chile, including swaps, has increased significantly since the start of these operations. It seems clear that investments made by creditor banks (which have actively participated) are motivated by the capitalization process, for this is not their regular line of business, but investments made by companies already established in Chile are less clearly additional. Bergsman and Edesis (1988) have studied many specific transactions and conclude that only 64 percent of the swaps involved additional investment, with the proportion being much higher for banks than for multinational corporations. It is important to stress that, whenever "additionality" is less than 100 percent, the country is receiving fewer dollars from foreign investment than it would without swaps.

An extreme case of nonadditionality is round-tripping. This occurs when Chilean residents disguise themselves as foreign investors. In this way, they can obtain a large, unintended subsidy and, in the extreme, even buy back their own assets through an offshore company of their own. Foreign investors already established in Chile may also engage in round-tripping by selling their assets in Chile and repatriating the proceeds with the sole purpose of coming back as "different" foreign investors through subsidized debt capitalization. Central Bank officials are aware of this problem and state that the case-by-case method of approval is precisely an attempt to control it (Fontaine, 1988). Impressionistic evidence suggests, however, that round-tripping has existed.

Interest, Remittances, and the Balance of Payments

The future burden created by debt capitalization arises from the need to generate foreign exchange to finance newly incurred profit-repatriation obligations. It is generally argued that profit payments present a

[3] See Ffrench-Davis (1990). A related argument is that, in a general equilibrium framework, debt-reduction schemes can reduce investment through their effect on interest rates, inflation, and other macroeconomic variables (see Chapter 5 of this paper).

high positive correlation with the business cycle, whereas interest payments do not. Thus, the conversion of debt into equity would promote stability in the domestic economy because profit remittances increase only when things are going well. Although there is some merit in this argument, it needs to be qualified. It is true that total profits are highly correlated with the cycle and in fact have a bigger amplitude than the cycle (see, for example, Lucas, 1977). But profit repatriation (Pr_R), not total profit, is the variable relevant for the analysis. It is the difference between total profits (Pr) and reinvested earnings (Pr_I) : $Pr_R = Pr - Pr_I$. The question, then, is how reinvested earnings behave in relation to the business cycle.

The evidence indicates that reinvested profits also have a procyclical pattern. For U.S. foreign investments in Latin America, Ffrench-Davis (1987) calculates that repatriated earnings as a proportion of total profits increased from 46 percent in 1980-81 to 85 percent in 1984-85.[4] As both profits and reinvested earnings move with the business cycle, we cannot say *a priori* how repatriation will behave. In order for it to have a stabilizing influence, reinvested earnings must have a lower correlation with the cycle than have total, after-tax, profits. The answer must come from empirical analysis.

There exists for Chile a time series of profit remittances and of the value of foreign equity for the 1954-87 period (Zabala, 1987). It is therefore possible to estimate the rate of profit repatriation and to compare it to the relevant international interest rate, real LIBOR in this case.[5] A simple test is to calculate the correlation between profit repatriation and the GDP growth rate (g_y), which we call $c(Pr_R,g_y)$; and between real LIBOR (r) and the GDP growth rate, which we call $c(r,g_y)$.

The results are

$$c(Pr_R,g_y) = 0.265;\ c(r,g_y) = -0.062 \qquad (4)$$

The values suggest that profit repatriation has been more procyclical in recent Chilean history than real LIBOR, with the average rate of profit repatriation at 7.8 percent, more than double real LIBOR. A meaningful comparison requires correcting Pr_R downward, using the average

[4] The Ffrench-Davis calculations are based on data in Lahera (1987). Note that this is a period of sharp decline in profits.

[5] This is the appropriate comparison, because the inflationary component of interest payments amounts conceptually to an amortization of principal. We are concerned here with flows of interest and profits, not with amortizations of debt and capital.

discount obtained by Chile from debt-equity swaps (11.4 percent for 1985-88). The corrected Pr_R is 6.9 percent, which is still 3.3 percentage points above average real LIBOR. This points out an important tradeoff: although the rate of profit remittance is more procyclical, it is also substantially higher than real LIBOR, even after correcting for the discount on debt conversions. By pursuing debt-equity swaps, Chile may be improving the cyclical pattern of investment income paid to foreigners at the cost of raising substantially the average level of income payments.

Notice also that the exchange risk attaching to DFI is different from that attaching to debt. Debt is denominated in foreign currency, whereas DFI in Chile is denominated in pesos. A real devaluation will reduce the dollar value of equity claims, as long as they have a significant presence in the nontradeable sector; it will leave unchanged the foreign-currency value of debt.

The future net foreign-exchange cost of debt-equity swaps depends also on which sectors receive the equity. If the swaps were concentrated totally on tradeables, were 100 percent additional, and implied higher capital formation, they would not pose a problem for the balance of payments. In reality, however, only 62 percent of capitalizations currently go to tradeables and 38 percent go to nontradeables.[6] According to Bergsman and Edesis (1988), 64 percent of this total would be additional. Thus, about 40 percent of capitalizations represent additional investments in tradeables. Only part of this last figure, however, corresponds to capital formation; the rest represents mere changes in ownership. Therefore, less than 40 percent of debt-equity swaps can be deemed to imply a net increase in the country's capacity to generate foreign exchange. All of these capitalizations, however, have the right to repatriate profits and, eventually, capital in the future.

Projections (presented in the next section) indicate that foreign-exchange pressure from profit remittances will increase substantially in the early 1990s. This is not surprising. Restrictions on the repatriation of profits last for only four years, so that the first investments made in 1985-86 will enjoy the right of repatriation in 1990-91. However, the bulk of debt-equity swaps (87 percent of the accumulated total at the end of 1988) will repatriate earnings in 1992-93. The pressure will be especially strong in the beginning, because investors will have the right

[6] These are Central Bank figures, which assume that 70 percent of manufactures are tradeables.

to repatriate all of the current year's profit, plus 25 percent of profits accumulated during the first four years. Estimates indicate that average yearly profit remittances will be above $300 million in the first half of the 1990s. Thus, debt-equity swaps have mainly implied a postponement of the burden. If external conditions deteriorate as remittances increase, Chile will face a payments problem additional to that created by its foreign debt.

Finally, it should be noted that, during the debt crisis, profit remittances have been "senior" to interest payments in terms of access to foreign exchange. Dividends on foreign investments have been sent abroad without requiring further contributions from investors. In contrast, a significant fraction of payments has been financed by "involuntary" new loans from existing creditors.

The Prospects for Chile's Current Account

Chile is often mentioned as a model debtor because of its drastic structural adjustment and punctual debt service. Furthermore, Chile has swapped a larger percentage of its external debt than has any other highly indebted country except Bolivia. Cruz (1989) and others, however, suggest that Chile still has a foreign-debt problem.

Cruz projects current-account deficits increasing from near balance in 1988 to almost $2.5 billion by 1992-93 before falling to about $1 billion by 1995. He cites two causes for this increase: (1) a projected drop in the trade surplus by 1992 to a quarter of its 1988 value and (2) the growth of both debt service and profit repatriation during the same period.

Chile's trade surplus reached a historical peak of $2.2 billion in 1988 following the sharp curtailment of imports in 1982 and the subsequent rise in nontraditional exports. If the economy is to grow at the 5 percent per year projected, however, imports will soon outrun exports, even if the price of copper remains high and noncopper exports continue to increase at 7 percent per year. Capital goods will make up part of these additional imports as investment ratios rise to a level compatible with noninflationary and sustained growth.[7]

[7] The projections assume that the investment/output ratio will stabilize at 18.5 percent after 1993. This is estimated as the minimum necessary to sustain annual growth at 5 percent, a highly optimistic assumption indeed. Until that point, the ratio has to be rising, which implies that investment must grow more quickly than output. Growth can occur at 5 percent in the short run also (even though the investment/output ratio is 18.5 percent), because of unused capacity.

In addition, payments for financial services will increase from $1.5 billion in 1988 to $2.7 billion by 1995, a rise only partly due to the increase in interest payments from $1.4 to $2.1 billion.[8] The remaining growth is attributable to profit repatriations on foreign investments, which should begin rising sharply in 1991. The calculations assume that the profit rate on this swapped capital is 10.5 percent and that all profits will be repatriated as early as is legally possible. Total remittances can be expected to swell to $254 million in 1991, growing steadily thereafter to reach a level of over $800 million in 1995.[9]

It is unlikely that the growing current-account deficits can be financed without either a partial debt writedown or a rescheduling of interest. Cruz forecasts a financing gap that will peak at $1 billion in 1992,[10] even if 90 percent of bank-debt amortizations due after 1991 are rescheduled for payment after 1995.[11]

In short, current debt levels and projected service obligations appear incompatible with sustained growth at 5 percent per year; one or the other will have to be cut. Debt reductions achieved so far by means of swaps have therefore not solved Chile's balance-of-payments problems.

[8] These estimates assume that LIBOR begins falling after attaining a peak in 1989, reaching 7 percent in 1994. Note that, according to current debt contracts, the interest rate relevant for calculating interest payments in a given year is the LIBOR of the previous year.

[9] Of this total flow of remittances, the amount associated with swapped capital is, in millions of dollars for each year: $77 (1991); $247 (1992); $429 (1993); $518 (1994); $486 (1995).

[10] A financing gap is defined as the capital inflow necessary to keep reserves equal to one-fifth of imports, given projected current-account deficits and other already scheduled capital movements. The relevant stock of reserves excludes the Copper Stabilization Fund, a government fund created in 1988 to hold part of the windfall income from high copper prices.

[11] According to the most recent restructuring agreement with creditor banks, no amortizations of bank debt are scheduled until 1991.

7 CONCLUSIONS

By December 1988, Chile had reduced its foreign debt by $6.2 billion, $4.2 billion through formal debt-swap mechanisms used primarily by the public sector and private financial sector, and $2 billion through direct, informal negotiations carried out almost entirely by the less-regulated nonfinancial sector.

The two formal debt-swap schemes used by Chile, debt repurchases and debt capitalizations, have produced fundamentally different benefits. Through debt repurchases, Chile has received, on average, close to 75 percent of the secondary-market discount (this figure was almost 90 percent in 1987). Through debt capitalizations, it has received only 30 percent. The remainder of the discount has gone principally as fees to intermediaries and as subsidies to foreign investors.

These schemes may not be able to reduce Chile's debt much further. Debt repurchases depend on the availability of funds through the parallel market or unexpected windfalls from high copper prices. Although Chilean assets abroad are in excess of $2.9 billion, only limited additional repurchases of debt can be financed without a significant portfolio reallocation or substantial diversion of funds from the trade account to the parallel market. This is true also for the direct repurchase of foreign liabilities using international reserves.

Debt-equity swaps involving official external debt also face important limitations. These operations require that the government either sell off its own equity or issue domestic bonds.[1] After two massive waves of privatizations, there is little or no equity left for the government to provide. That leaves only the issue of domestic debt, the stock of which has increased sharply since 1982. It is far from clear, however, that swapping foreign for domestic debt is fiscally sound when domestic real interest rates are much higher than international rates. Although Chile's public finances have not been characterized by large deficits,[2] the budget is extremely sensitive to a number of variables. Any signifi-

[1] That is, we rule out inflation or tax financing. The former is undesirable and the latter infeasible.

[2] Less than 0.5 percent of GDP in 1988 for the nonfinancial public sector. Deteriorated by the negative net income of the Central Bank, this figure is probably higher, but still modest.

cant change in the price of copper or of international interest rates, for example, could make the continued service of public debt very burdensome.

Although they have been operating for more than three years and have generated a relatively high volume of transactions, debt repurchases and capitalizations have not been able to offer a permanent solution to Chile's debt problem. The balance of payments is likely to deteriorate once again in the early 1990s, as the import requirements of sustained growth increase and repatriations of profits from newly swapped equity begin. Furthermore, investment performance continues to be inadequate, reflecting the medium-term uncertainty caused by, among other factors, the lingering debt burden.[3]

If the strategy of gradual and partial debt conversion has failed to solve Chile's problem, it is even less likely to succeed in other highly indebted countries of the region. Chile has been able to extinguish large amounts of public debt to foreign banks by partly replacing it with debt to the multilateral institutions and to domestic residents. This second option is all but closed to most other Latin American countries, as all of them have very high real interest rates and several already have serious internal debt problems.

The optimal solution for Chile is probably a comprehensive debt settlement aimed at achieving a viable balance of payments that allows a sustained rate of GDP growth under reasonable estimates of external variables without increasing the burden of foreign debt in the future. It should also avoid further detrimental macroeconomic effects such as increases in domestic interest rates, in inflation, or in the parallel-market premium. These goals could be achieved, in part, through securitization (Larraín, 1989b), with the key to success being the posting of adequate collateral. An example can be seen in the recent debt settlement for Mexico.

International institutions and foreign governments can certainly help to implement such a scheme. Barring help from abroad, or as a complement to international assistance, Chile has access to two other forms of collateral: (1) Chile's foreign reserves, although relatively low, can achieve a modest amount of debt reduction if used to purchase long-term, zero-coupon U.S. Treasury bonds; these, in turn, can be used to

[3] Helpman (1989), Krugman (1988), and Sachs (1989) have pointed out that, when the level of debt is too high, the *marginal* tax on investment is also high; eliminating the overhang of debt creates renewed incentives for capital formation, which can benefit both the debtor country and its creditors.

guarantee the principal of new obligations. (2) A limited portion of copper revenues might be deposited in an escrow account to complement outside assistance in guaranteeing interest payments for new obligations. Old debt can be converted into bonds at par but with a significant reduction in the interest rate, thereby establishing clear seniority of the new bonds over old debt.

This approach could help to achieve a permanent solution to Chile's debt problem. Adjusted for individual country differences, it might fruitfully be applied to other highly indebted countries in Latin America.

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