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*Managing Mexico's External Debt:
The Contribution of Debt
Reduction Schemes*

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CHAPTER I

OVERVIEW

The purpose of this paper is to study how and why Mexico accumulated its external debt, what it has done in its adjustment effort, can its debt be paid, what has been done to reduce its debt and what can be done in the future.

The study is organized into seven chapters. Chapter II looks at the process of debt accumulation from 1970 to 1982 and at the adjustment period since then with a review of the debt reschedulings that have taken place. Here we can see that internal disequilibrium and, in particular, keeping an overvalued fixed exchange rate in 1976 and 1982 led to massive capital flight financed through debt accumulation. In fact, since 1976, Mexico has received almost no net transfers from abroad. In 1982, the fall of the oil prices pushed Mexico into default starting what has been known as the "debt crisis". The problem was first considered to be a transitory liquidity crisis. Despite a costly fiscal adjustment in terms of recession and a fall in real wages and GDP per capita, the main debt burden indicators have not improved. After several rounds of reschedulings, serious doubts as to the ability of Mexico to pay its debt exist. Chapter III deals with Mexico's capacity to reassume sustained growth while servicing its debt. Our results show that it would probably be possible to achieve a rate of growth of real GDP of

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5 percent while attaining a non-interest current account to cover of the scheduled interest payments abroad. The main problem then is not the transfer of resources but a fiscal one. Most of Mexico's debt is public and even under moderately optimistic scenarios it does not seem feasible to sustain growth while paying more than 50-60 percent of the current debt service. It also seems unlikely that political and social stability will be maintained if growth does not start again soon.

Chapter IV sets an analytical framework for debt reduction. It starts by exploring the valuation of the debt from both perspectives: banks and debtor nation. It is shown that in most cases these values do not coincide and when the value of the debt to the bank is lower than the cost to the country, there is a space for Pareto improving negotiations. These negotiations can take the form of exchanging a new asset for old debt. This includes repurchases, debt-for-equity swaps and securitization. The conditions for mutually advantageous trades are explored as well as their timing. The conditions for mutually profitable debt forgiveness (when no asset is exchanged for the existing debt) are also analyzed. When the probability of default is reduced by the additional incentives for adjustment brought by forgiveness, both country and banks can improve. Nevertheless, the banks might be reluctant to forgive debt if they are not sure that the liberated resources will go into productive investment but rather into present consumption.

This framework is used in Chapter V to analyze the Mexican experience with debt-for-equity swaps and the securitization scheme known as the Mexico Bond. In the case of the swaps, the asset given in exchange for debt, domestic credit, was very costly given the pre-existing inflation level. The inflation tax was already close to its maximum in 1986-87 so any

marginal increase in the money supply could push the country into the explosive region of the Laffer curve.

Regarding the bond, failure in its design contributed to its relative lack of success. The new bond was not made explicitly senior with respect to the old loans and it carried no guarantee on interest thus decreasing its value.

Chapter VI looks at the private debt and the FICORCA scheme. Private debt was accumulated both as a result of the willingness of the banks to lend and the disequilibrium exchange rate that encouraged entrepreneurs to use their firms as financial intermediaries. The companies would borrow and then use these funds to finance the capital flight of their owners. In 1982, most companies were on the brink of bankruptcy. The government created FICORCA to prevent a crisis resulting in massive unemployment. The scheme which is described in this section was highly successful without granting a subsidy to the private sector. In 1986, a new FICORCA Restructure Agreement was reached with the creditors opening the possibilities of prepayment to the Mexican firms. Since then, the private debt has decreased representing today slightly more than 10 percent of the total outstanding debt.

Finally, Chapter VII explores the perspectives for debt forgiveness. Even if forgiveness is Pareto improving, there are practical difficulties in reaching such an agreement. In particular, the difficulties of enforcing conditionality stand in the way of a solution along such lines. A possible way out would be to create a debt facility which would lend debtor countries the resources needed to secure their obligations with commercial banks in exchange for a reduction in the outstanding debt. Access to such a facility would be subjected to acceptance of stringent conditionality on the use of the freed resources. Recent negotiations between Mexico and the World Bank point in this direction although no concrete results have been achieved yet.

CHAPTER II

DEBT ACCUMULATION, RESCHEDULING AND ADJUSTMENT

1. The Origin and Uses of Debt

In December 1970, President Luis Echeverría came into office convinced that the period of low inflation and sustained growth known as the "Stabilizing Development" (1958-1970) had come to a halt. He claimed that the dissatisfaction of the middle classes with the economic and political model being pursued was the cause of the rising social tensions that were dramatically manifested in the student riots of 1968. 1/ President Echeverría announced his own model of "shared development". Under this model, social inequality would be reduced, agriculture would receive increased government funding, and the public sector was to participate actively in the creation of employment, both directly (through the expansion and creation of new agencies) and indirectly (through the multiplier effects of increased public expenditures). 2/

It was not until 1972, however, that government expenditures began to rise. Faced with a very large current account deficit in 1970 and an inflationary outburst in the first months of 1971, the government actually reduced public expenditures in real terms in the latter year. This measure contributed to a recession that added to the unemployment and other social problems policy-makers regarded as highly undesirable.

1/ The record of the period of Stabilizing Development and the merits of Echeverría's viewpoint are discussed in Buffie and Sanginés (1987).

2/ See Solís (1976) for a detailed account of the economic goals in 1970.

The decline in economic activity in 1971 sharply reduced the demand for credit by private firms, while the contraction in public expenditures reduced the government's financing needs. The banks, therefore, accumulated sizable excess reserves, which they deposited at the Bank of Mexico to earn interest. Those officials who wanted to increase public spending used the excess reserves in the banking system as justification, stating that there was a contradiction between the objective of reducing social inequality and the presence of idle funds in the banks. The Ministries of the Presidency and of the National Patrimony (public enterprises) attacked the stance of the Finance Ministry and the central bank on this issue. Clearly, the Government was embarking on a more aggressive approach to restoring a high rate of growth.

Institutionally, an important shift occurred among the entities responsible for government expenditures. The Ministry of Finance lost some of its control, which was now limited to current expenditures. Instead, public investment decisions were placed under the Ministry of the Presidency. As the President himself came to approve more and more programs directly, the Ministry of Finance's control over spending diminished further.

Inflation surged in 1973-74, a reflection of the increased domestic absorption and higher rate of imported inflation. Even though Mexico was self-sufficient in oil and did not suffer from the terms of trade shock associated with the first rise in oil prices, it did feel the inflationary world environment in the form of higher prices for non-oil imports.

Initially, the Government responded to the inflationary outburst with price controls and then with mixed and often confusing stop-and-go policies. To protect real wages, in September 1973 it decreed an 18 percent salary increase. Since the private sector was at first reluctant to comply, the increase originally applied only to government salaries and led to

increased current expenditures. The combination of demand-pull pressures arising from public expenditures and the cost-push effects of the wage increase fueled inflation even more and required another round of wage increases in 1974. In that year, the government also attempted to cool the economy by reducing the rate of fiscal expansion, adopting a restrictive monetary policy. However, this policy proved to be only temporary.

The years 1975 and 1976 were marked by a spending surge similar to that of 1972-73, spurred by the need to complete the projects undertaken under President Echeverría's administration. The increased spending led to a renewal of inflation, which, in turn, led to a significantly overvalued currency and a deterioration in the current account. Starting in 1973, a fear of devaluation was reflected in capital flight, a phenomenon that had been absent from the Mexican economy since the early fifties. The overall stability of the economy in the face of aggregate demand pressures was questioned.

In August 1976, after 22 years of exchange rate stability, the government finally devalued the peso. The growth rate of GDP had decreased to 4.2 percent, and the size of the public sector deficit had increased from 3.8 percent of GDP in 1970 to 9.8 percent in 1973. 3/

During the Echeverría administration (1971-76), Mexico's external debt started growing in order to finance the current account deficit that was needed to sustain the ambitious investment plans of the public sector. The non-interest cumulative current account deficit of that period accounted for over 50 percent of the increase in external debt (see Table II.1) As stated, capital flight also had played an important role in the picture since 1973, but most of it came late in 1976 after the devaluation of August 31.

3/ For an account of the 1976 devaluation, see Córdoba and Ortiz (1979).

Table II.1: DETERMINANTS OF THE INCREASE IN EXTERNAL DEBT
(millions of dollars)

Year	Current Account Deficit		Capital Flight *	Increase in Debt
	Interest	Non-Interest		
1960-65	580	1,580	-205	1,744
1966-70	1,411	2,341	-289	3,199
1971-76	5,702	9,113	5,371	17,726
1977-82	34,314	834	25,835	50,446
1983-85	31,735	-41,933	9,423	-2,516

* Capital Flight = World Bank Definition

Source: Banco de Mexico.

The story that goes with the López Portillo administration (1976-1982) is quite different. At the end of 1976, Mexico signed an Extended Facility Agreement with the IMF that lasted from 1977 to the end of 1979. As stated by the Mexican authorities in their letter of intent, the aim of the program was to promote domestic savings, and therefore reduce the need for foreign savings, to lower inflation to world levels and to restore equilibrium in the balance of payments. The adjustment achieved in the first year of the program was significant: the public sector deficit decreased to 3 percent of GDP, the lowest rate in more than two decades.

In late 1977, the government released the figures on Mexico's oil reserves, which showed proven hydrocarbon reserves of 16 billion, up from the 6.4 billion barrels estimated in 1975 (Table II.2). The government then announced its intention of embarking on an ambitious investment program to take advantage of this potential new wealth. A surge in public expenditures followed in 1978-79, in much the same way as at the beginning of the

Table II.2: OIL RESERVES
(million barrels)

1975	6,338
1976	11,160
1977	16,002
1978	40,194
1979	45,803
1980	60,126
1981	72,008
1982	72,008
1983	72,500
1984	71,750
1985	70,900

Source: PEMEX.

seventies. The wisdom of this decision seemed to be confirmed by the behavior of oil prices in the world market: they rose almost two-and-a half times between early 1977 and 1980. Oil exports soared, and GDP growth rose to 8.2 percent in 1978 and 9.2 percent in 1979.

A major institutional reform occurred at the end of 1976. The Ministry of the Presidency was transformed into a new Ministry of Programming and Budgeting, with enhanced powers as compared to its less important predecessor. The new Ministry was to be responsible for all government expenditures. The Ministry of Finance, which once had control over public revenues and current expenditures, was left in control of only revenue collection. The administrative separation of the authority over revenues and the expenditures became complete.

As a result of the new expenditure policy, the government failed to reduce the deficit, which rose to 6.7 percent of GDP in 1978 and 7.7 percent in 1979. The policy perspective had changed radically in 1977 with the announcement of the new oil wealth. By the time oil prices reached \$31.19

per barrel in 1980, the oil wealth was estimated at 1,370 percent of GDP and 570 percent of the total capital stock (according to Rizzo (1980)).

Given the oil wealth, which in 1980 generated export revenues of US\$9 billion, almost twice what the country had received in 1979 for exports other than oil, policy changed in important ways. The government believed it was facing a less rigid set of constraints and that its economic policy ought to be oriented toward further growth. It therefore dropped the adjustment program in favor of a more expansionary fiscal policy.

The rationale was that the economic base, expanded as it was by the oil wealth, could support a much larger role for the public sector. Strong fiscal stimulus was, however, to be only one part of a comprehensive reform package that would avoid the main policy errors of 1973-76. The government would manage the exchange rate more flexibly to avoid balance of payments crisis and speculative runs against the peso. It would maintain more flexible nominal interest rates, which would be set so as to keep real interest rates positive and a high level of financial intermediation. To keep the fiscal deficit in check, the operations of public enterprises would be rationalized, while tax revenues would be increased by broadening the tax base and improving tax administration and collections. At the same time, it introduced the new debt instruments, Cetes and Petrobonos, to reduce the monetization of the deficit. Finally, public sector expansion was not to occur at the expense of productive capacity in the private sector. Capital goods were exempted from the VAT, and depreciation allowances were accorded more favorable treatment in an effort to revive private investment.

The economy registered impressive growth in 1980 and 1981, with real GDP expanding at 8.3 percent and 7.9 percent, respectively and investment reaching 24.1 percent of GDP in 1980 and 25.7 percent in 1981, with both

public and private investment increasing significantly. ^{4/} In much the same way as in the mid-seventies, the government loosened its control of the budget. The most powerful members of the Cabinet demanded higher budgetary allowances, and even the President authorized budgetary expansions not originally contemplated in the project sent to Congress. The officials who favored restraint were generally ignored; it is said that the Governor of the Central Bank stopped attending economic cabinet meetings in early 1980. Non-oil public revenues were, on the other hand, stagnant, as tax collection became less stringent and public sector prices declined in real terms. In 1981, the fiscal deficit soared to 14.8 percent of GDP.

Even though inflation held at moderate levels in 1980 and 1981 (26.3 percent and 28 percent, respectively, as measured by the average CPI), the economy started to show serious macroeconomic disequilibria. The current account registered sizable deficits in these years, representing 3.6 percent and 4.9 percent of GDP, respectively, in spite of the oil revenues. On the revenue side, non-oil exports manifested the "Dutch Disease" phenomenon, remaining almost unchanged in 1979-81. At the same time, total imports almost doubled, a reflection of the overvaluation of the currency and the expansion of domestic demand.

The prices of Mexico's oil exports rose by more than 58 percent in 1980, following the trend of OPEC prices. The average of the prices for the two kinds of oil exports reached \$31.20 per barrel, 58 percent above the 1979 value, while the daily volume of exports climbed from 0.5 million barrels per day in 1979 to 0.8 million in 1980.

^{4/} The share of public consumption in GDP rose, while that of private consumption fell by 3.5 percent between 1979 and 1981.

There was a strong belief at the time that the favorable terms of trade would be permanent. The fiscal budget for 1981 assumed the world price of oil would rise a further 10 percent while the export volume would increase by 75 percent. When the world price started to fall, Mexico tried to sustain its export price, but the effort led only to a substantial loss in its market share. Finally, it had to lower its prices. Oil revenues, therefore, were significantly below the initial estimate. As expectations of an imminent devaluation spread, dollar-denominated accounts swelled, and capital flight reached enormous proportions.

The government attempted a timid adjustment in expenditures of 4 percent across-the-board. This cut, however, was being applied to a level of expenditure that was already higher than the budgeted one and in the end the government failed to implement even that cut. Actually, expenditures rose, and by the end of the year, the overall deficit was more than double the projected value. Policy-makers refused to acknowledge the fall in oil prices as permanent and therefore concluded that no serious adjustment was needed.

Despite the administration's promise to "defend the peso like a dog", in February 1982 the peso was devalued by 40 percent. An economic adjustment program was also announced for that year. Implementation, however, either was delayed or contradicted by subsequent actions. Among these actions were several that boosted public expenditures: the sudden percent wage increase and the emergency program to relieve indebted firms being examples. The fact that it was the administration's last year in office added to the pressure to expand expenditures in order to finish its projects.

Capital flight and dollarization became so severe that in August the government initiated a dual exchange rate system. Soon afterward, it decreed

that dollar-denominated deposits were to be paid only in the domestic currency at a rate below the market one. In September, it introduced exchange controls in an attempt to stop the capital flight, a measure that ended the long tradition of unrestricted capital mobility. Moreover, because a few influential public officials were convinced that the commercial banks were greatly responsible for the capital flight, the government suddenly and unexpectedly nationalized them.

None of these steps brought Mexico closer to servicing its enormous public foreign debt, (the contractual repayment of principal for 1984-85 was US\$14.3 billion). The prospects for making those payments on time were dismal. Mexico entered into negotiations to restructure the public sector foreign debt. In the last four months of the year, there was a de facto moratorium on the public debt, as Mexico suspended payments of the principal and stopped all payments on private sector debt.

As 1982 came to a close, Mexico was burdened not only by this immense foreign debt, but also by severe stagflation and depressed private investment. An expansionary fiscal policy coupled with the large nominal devaluations and severe restrictions on imports of intermediate inputs and capital goods had sent inflation soaring to 99 percent, while, for the first time since 1932, real output fell. The fiscal deficit--117.7 percent of GDP--led to an enormous real increase in the domestic component of the monetary base. However, expectations that the peso would be devalued and the government's failure to adjust deposit rates in keeping with inflation caused a large decrease in the volume of real bank liabilities. Hence, at the same time that real credit to the public sector expanded 45 percent, real bank lending to the private sector contracted 32 percent. The credit crunch, together with the curtailment of imports of capital goods, caused a 17

percent decrease in real private sector investment. After growing strongly in the first quarter, manufacturing output and employment declined by 13 percent and 9 percent, respectively, in the succeeding three quarters. A contraction in employment paralleled the decrease in real wages of 11 percent.

The collapse of oil prices in 1982 brought a severe liquidity crisis, but the origins of a debt overhang are not found there. The stubbornness of maintaining an overvalued exchange rate and low interest rates resulted in capital flight amounting to more than 50 percent of the total increase in external debt. ^{5/} Capital flight explains, almost single-handedly, the increase in the Mexican debt during the López Portillo years. The disequilibrium exchange rate and low domestic interest rates seem to be the direct culprits. Hence, although the external shocks intensified the crisis, domestic mismanagement was the cause behind it. The oil resources increased the magnitude of the crisis by allowing the government to postpone the adjustment.

Since 1976, Mexico has received no net transfer of resources once capital flight is accounted for. Indeed, capital flight and interest payments have been the major causes of the immense Mexican liabilities with the rest of the world. Using its own definition, Morgan Guaranty has estimated the counterfactual Mexican debt without capital flight for the period 1976-85 (see Table II.3).

^{5/} See, for example, Zedillo (1985).

Table II.3: DEBT AND CAPITAL FLIGHT, 1976-1985
(billion dollars)

<u>Capital Flight</u>	
1976-1982	36.0
1983-1985	<u>17.0</u>
1976-1985	53.0
<u>Mexican Deposits Abroad, 1985</u> (billion dollars)	
US Banks	11.1
Other	<u>4.2</u>
	15.3
<u>Debt Without Capital Flight, 1985</u> (billion dollars)	
Actual Debt	97
Without Capital Flight (including savings in interest)	12

Source: World Financial Markets, Morgan Guaranty (1987-II).

As a summary, the following table presents the magnitude of the total external debt and the relative importance of its public and private components:

Table II.4: TOTAL EXTERNAL DEBT
(billion dollars)

Year	Total Debt	<u>Long-Term Debt</u>		IMF Credit	Short-term Debt
		Public	Private		
1970	--	3.20	2.77	0.00	--
1975	--	11.41	4.19	0.00	--
1980	57.45	33.99	7.30	0.00	16.16
1981	78.29	43.11	10.20	0.00	24.98
1982	86.11	51.64	8.10	0.22	26.15
1983	93.06	66.85	14.80	1.26	10.14
1984	94.91	69.81	16.29	2.36	6.44
1985	96.87	72.71	15.75	2.97	5.45
1986	101.05	75.99	15.10	4.06	5.09
1987	107.88	82.77	14.15	5.16	5.08

Source: The World Bank.

As it can be seen from the table above, most of the debt has been public and publicly guaranteed and increasingly so since 1985. At the same time, short term debt has fallen significantly since 1982 as a result of the end of voluntary lending.

Until August 1982, most of this debt was borrowed from commercial banks and had, therefore, no grant element. This situation has not changed significantly since the 1982 crisis. The following table presents the composition of the debt by creditor:

**Table II.5: TOTAL DEBT BY CREDITORS
(percent)**

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Official								
Creditors	13.2	12.4	13.5	10.0	10.2	12.2	15.5	19.3
Private								
Creditors	86.8	87.6	86.5	90.0	89.8	87.8	84.5	80.7

The analysis of who did the borrowing is very revealing of the lack of control of the state-owned enterprises during the Echeverría and López Portillo regimes, and the growing importance of PEMEX in the latter period.

**Table II.6: TOTAL PUBLIC DEBT BY BORROWERS
(percent)**

	<u>1971-1976</u>	<u>1977-1982</u>
Federal Government	14.6	14.2
PEMEX	11.3	34.9
Other State-owned Enterprises	42.8	14.5
Development Banks	31.3	36.4
<u>Total</u>	<u>100.0</u>	<u>100.0</u>

Source: Hacienda.

2. The Renegotiation of External Debt

In early 1982, Jesús Silva Herzog, Minister of Finance, organized a task force to quantify the public sector's debt and come up with a proposal to be presented to the creditors. Silva tried to reach an agreement with the IMF before going to the commercial banks, so negotiations started in February 1982, but the sluggishness of the process failed to prevent a crisis. On August 23, 1982, Silva announced that Mexico was stopping the amortization payments coming due in the next 90 days on its debt. In the following days dramatic negotiations took place between the Mexican authorities and the banks under the auspices of the Federal Reserve. ^{6/}

The banks formed an advisory committee with Williams Rhodes of Citibank serving as chairman, with co-chairing by Bank of America and the Swiss Bank Corporation. By December 15, 1982, more than 1,000 of the 1,400 banks involved in the negotiations closed a deal with Mexico under the terms shown in Table II.7.

Table II.7: MEXICO--PRIMARY AND OPERATIONAL FISCAL DEFICIT, 1982-85

	1982	1983	1984	1985
Public Sector Borrowing Requirements	17.7	9.0	8.7	9.6
Interest Payments	8.6	12.9	12.2	11.9
Internal	3.5	7.8	9.2	9.3
External	5.1	5.1	3.0	2.6
Primary Deficit	9.1	-3.9	-3.5	-2.3
Operational Deficit	n.a.	0.3	1.1	1.6

Source: SHCP, DGPH.

^{6/} This period has been chronicled in a fascinating way by Kraft. See Kraft, J., The Mexican Rescue.

The participating banks contributed approximately 7 percent of their exposure to form the new US\$5 billion loan. The banks obtained very high rates and commissions in exchange for leaving the door open for further reschedulings of the Mexican debt and the four years of grace on the new loans for refinancing. This was the first time that the IMF conditioned its own lending on obtaining a new loan from commercial banks. This approach reflected the diagnosis done at that time that the problem was a liquidity and not a solvency crisis. For example, Cline (1983) claimed that in a few years voluntary lending would be restored.

When President de la Madrid took office in December 1982, the economy was in a more serious crisis than that of 1976-77. Real GDP was down by 0.5 percent, inflation was soaring at almost 100 percent, the exchange rate had depreciated by more than this amount, capital flight was still rampant and the financial system was contracting rapidly.

In the new Extended Agreement with the IMF for the 1983-85 period, the government agreed to reduce the public sector deficit to 8.5 percent of GDP in 1983, 5.5 percent in 1984 and 3.5 percent in 1985. At the same time, the government announced a new program for Immediate Economic Recovery (PIRE). Among its objectives were a reduction in the growth of public expenditures and rationalization of public investment projects. Finally, the government sought to avoid a reduction in employment.

Public expenditures were to be reduced by eliminating low priority investment projects and associated current expenditures. To avoid a drop in employment, some transitory and highly labor-intensive programs were announced; they were to create between 500,000 and 700,000 new jobs in 1983. The industry and oil sectors were no longer the priority. Instead, the proposed budget for 1983 favored education, health and social security,

agriculture and communications, because of their social impact and labor-absorbing characteristics.

In the first year of the program, expenditures were reduced. At the same time, the government adjusted public sector prices strongly upward. The overall deficit fell greatly to 9 percent of GDP (Table II.7).

A policy of a generalized wage contraction was implemented: it is estimated that the real minimum wage fell by 18 percent, while wages in the manufacturing sector declined by 26 percent in real terms. On the one hand, this measure contracted demand. On the other, it greatly enhanced the external competitiveness of the Mexican economy.

Because of the steep contraction in aggregate demand, output fell by 5.3 percent, while the current account registered a surplus, something that had not happened since the early part of the century. Inflation, however, reached 102 percent a year on average.

The government continued to pursue budgetary contraction in 1983, although at a slower pace. During 1983 and 1984, however, it became progressively more difficult to reduce public expenditures as expeditiously as in the past. It was almost impossible to reduce real wages in the public sector further without risking a general strike, and reducing the number of employees would have had severe political costs in terms of organized labor's support for the government.

With regard to interest payments, the need to restore the deteriorated financial system and to check capital outflows and dollarization required high interest rates for savers. Given the high level of domestic debt, this approach was reflected in increased domestic interest payments, which in turn undermined the fiscal correction. Servicing of the foreign debt further complicated the situation.

Debt negotiations continued during most of 1983. In late 1984, all public sector payments coming due between December 31, 1984, and December 31, 1989, were rescheduled. The rescheduled debt amounted to US\$48 billion, to be paid over a period of 14 years. The interest rate on the rescheduled debt was cut roughly one percent and LIBOR replaced the prime rate as reference. The longer maturity and lower interest rate cut capital payments by US\$39.2 billion between 1985 and 1990 while raising payments over 1991-1998 by US\$50.9 billion.

In addition to renegotiating the maturity and interest rate, the currency denomination of part of the debt was diversified. Non-US banks were offered the option of converting a portion of their dollar debt into their own national currency. If 30 percent or less of the total debt was earmarked for redenomination, the conversion would be effected in equal monthly installments over a period of two years at the then prevailing exchange rate. For redenomination of 40 percent of the debt, the conversion period was 30 months, and for the redenomination 50 percent (the maximum allowed) it was lengthened to 42 months. In all, US\$12.2 billion of the public sector debt was made eligible for redenomination. So far, redenomination has been very limited (dollar-denominated debt still claimed 90 percent of the total public sector external debt in December 1985).

The inability to cut expenditures further, together with the progressive erosion of public revenues because of the recession and the adverse effects of inflation on tax revenues, meant that no further advances could be made in correcting the fiscal imbalance. Oil revenues remained basically unchanged at the level of 1984, while the deficit as a proportion of GDP increased slightly from 1984 to 1985.

At the end of the program, growth was below the average for the last 20 years; inflation, although lower than in 1983, still averaged 65.4 and 57.8 percent in 1984 and 1985, respectively, while the current account surplus shrank.

During 1984-85, US\$48 billion were renegotiated with the banks. Of this amount, US\$20 billion corresponded to debt that had not yet been rescheduled while US\$23 billion had been rescheduled in the aftermath of the 1982 crisis and were due for payment. The remaining US\$5 billion were "new money".

In 1986, the country suffered a dramatic fall in oil prices once more (see Table II.8). This time, instead of accommodating the shock in an attempt to prevent recession as in 1981-1982, the government reacted by depreciating the peso at a faster pace and cutting investment programs even further.

Table II.8: EXTERNAL SHOCKS

<u>Year</u>	<u>Terms of Trade</u>	<u>Prime Rate</u>	<u>LIBOR</u>
1970	97.7	7.91	8.91
1971	100.0	5.72	7.11
1972	103.3	5.25	6.00
1973	115.2	8.02	9.40
1974	100.1	10.80	10.84
1975	97.8	7.86	7.75
1976	113.0	6.84	6.12
1977	113.0	6.82	6.29
1978	104.1	9.06	9.08
1979	113.1	12.67	11.90
1980	127.6	15.27	13.91
1981	124.3	18.87	16.69
1982	108.2	14.86	13.60
1983	98.8	10.79	9.92
1984	97.1	12.04	11.26
1985	91.9	9.93	8.64
1986	66.2	8.32	6.83
1987	73.2	8.84	7.31

Source: International Financial Statistics.

On July 22, 1986, the Mexican government presented a new letter of intent to the IMF and approached the World Bank for a new loan. By early September, a bridge loan was arranged with the Bank for International Settlements, the US Government and the Central Banks of four Latin American countries. In order to obtain US\$500 million dollars from the World Bank, Mexico agreed to continue the privatization of some state enterprises (those defined as non-strategic by the government), promote foreign investment and go further with trade liberalization. All these initiatives were inspired by the Baker Plan.

The IMF set a loan of US\$6 billion from the commercial banks as a precondition for a program. Furthermore, three contingency clauses were included. The first, with the IMF, provided US\$600 million in case the oil prices fall below US\$9 per barrel. The other two contingency funds were established with the banks. They included a loan for US\$1.2 billion linked to the growth rate of Mexican GDP.

This agreement was considered too lenient by the small and medium American banks who refused to join the syndicate. To complete the loan, the major banks were forced to lend more than the proportional share.

The inability to reduce net transfers through reschedulings pushed the government into attempting new schemes aimed at debt reduction. In the case of Mexico two have been tried: a debt-for-equity swap program that was in effect from 1985 to 1987 and a securitization scheme. The latter created a new bond with the principal backed by a US Treasury peso coupon bond. This new instrument, with a twenty year maturity and a spread of 13/8 over LIBOR, was offered for voluntary exchange schemes and will be analyzed in detail in Chapter IV.

As a summary to this section, the terms of all the reschedulings are presented in Table II.9.

Table II.2: RENEGOTIATIONS OF MEXICAN EXTERNAL DEBT

Date of Agreement	Rescheduling (Tenor/Grace) (\$Million)	New Money (Tenor/Grace) (\$Million)	Conditions	Interest Rate (% p.a.)		Fees (% flat)	
				R	NM	R	NM
83/83		5,000 (6/3)			L + 2-1/4 P + 2-1/8		1-1/4
88/83	23,000 (8/4)		88/82-12/84 (Public)		L + 1-7/8 P + 1-3/4		1
	14,000		Private sector interest arrears				
84/84		3,000 (10/5.5)			L + 1-1/2 P + 1-1/8		5/8
83/85	5,000 (10/5)		Amendment of 1983 \$5,000 m. Credit Agreement to conform to price structure and repayment schedule under 1984 \$3,000m Credit Agreement. \$1,200m to be repaid in 1985.		L + 1-1/2 P + 1-1/8		
	23,000 (14/-)		81/85-12/88 (Public) Includes all repayments under previous 88/82-12/84 rescheduling to be spread between 88 and 88.		L + 7/8 (85-86) L + 1-1/8 (87-91) L + 1-1/4 (92-98)		
88/85	20,100 (14/1)		Currency switch option				
10/85			6-month extension of \$950 m pre-payment due on Oct.-Nov. '85 as per Mar. '85 agreement.				
85/86			6-month re-extension of \$950 m pre-payment of 83/85 agreement.				

Date of Agreement	Rescheduling (Tenor/Grace) (\$Million)	New Money (Tenor/Grace) (\$Million)	Conditions	Interest Rate (% p.a.)		Fees (% flat)	
				R	NM	R	NM
00/00		500 Bridge Loan			L + 7/8		
04/87		5,000 (12/5)	Parallel sectoral financing with IBRD		L + 13/10		
		1,000 (15/9)	Transport sector cofinancing with IBRD for BANOBRAS (including \$500 m guarantee)		L + 13/10		
		1,200 (8/4)	Contingent investment support financing. Drawdown period 02/87-04/88		L + 13/10		1/4
		500 (12/7)	Growth contingency cofinancing with IBRD (including \$250 m guarantee)		L + 13/10		1/4
	23,000 (20/7)		Amendments to maturity schedule of the 52 Restructure Agreements	L + 13/13			
	20,100 (20/7)		Amendments to maturity schedule of the 35 Restructure Agreements	L + 13/10			
	8,800 (10/5.5)		Amendments of the 83 and 84 Credit Agreements	L + 13/10			
04/30/87	First drawdown of \$2.5 billion under Facility 1 (Parallel New Money), and the full amount of \$1.0 billion under Facility 2 (Cofinancing New Money). Mexico also terminated in whole the commitments of the banks for the first and second tranches of Facility 4 (Investment Support).						
00/87	9,325 (20/7)	Rescheduling of private sector debt (FICORCA)					

Date of Agreement	Rescheduling (Tenor/Grace) (\$Million)	New Money (Tenor/Grace) (\$Million)	Conditions	Interest Rate (% p.a.)		Fees (% flat)	
				R	NM	R	NM
12/29/87			Banks are being offered to swap existing Mexican debt at a discount for new bonds with L + 1-5/8, the principal of which is guaranteed by a 26-year zero-coupon Treasury security to be held by the NY Fed. Mexico will purchase up to \$10 billion of zeros for about \$1.9 billion. A total of \$53 billion of public sector debt is eligible for exchange. The interest will remain an obligation of Mexico's government. Banks will write down only the loans they tender in the swap plan. Roadshow starts on 01/25/88 and cutoff date for bids is 02/19/88. Response to negative pledge waiver request is due no later than January 22, 1988.				
03/03/88			139 banks from 18 countries submitted 320 bids to exchange loans for collateralized bonds. Loans with aggregate face value of \$3.67 b. held by 95 banks were accepted for exchange (minimum discount of 25%) for new bonds worth \$2.58 b. Mexico's debt reduced by \$1.1 b. with interest savings of \$1.54 b. over next 20 years; Central Bank will use \$532 m. to purchase collateral. Average price Mexico paid for debt was 69.77 cents on the dollar.				
	2,580 (26/-)		collateralized bonds		L + 1-5/8		
03/05/88		1,100	final drawdown of financing package for 1987-88				

Note: In July 1988, Mexico released a series of regulations on the Capitalization of Credits and the substitution of Public Debt by investment (Clause 5.11 of March 28, 1987 Amendment: Exchange of Credits for Qualified Capital Stock, Qualified Debt and Qualified Investment)

CHAPTER III

FROM A LIQUIDITY TO A SOLVENCY CRISIS

In Mexico, a significant recession has been necessary to attain a large non-interest current account surplus during a period of declining terms of trade. Through import compression and increased exports the external sector has adjusted quickly. The key issue is whether the surplus can be sustained with resumption of economic growth.

The adjustment effort of Mexico (to live with no foreign credit and, on the contrary, have significant net transfers abroad) at a time of falling oil prices has been very costly. Table III.1 shows some selected indicators of the performance of the Mexican economy. Lacking foreign credit, inflation nearly doubled in the period 1983-1985 with respect to the previous three years as the government relied on money financing to close the fiscal deficit

Table III.1: SELECTED ECONOMIC INDICATORS

	<u>1970-1979</u>	<u>1980-1982</u>	<u>1983-1985</u>
Inflation	16.2	37.0	74.0
Real Per Capita GDP	3.6	2.6	-1.9
Investment/GDP	20.2	24.0	17.9
Current Account Deficit/GDP	2.9	4.2	-2.7
Public Sector Borrowing Requirement/GDP	6.6	13.4	9.1
Cumulative Oil Export Revenues (US\$ billion)	8.1	41.5	47.3
Real Minimum Wage (1978=100)	92.8	89.3	65.1
Open Unemployment Rate	10.1	6.3	9.8

Source: Banco de México, Indicadores Económicos and SHCP.

gap. Real per capita GDP declined while investment decreased its share of GDP compromising the resumption of high growth rates. Real wages, in 1986, were about half of what they were in 1981 while open unemployment increased 3.5 percent.

This adjustment created an unprecedented non-interest current account surplus that allowed the country to remain current in its payments abroad in every year but 1986 (Table III.2). Although the adjustment has been severe both on the fiscal and external sides, 7/ the traditional measures of debt burden have not improved since 1982 (see Table III.3). Both the debt to exports and debt to GDP ratios have deteriorated. Nevertheless, through import compression since 1982 and an increase in non-oil exports after 1986, the country achieved its record high level of international reserves, US\$15 billion, by mid-1987.

Table III.2: CURRENT ACCOUNT
(percent of GDP)

Year	Non-Interest Current Account	Interest Payments	Current Account Balance
1970	-1.9	-1.1	-3.0
1976	-1.4	-2.4	-3.8
1980	-1.2	-3.2	-4.4
1981	-1.7	-4.1	-5.8
1982	6.2	-10.0	-3.8
1983	10.1	-6.3	3.8
1984	8.2	-5.7	2.5
1985	5.2	-4.8	0.4
1986	4.5	-5.5	-1.0
1987	8.4	-5.7	2.7

Source: The World Bank.

7/ See Gil Díaz (1986), Hierro and Sanginés (1987), Aspe and Córdoba (1985) and Buffie and Sanginés (1987) for a detailed analysis of the adjustment.

Table III.3: DEBT BURDEN MEASURES
(percentages)

	Debt/Exports	Debt/GDP	Interest/Exports	Reserves/Debt
1970	108.9	8.7	7.4	23.7
1975	179.3	12.5	13.0	16.6
1978	223.3	25.3	16.3	8.9
1980	138.0	18.0	15.8	12.3
1981	141.6	17.9	15.9	11.5
1982	186.6	31.5	22.3	3.4
1983	233.7	47.7	23.1	7.2
1984	215.3	42.1	22.8	11.5
1985	244.5	41.2	25.3	7.8
1986	320.9	62.0	26.3	8.8
1987	278.1	59.5	19.2	16.5

Debt = Total Long-Term Public and Publicly Guaranteed

Source: The World Bank.

To evaluate Mexico's capacity to pay interest on its external debt, the ratio of the non-interest current account to contractual interest on the total external debt can be used (see Table III.4).

Table III.4: MEXICO'S CAPACITY TO PAY
(percent of GDP)

Year	Non-interest Current Account (A)	Interest (B)	A/B
1980	-1.2	3.2	--
1981	-1.2	4.1	--
1982	6.2	10.0	0.62
1983	10.1	6.3	1.60
1984	8.2	5.7	1.43
1985	5.2	4.8	1.08
1986	4.5	4.8	0.93
1987	8.4	5.7	1.47
Average 1982-1987	--	--	1.18

Source: The World Bank.

The coverage ratio has been above 1 in 1982-87. Furthermore, if the non-interest current account is projected g/ for different scenarios of GDP growth and terms of trade, the coverage ratio fluctuates between 0.95 and 1.25. Therefore, as a country, Mexico has the capacity to pay interest on all or nearly all of its external debt. The problem is that most of Mexico's debt is owned by the public sector and, therefore, the real measure of capacity to pay is given by the primary surplus of the public sector.

The need to finance high fiscal deficits led to the accumulation of both internal and external public debt. This debt created a high financial burden for the consolidated public sector. By 1985, interest payments on the total public debt were almost 12 percent of GDP. It is important to remember, however, that during a period of high inflation, interest payments on the internal debt may include a significant component of value maintenance, in other words, an anticipated amortization of the principal.

A fundamental question is whether the government has the capacity to pay interest on both the internal and the external debt. A simple vector autoregressive model of the behavior of fiscal accounts was estimated to project the primary surplus. The following table show both the results of the projections and the assumptions used for key exogenous variables. Even under fairly optimistic assumptions, such as oil prices reaching US\$37 per barrel in 2000 and sustained growth at a rate of 5 percent (World Bank Estimates), the primary surplus stays around 3 percent of GDP in the long run. A sensitivity analysis shows that a primary surplus of 4 percent of GDP

g/ These projections were done using vector autoregressions on the following variables: non-interest current account, GDP, US GDP, inflation, oil prices, LIBOR and domestic real interest rates. The model used was a variation of the CAIE model at ITAM. For details on the model see Hurtado et al (1986).

can be achieved only by increasing oil prices to US\$44 per barrel by the year 2000, but a reduction in the rate of growth of oil prices to 7 percent a year on average reduces this figure to 1.8 percent of GDP.

Table III.5: ESTIMATED PRIMARY SURPLUS

Vector Autoregressive Model
(% of GDP)

Year	Federal Government	State-Owned Enterprises	Consolidated Non-Financial Public Sector
1990	2.59	-0.17	2.42
1991	2.64	-0.30	2.34
1992	2.69	-0.30	2.39
1993	2.74	-0.30	2.44
1994	2.81	-0.33	2.48
1995	2.87	-0.36	2.51
1996	2.98	-0.35	2.63
1997	3.09	-0.34	2.75
1998	3.21	-0.34	2.87
1999	3.35	-0.35	3.00
2000	3.51	-0.36	3.15

Assumptions: Oil prices start at \$14 per barrel growing to \$37 in year 2000. Real domestic GDP grows at a constant 5 percent.

It follows then that unless a structural change takes place so the model takes different parameters, the expected primary surplus is likely to be well below the interest payment requirements. The structural change would need to include higher tax rates and lower expenditures for a given level of GDP.

If an outright default of the internal debt is ruled out for political reasons, the options are either a wiping out of the real value of the internal debt through high inflation or a reduction on the external debt burden. Thus, regardless of the capacity of Mexico as a country to service

its debt, there is a fiscal problem because the government cannot pay interest on all the outstanding public debt.

Table III.6 presents the primary surplus of the consolidated public sector and its interest payments.

**Table III.6: PUBLIC SECTOR'S CAPACITY TO PAY
% OF GDP**

Year	Primary Surplus	Interest Payments			Ratio of Primary Surplus to Interest (B + D)
		External (B)	Internal (C)	Real Internal (D)	
1980	-1.4	1.9	1.6	-0.4	--
1981	-9.1	2.8	2.2	-0.2	--
1982	-8.7	6.9	1.3	-7.3	--
1983	3.9	4.4	8.0	0.8	0.75
1984	4.8	4.3	7.6	1.1	0.80
1985	2.4	3.9	8.1	1.8	0.42
1986	0.9	4.1	12.0	2.1	0.15
1987	4.3	4.2	15.3	0.3	0.95
Average: 1982-1987	--	--	--	--	0.51

Source: The World Bank.

The average coverage ratio for the public sector is almost identical to the price of the debt in the secondary market. For most realistic scenarios of fiscal behavior and of the real internal interest rate, the coverage ratios of the government are below 0.60. The non-interest current account can probably finance the debt service but there is a serious fiscal problem. The government has not been able to free enough resources to pay interest on its debt. It is not clear whether the necessary fiscal adjustment will turn out to be politically feasible.

Yet, the results presented here point in the direction of a serious solvency problem for the public sector. As Krugman (1988) has pointed out, the existence of an excess debt burden affects both the behavior of the banks and the debtor. The banks are not willing to return to voluntary lending while the country lacks the incentives for further internal adjustment. Quoting Krugman (1988): "...the creditors have two choices. They can finance the country, lending at an expected loss in the hope that the country will eventually be able to repay its debt after all; or they can forgive, reducing the debt level to one that the country can repay ... the choice between financing and forgiveness represents a trade-off. Financing gives the creditor an option value: if the country turns out to do relatively well, creditors will not have written down their claims unnecessarily. However the burden of debt distorts the country's incentives, since the benefits of good performance go largely to creditors rather than itself."

Given the results of this section, it seems that some sort of debt reduction is inevitable for the Mexican public debt. To the extent that the capacity to pay is insufficient, as seems to be the case even in moderately optimistic scenarios, debt reduction is necessary to encourage further adjustment and to sustain economic growth compatible with political and social stability.

CHAPTER IV

THE POSSIBILITIES FOR DEBT REDUCTION: AN ANALYTICAL FRAMEWORK

In order to study the potential for debt reduction, several concepts need to be clarified and an analytical framework needs to be set up.

First, one can start by looking at the value of the debt from the creditors' point of view. Salomon Bros. (1987), First Boston (1987), Rodriguez (1987) and Carstens (1987) have analyzed this problem in detail. If the banks are risk neutral, the value per dollar for the existing debt is given by:

$$V_b = E \left[\sum_{t=1}^{20} \left\{ \frac{P_i(t) i_t}{(1+r)^t} + \frac{(1 - P_i(t)) \gamma i_t}{(1+r)^t} \right\} + \frac{P_p(t) + (1 - P_p(t)) D}{(1+r_{20})^{20}} \right]$$

- where:
- $P_i(t)$ = probability of no default on interest payments at time t
 - i_t = interest rate on the debt (currently LIBOR + 13/16)
 - r_t = risk free rate
 - γ = fraction of the interests that get paid if default occurs.
 - $P_p(t)$ = probability of no default on the principal
 - D = expected value of the debt at time $t = 20$ if it does not get repaid

P_i and P_p are usually assumed constant through time. Also, assume that $\gamma=0$ and the discount rate r is constant. It is not necessary to assume a constant LIBOR since it can be "expected out" to its average value. Under these assumptions, the formula becomes:

$$V(b) = E \left[\frac{20}{L} \frac{P_i i_c}{(1+r)^{i-1}} + \frac{P_p + (1-P_p) D}{(1+r)^{20}} \right]$$

This formula can be easily manipulated to value alternative assets (see for example Rodriguez, 1987). Examining the formula, one can easily see why the creditor and the country can value the debt differently. First, if the country can diversify its portfolio, it will probably behave as a risk averter rather than with neutrality. At the same time, the relevant discount rate for the country might not be the risk free rate available in the market but rather a subjective time preference rate. This rate is influenced by economic factors such as the opportunity cost of foreign exchange and institutional factors such as political planning horizons. These factors likely will result in a discount rate above the risk free rate. Most important of all, the probability of default is not a readily observable variable. On the contrary, the country usually has an informational advantage over the bank as to what is its true capacity to pay. The observable probability of default revealed by the price in the secondary market (if P_i and P_p are assumed equal) gives the perception of the marginal bank that traded in this market, but not that of the intermarginal banks or of the country.

Another major source for discrepancy in the valuation comes from the cost of default. As we have seen, if default takes place, the bank receives an amount lower than the full interest due. From the country's point of view, there are some associated costs with default such as canceling of trade credits that are not necessarily a benefit to the bank. Therefore, a default situation can be a negative sum one.

If the country has a time separable expected utility function, the value of the debt from the country's viewpoint will be:

$$V_c = P_i \sum_{t=1}^{19} \beta^{t-1} U(X_t - i_t B) + (1 - P_i) \sum_{t=1}^{19} \beta^{t-1} U(X_t - C_t) \\ + P_p \beta U(X_{20} - i_{20} D_{20} - B) + (1 - P_p) \beta U(X_{20} - D)$$

where: B is the stock of debt outstanding

X_t is the income level of the country at time t

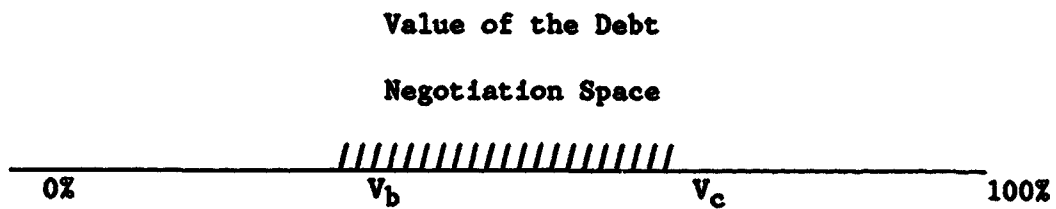
β is the subjective intertemporal discount factor

C is the cost of the default to the country

and the other variables are defined as before.

These differences in valuation are not a problem. On the contrary, they permit mutually profitable trades. The first condition for such a trade to be feasible is that the value assigned by the country is higher than that of the bank.

In brief, if $V_b < V_c$, that is the debt is worth more for the country than to the bank, then we have a possible negotiation space:



We can divide debt reduction schemes into two categories. The first implies changing the existing debt for a new asset. This new asset can be real or financial, in domestic or foreign currency. For example, changing old debt for equity in government-owned companies, for cash (repurchase), for equity in domestic firms, etc., are all special cases. As long as a

negotiation space exists these sort of trades can be Pareto improving. The condition for it is that the cost of the asset (A) is such that:

$$V_b \leq A \leq V_c$$

In general, the cost of the asset for the country might be different from the value that the bank gets from it. As it can be seen, repurchase, securitization and capitalization are all particular cases of changing existing debt for a new asset. The difference among them is the choice and cost of the asset.

The question of whether debt relief is present or not in these schemes can be neatly seen in this framework. Since $A \leq V_c$ to have a negotiation space, debt relief from the point of view of the country is present whenever $A < V_c$. The amount of relief is precisely $V_c - A$. Nevertheless, there is no real forgiveness from the banks' points of view since $V_b \leq A$.

There are clearly two limits for exchanging old debt for a new asset:

- a) the case where $V_b > V_c$ (no negotiation space exists); and
- b) the case where the country does not have an asset A (or not enough of it) such that $V_b \leq A \leq V_c$.

When case a) happens, the presence of a third interested party can bring a solution to the problem. For example, if $V_b > V_{\text{Mexico}}$ but the US Government had an interest in obtaining debt reduction for Mexico for political stability reasons and was therefore willing to pay X for it, a negotiation space with US support would appear if $V_b - V_{\text{Mexico}} \leq X$.

The occurrence of case b) might also require another lender to provide the country with an asset A to be traded with the banks. This case would include the existence of a debt facility given by the World Bank or the IMF.

The second possible scheme for debt reduction is direct forgiveness. Forgiveness and not the change of debt for an asset can also provide possibilities for a Pareto improvement. For simplicity of exposition assume that there are two periods and that in case of default the banks get nothing. Then the value of the debt to the banks is:

$$V_b = S_1 + \delta(1-\pi)S_2$$

where S_1 and S_2 are debt service in each period, π is the (subjective) probability of default at time 2, and δ a discount factor. If following Krugman (1988), debt reduction increases the incentives for domestic adjustment (reducing the moral hazard problem), then reducing S_2 can lower π , the probability of default. Debt forgiveness would be Pareto improving as long as:

$$V_b(S_1, S_2) < V_b(S_1, aS_2) \text{ and } a < 1$$

The existence of a negotiation space is not sufficient to assure a successful debt reduction program even if the asset A exists. In the appendix to this chapter the issue of the timing of the reduction is explored.

With this framework in mind, we can analyze the two experiments of debt reduction in Mexico: the debt-for-equity swap program and the Mexico-bond deal for public debt. These issues will be analyzed in Chapter V. Furthermore, this same framework will prove useful to explore the possibilities for significant debt reduction in the future. These possibilities will be dealt with in Chapter VII.

APPENDIX

We assume that there is only one bank with reservation value \bar{p} equal to the secondary market price. The country can be of two types. Type A values its debt by \bar{v} while B does so at \underline{v} ($\bar{v} > \underline{v}$). The condition for Pareto improving trades with both countries is:

$$(1) \quad p \leq \underline{v} < \bar{v}$$

Each country knows its reservation value but it is private information. The bank's belief can be summarized by:

$$(2) \quad \text{PROB} [\text{Country A}] = \Pi$$

$$(3) \quad \text{PROB} [\text{Country B}] = 1-\Pi$$

Now, knowing that if (1) holds it is possible to have a Pareto improving repurchase or swap, it is easy to answer whether a country should borrow internally, use the inflation tax or international reserves to finance such a scheme. If the valuation from the country's point of view (using the relevant intertemporal discount rate) is above that of the country, from a purely financial point of view, the trade makes sense. One could think that this is the case for Mexico in 1987-88 with an abnormally high level of reserves. 9/

The question to be addressed here is, can we be sure that Pareto improving trades take place [assuming that condition (1) holds]?

To answer the question we use a very simple model. There are two periods. In period 1, the bank makes an offer to the country who can either

9/ Note that the relevant discount rate (opportunity cost) is not the same once the reserves have been raised than ex-ante when the inflation tax or internal debt are need to buy the reserves.

accept it and trade or reject it. If the offer is rejected, the bank can make a new offer. The game is over after the second period. If in period 1 the offer $P(1)$ is accepted, the utilities are:

- (4) $U(A) = \bar{v} - p(1)$ country A
 (5) $U(B) = \underline{v} - P(1)$ country B
 (6) $U_{BANK} = p(1) - \bar{p}$ bank

If no agreement takes place after period 1, the country pays an interest r to the bank. Both the bank and the country discount the future by a factor δ . At time 2, the bank will trade with both countries if the following condition holds:

$$(7) \quad P(2) < \underline{v} - r(2)$$

so it is better for country B to trade with the bank rather than service its debt.

From the bank's viewpoint, an agreement with both types of country is profitable if:

$$(8) \quad (p(2) - \bar{p}) > (\bar{v} - \bar{p})\Pi^* + r(2) (1 - \Pi^*)$$

where Π^* is the bank's belief about the country being type A at time 2 (a posteriori probabilities).

The bank sets $p(2)$ to the individually rational level for country B, this is $P(2) = \underline{v}$. Condition (8) imposes the following constraint on the admissible beliefs of the bank:

$$(9) \quad \Pi^* < \frac{\underline{v} - \bar{p}}{\bar{v} - \bar{p} - r(2)}$$

Hence, a perfect Bayesian equilibrium at time 2 has the bank offering $P(2) = \underline{v}$, both countries accepting the offer and the bank holding beliefs as defined in (9). Now, we move to time 1 and assume that the bank makes an offer:

$$(10) \quad \underline{v} < p(1) < \bar{v}$$

and we show that even a type A country finds it in its own interest to reject the offer with a positive probability.

Beliefs Π^* have to be derived from the priors Π by Bayes' Law. Given the assumptions:

$$(11) \quad \text{PROB} [\text{Reject} \mid B] = 1$$

and we will define:

$$(12) \quad \text{PROB} [\text{Reject} \mid A] = x$$

So, applying Bayes' Law:

$$(13) \quad x > \left[\frac{1 - \Pi}{\Pi} \right] \left[\frac{\underline{v} - \bar{p}}{\bar{v} - \underline{v} - r(2)} \right]$$

which is the equilibrium strategy for type A country at time 1. Finally, an equilibrium strategy for the bank at time 1 is to offer a $p(1)$ such that

$$(13) \quad \underline{v} + r(1) \leq p(1) \leq \bar{v} - \delta (\bar{v} - \underline{v}) + r(1)$$

which satisfies the requirement that B rejects the offer with probability one and A does so with a positive probability.

It is possible then, that in order to obtain a better deal from the bank by convincing it that its valuation of the debt is relatively low, a country that could profit today from a swap or a repurchase might not engage in one postponing the decision.

From the Mexican point of view, with the level of reserves between US\$15 billion and US\$16 billion and an extreme reluctance to a moratorium, it seems unlikely that the condition $V_{\text{MEX}} > \bar{p}$ was not being met in 1987. It is much more likely that the deal obtained through the swap program was not considered good enough, in particular because the gap between V_{MEX} and

MARKET was being shared by the foreign investor and by the administrators of the swap program (investment bankers, buresucrats, etc). In that sense, a debt repurchase, which would be identical for the holders of the debt, would be much better for the country by allowing it to capture the gap. Therefore, even if mutually profitable trade of debt between Mexico and its creditors is possible, the swaps seem to be an inferior alternative.

Regarding alternative ways to finance either a swap or repurchase scheme, if all the taxes (including the inflation tax) and the internal debt were set ex-ante at their optimal levels, the country should be indifferent at the margin among the various sources. For Mexico, at least from a strictly economic viewpoint this ex-ante optimality assumption does not seem to hold. Financing through internal borrowing seems an unwise move because it would be swapping external debt for a higher cost internal debt as measured by the real interest rate it carries. Furthermore, there is an implicit agreement that the internal debt is senior with respect to the external debt held by commercial banks making it even more costly. Financing a significant debt reduction scheme through an inflation tax seems to be too costly also. To buy back a large portion of the debt, the country would require such an inflation rate that it would probably move into the region where the decrease in local currency demand more than compensates for the increase in the inflation rate lowering the revenues from the tax.

Hence, financing through the use of existing reserves or from general taxation are the best available alternatives. Nevertheless, to quantify this statement, a general equilibrium model would be needed.

CHAPTER V

EXCHANGING OLD DEBT FOR A NEW ASSET: THE MEXICAN EXPERIENCE

The issue of whether the country will go into default again or a new contract can be agreed upon with the creditors is an open one. ^{10/} The Government has claimed frequently that debt relief to allow investment and growth is the only alternative, while the banks have serious reservations about the prudence of such a strategy.

So far, Mexico has attempted two debt reduction programs. The first one was a debt-for-equity swap scheme that was suspended in October 1987 because of the inflationary effects and lack of transparency in the process of subsidization of foreign investment. The second was a securitization plan which consisted of exchanging a new bond with its principal backed by a zero coupon bond for old loans. The schemes are described and evaluated in the following section.

1. Debt Equity Swaps

The debt-for-equity swaps scheme was regulated under Section 5.11 of the New Restructure Agreement between the United Mexican States and its

^{10/} In the past, Mexico has had several experiences of default and the long story associated with these episodes has been presented by Bazant (1968). The latest episode started in 1913 during the Mexican Revolution when the country declared a default on its external debt. A settlement was attained only in 1940 (the Suarez-Lamant Agreement). Nevertheless, in the 1930's Mexico was able to repurchase through the Chase National Bank part of its debt at discount. The government also exchanged a new bond for the old debt at a ratio of 10 cents on the dollar.

creditors, dated August 29, 1985. This section allowed foreign investors to buy public external debt to:

- a. exchange it for stocks of public or private enterprises;
- b. complete an existing investment project;
- c. start a new investment project; and
- d. cancel debts with Mexican banks or FICORCA.

Payments to foreign banks, to home offices by its Mexican subsidiaries or foreign suppliers were not allowed.

In accordance with the Agreement, debt swaps could involve the issue of either qualified stock or qualified debt. The qualified stock had to be issued in the name of the foreign investor and could not be transferred to a Mexican national until January 1, 1988. Furthermore, foreign investors could not receive extraordinary dividend payments nor convert the stock into any other financial asset. The acquisition of qualified stock required the authorization of the Ministry of Finance, the Foreign Investment Board, and the Ministry of Foreign Affairs.

Qualified debt was defined as a financial instrument with better terms (both in terms of interest and maturity) than the United Mexican States (UMS) paper. Qualified debt for a swap should be offered to all creditors according to their exposure without discrimination. A swap of UMS paper for qualified debt required the authorization of the Ministry of Finance and the Foreign Investment Board.

The possibility of Mexican nationals participating in swap schemes existed through "qualified investments". Through them, Mexicans (both firms and individuals) could buy public debt (foreign assets owned by Mexican nationals). These resources could be used to pay existing liabilities with Mexican banks or with FICORCA or to invest the funds in new projects authorized by the Ministry of Finance.

Section 5.11 was modified on March 20, 1987, to clarify that when a company used the resources coming from a swap to prepay FICORCA, this does not imply that the Bank of Mexico had to cancel this debt. In other words, it allowed the company to pay in pesos its FICORCA debt to the Bank of Mexico without creating the obligation for the Bank to make an equivalent payment to the foreign creditor. Thus, it made clear that swaps used to prepay FICORCA did not imply the need for the Bank of Mexico to disburse any additional funds.

The Operating Procedures Manual

According to Section 5.11 of the Restructure Agreement, the Ministry of Finance and the Board of Foreign Investments would publish an operating procedures manual to set the administrative rules for debt swaps. The manual was published in May 1986 but included rules only for "qualified stocks", leaving out the specifics for both qualified debt and qualified investments and, therefore, the possibility of Mexican nationals participating in the scheme.

The two most important operations regulated by the manual were:

- The swap of public debt for equity in a state-owned enterprise.

This operation would be part of a broader privatization effort.

- The sale of public debt to a foreign investor which uses the funds to finance a new investment project or to pay its debt to a Mexican banks or FICORCA.

The Administrative Procedure

In order to participate in a swap, the foreign investor had to present an application to the Ministry of Finance. The application had to include a description of the intended use of the funds, the financial statements of the last three years of the applicant, and the amount and source of the public debt used for the swap.

The Ministry of Finance played three different roles in the deal. The first one was as representative of the public institution which issued the debt. As such, the Ministry was in charge of negotiating the discount at which the debt would be acquired. The second role was as the administrative agency in charge of processing the applications. The third and most important role was to authorize the deal.

To qualify for authorization from the Ministry of Finance, the applicant had to obey the Law for Foreign Investments of 1973. According to this law, direct foreign investment was prohibited in some activities, either because they were reserved to the government (for example, oil, basic petrochemicals, nuclear energy, electricity, railroads, and telegraphs) or because only Mexicans can control them (for example, radio and television, transportation and forestry). Furthermore, in automobiles, pharmaceuticals and electronics, for which the government has special industry promotion programs, the participant had to comply with all the special regulations. These regulations affected the use of domestic components up to a certain percentage of value added, restrictions on the models produced and the requirement of a positive foreign currency balance.

Discounts

The discount negotiated between the Ministry of Finance and the foreign investor could vary between 0 and 25 percent. Six different categories were established depending on the characteristics of the projects. More favorable conditions were offered for companies to be privatized, with high technology, generating foreign exchange, labor intensive, for small and middle-size industry and for companies with 100 percent foreign ownership.

The discount tables of the operating manual were estimated for some base market values of the Mexican paper and a given spread between the free

and controlled exchange rates. Since fluctuations in these variables could change the attractiveness of the capitalization schemes, the discounts were adjusted according to the following formula:

$$D = D_0 \left[\frac{100 - pd}{100 - p_0 d_0} \right]$$

where D = discount to the foreign investor

p = price of the UMS paper

d = ratio between the free and controlled exchange rates

D₀, p₀, d₀, the published base values

By August 31, 1987, 207 deals had been authorized but there is no more information available since then. The distribution of the discounts for these deals is presented in the table below:

Table V.1: DISCOUNTS

Percent	No. of Deals	Percentage of Total
0	5	2.4
5	1	0.5
8 *	77	37.0
12	36	17.3
13	14	6.7
14	11	5.3
15	27	13.0
16 **	35	16.8
20 ***	2	0.1

* Includes one deal at a 9 percent discount and 5 at 10 percent

** Includes two deals at 17 percent and two with 18.75 percent

*** Includes one deal at 20.39 percent.

Source: Secretaría de Hacienda.

The discounts varied depending on the sector in which the investment was allocated. In the following table, the average discount is presented by sector:

Table V.2: DISCOUNTS BY SECTOR

	Average Discount	No. of Deals
Automobiles	11.74	15
Tourism	10.42	47
In-bond Assembly Plants	10.08	35
Metallic Products	11.00	13
Chemicals	13.09	20
Manufacturing	12.83	22
Metal Foundries	14.20	7
Services (Health Care)	8.00	1
Agribusiness	14.40	10
Textiles and Leather Goods	12.82	4
Electronics	12.22	12
Mining	13.02	4
Construction	12.50	6
Others	9.45	11

Source: Secretaría de Hacienda.

It is interesting to observe that although there has been a wide range of fluctuation in the number of discounts, the sectoral averages are all very close: going from 8 percent in health care to 14.4 percent in agribusiness.

Profits for the foreign investor were not subject to any tax. A proposal for imposing a 30 percent capital gains tax was not approved by Congress before the swap program was suspended in October 1987.

Results Achieved: Amounts

Between June 1986, when the debt swap program started, and April 30, 1988, 404 projects were presented to Hacienda for consideration by foreign

Rodríguez (1987), Salomon Brothers (1987), First Boston (1987) and Carstens (1987), valued the Mexican Bond using the formula presented above. All of the studies agreed that the value of the old debt relative to the new one was 68-75 cents to the dollar. The reason for this was obvious. Besides the legal problems of issuing senior debt, the principal represents only about 18 percent of the total value of a 20-year bond. Therefore, the non-secured interest basically made the new bond a Mexican risk security.

On February 26, 1988, the Mexican government and Morgan Guaranty held the auction to exchange the old loans at a discount for the new bonds. At this auction, 139 banks from 18 different countries participated, submitting bids valued at US\$6.7 billion. On March 3, Mexico set a minimum acceptable discount at 25.01 percent, and loans for US\$3,665 million held by 95 banks were accepted for exchange. The average discount of the acceptable bids was 30.23 percent. Hence, US\$3,665 million of old loans was exchanged for US\$2,557 million of new bonds reducing the total debt by US\$1,108 million. In order to issue these new bonds, the government allocated US\$532 million of its international reserves to purchase the necessary zero-coupon bonds from the American Treasury. Although the new bond carried twice the spread over LIBOR, the creditor would get repaid on the principal only after twenty years, that is, at the maturity of the zero coupon bond. With the old loans, amortization payments were supposed to start coming in by 1994 after a 7-year grace period.

Evaluation of debt securitization

When evaluating the potential for debt securitization, two issues need to be discussed: the possibility of indexing the new securities to some performance index and the value of the potential guarantees.

Much has been said regarding the convenience of indexed debt. If undesirable macroeconomic fluctuations are to be avoided, the transfer to the creditors has to be made contingent on the state of the world. Hence, first we will analyze the convenience of different risk sharing schemes and second the contribution of securitization to better risk sharing.

A common proposition in the literature (Stein et al, 1988) is to have debt indexed to the main commodities that the debtor countries export. If the country is risk averse, and the bank can diversify and thus act as risk neutral and, furthermore, if the country is a price taker in the commodity market, standard principal-agent theory shows that the efficient risk sharing mechanism has the country paying a fixed amount and the bank taking all of the risk. This same logic applies to fluctuations in the LIBOR rate. The bank should take all of the risks and the country would be better off by paying a fixed rate on its debt. In general, if the country is risk averse and the bank risk neutral, the latter should take all the uncertainty that cannot be affected by the country's conduct.

A different problem appears with output or exports indexation. To the extent that a moral hazard problem exists (the country can affect output and exports), risk has to be shared. The optimal solution in this case, has the country taking part of the risks upon itself to keep the incentives straight.

With the above facts clearly established, one can discuss the merits of securitization in achieving better risk sharing. Most commodities are widely traded in financially efficient markets. In the case of oil, Mexico can hedge its position by selling its output through long-term contracts or using the futures market. In the case of interest rate fluctuations, there are also a number of ways of hedging through the world capital markets.

These operations, though rarely publicized, are regularly conducted by the Bank of Mexico. The reason for keeping them private is that hedging is a way of buying insurance. Insurance is only used in case disaster strikes, otherwise ex-post nothing was received in exchange for what one paid for. The Bank, therefore, is reluctant for political reasons to announce how much is spent on insurance that many times goes unused. To the extent that the hedging can be done with the existing financial vehicles, the contribution of securitization has to be found in the asymmetric valuations of banks and countries but not on its added value in risk sharing. On the contrary, to the extent that insufficient use has been made of hedging through the financial markets (perhaps the case of PEMEX in 1981-1982 and 1986), securitization would be a good way to avoid gambles that the managers of PEMEX might like, but which are not desirable from the viewpoint of the country.

Regarding the value of the guarantees, the assessment of creditor banks and the country are different. If old debt is exchanged at a discount for new debt but the value of the guarantee to the country plus the increase in value of the remaining debt compensate the discount, the country is not better off. The ideal guarantee should have a higher value to the creditor than its cost to the debtor. Unfortunately, it usually works the other way around. The difficulties of issuing an oil-backed bond come from the fact that the oil in the well is not a sufficiently good guarantee for the creditor. To get around this problem, for example, to back interest payments with export revenues, an escrow account would need to be set up out of the reach of the Mexicans but this turns out to be politically difficult. Finding a guarantee with the right attributes has not been a successful venture so far.

The relative failure of the Mexican Bond was due basically to its design. The asset used to exchange it for debt, in this case, international reserves, is costly and limited. Nevertheless, Mexico was willing to use up to US\$2 billion to support the security. The lack of explicit seniority of the new bond with respect to the old loans and the absence of assets backing interest payments, were the main factors that limited the success of the operation.

CHAPTER VI

PRIVATE DEBT AND THE FIGORCA EXPERIENCE

1. Its Origins and Size

Prior to 1982, most of the external debt contracted by the private sector was obtained through banks which acted as intermediaries. Thus, a Mexican bank would obtain a loan from a foreign syndicate and, through a different contract, lend the funds to the private company, either as creditor or as intermediary. The most important intermediaries were Nacional Financiera (NAFINSA) and Banco Nacional de Comercio Exterior (BANCOMEXT) among the government banks and BANCOMER, BANAMEX and COMERMEX among the privately owned banks. These institutions had agencies in New York (and some in London and Tokyo) to tap the capital markets. Only the largest Mexican companies contracted credit directly from foreign lenders--and even they did it infrequently. This process simplified the negotiations and, according to NAFINSA, some credits were arranged in less than an hour. Hence, the responsibility to service the debt fell either on the banks who borrowed abroad to relend money to small and medium size Mexican companies or on the large Mexican firms that dealt directly with foreign banks or used domestic financial institutions as agents only.

Although no capital controls existed prior to 1982 and, in principle, anybody could buy dollars at a commercial bank, owners used their firms as financial intermediaries. They could obtain dollar denominated loans and deposit the dollars abroad. This practice became widespread because of the generalized expectation that the Government would first devalue and then bail out firms facing liquidity problems. These expectations rested on the fact that if the government decided not to

intervene, the resulting bankruptcies would have a serious destabilizing effect by creating massive unemployment. Using companies as financial intermediaries for their owners was a common mechanism for capital flight.

Information regarding private external debt is scarce. The World Bank figures seem to underestimate it because there is no proper accounting for debt with suppliers so there is significant disagreement with their estimation of US\$8.1 billion. According to the Bank of Mexico private long-term debt amounted to US\$20 billion by 1982. The best figures available, inaccurate as they may be, come from the Bank of Mexico (Table V.1).

Table V-1: PRIVATE LONG TERM DEBT
(billion dollars)

Year	Total	FICORCA	Paris Club	Others
1975	4.9	-	-	4.9
1976	5.5	-	-	5.5
1977	5.4	-	-	5.4
1978	5.5	-	-	5.5
1979	7.2	-	-	7.2
1980	11.0	-	-	11.0
1981	14.9	-	-	14.9
1982	20.0	-	-	20.0
1983	20.6	11.5	-	9.1
1984	18.8	11.9	0.13	6.77
1985	17.6	11.0	0.29	6.31
1986	17.0	10.6	0.25	6.15

Source: Banco de Mexico.

Since the nationalization of the private banking system in 1982, the Government has been responsible for private debt contracted by Mexican banks. At the same time, the massive devaluations of 1982 created serious cash constraints on the borrowing companies where revenue flow was largely peso denominated since very few of them were exporting at that time. Between

September and December 1982, private companies did not pay principal and interest on their external debt.

2. FICORCA

The devaluation of September 1982 created two problems. At a micro level, Mexican firms did not have the cash flows to meet their coming obligations in terms of external debt service. At a macro level, the tight balance of payments situation placed the government in a situation of lack of international reserves to make payments abroad. To face these situations, the De La Madrid administration created FICORCA.

The objectives pursued by FICORCA were to improve the cash position of private firms, prevent bankruptcies and postpone payment abroad. To participate in the program any firm, regardless of ownership structure, established in Mexico with dollar bank loans contracted prior to December 20, 1982, could register. The loans could be with either a Mexican or a foreign bank. Mexican banks with liabilities abroad, were not participants in FICORCA, since they had already been nationalized and therefore de facto their debts became public.

Any company interested in participating in FICORCA had to reschedule its loans on a basis of eight years for maturity with at least, four years of grace. The rescheduling was the sole responsibility of the private firm.

Several contracts were available through FICORCA. The most popular (sistema 4) covered principal and interest at LIBOR + 2. Its mechanics were as follows: The firm would get a loan in pesos from FICORCA to buy dollars at the controlled exchange rate up to the amount necessary to cover principal amortization. Now, the firm would lend these dollars to FICORCA on the same terms agreed between the firm and its original creditor. FICORCA would then

pay dollar interest and principal to the original creditor as long as the Mexican firm would remain current on its peso payments to FICORCA.

FICORCA would not cover commercial risk. Therefore, if a company went bankrupt or for any other reason would not pay FICORCA, the Bank of Mexico would not continue serving the debt in dollars. The peso loan granted by FICORCA to the firm had to be amortized in monthly installments that were constant in real terms. During the grace period, the firm would pay FICORCA, in pesos, more than what FICORCA would pay in dollars to the creditor bank. Therefore, the firm would have a surplus to its credit between its payments to FICORCA and those of FICORCA to the bank. This cumulative surplus was called "rescue value" (valor de rescate).

If the firm stopped paying FICORCA or withdrew from the program, FICORCA would pay this rescue value to the creditor bank.

The scheme was designed so as to have a zero NPV as long as interest rate parity held. If this condition was met, FICORCA implied a zero subsidy to the Mexican firm. If the domestic rate increased above its parity level, FICORCA would, in fact, make a profit, however, if they fell below their parity level, it would become a subsidy.

Since the creation of FICORCA, the domestic rates have been equal to or above this parity level except from February to September 1985. Overall, from April 1983 to April 1987, FICORCA has generated additional revenue to the government. Nevertheless, the risk of having FICORCA turn into a big money loser is still there, particularly if domestic real interest rates are reduced.

FICORCA also included under the same conditions three government owned institutions: SIDERMEX (steel mills), BANPESCA (fisheries), and BANCOMEXT (foreign trade).

investors. Nearly US\$3,605 billion of public debt were converted. The table below summarizes the results.

Table V.3: DEBT SWAPS: FOREIGN INVESTORS

	<u>Number</u>	<u>Amount</u> (US\$ Million)
Completed	238	1,837
Authorized (disbursed)	61	1,137
Authorized (not disbursed)	26	0,181
Authorized (temporarily suspended)*	60	0,337
Pending	19	0,111
<u>Total</u>	<u>404</u>	<u>3,605</u>

* Although the operations had already been authorized, Hacienda decided not to disburse the funds temporarily starting December 1987.

Source: Hacienda.

Despite no formal proceedings regulating their participation, applications by Mexican investors were accepted after March 1987 and at the time of the cancellation of the program there were 4 authorized deals and 28 pending applications.

Table V.4: DEBT SWAPS: MEXICAN INVESTORS

<u>Deals</u>	<u>Number</u>	<u>Amount</u> (US\$ billion)
Authorized	4	0.034
Pending	28	2.770
<u>Total</u>	<u>32</u>	<u>2.804</u>

Source: Secretaría de Hacienda.

Types of Deals

Seventy-five percent of the deals were for investment projects while the remaining 25 percent were to pay FICORCA or Mexican Banks:

Table V.5: DISTRIBUTION OF THE DEALS
(percent)

	Investment	Debt Repayment
June-December 1986	81.4	18.6
January-March 1987	67.4	32.6
April-June 1987	71.4	28.6
Total	75.3	24.7

Source: Secretaría de Hacienda

The two deals--investment projects and debt repayments--had different effects on the monetary base. Funds for investment projects had to be placed at the disposition of the foreign investor at once. Hence, to make these resources available, the Ministry of Finance had to borrow directly from the Bank of Mexico, increasing the monetary base. FICORCA repayments were neutral from the Bank of Mexico's point of view. The Bank of Mexico was left in exactly the same net position and it only needed to expand the money supplies resource when FICORCA's debt service became due. Thus the inflationary effect of the two types of deals is completely different. In a further paper, these effects will be measured precisely.

Although the Bank of Mexico preferred the FICORCA repayment deals, the authorities in charge of approving the projects were known to delay and even discourage the approval of debt repayment deals.

Sectoral Distribution

Four sectors received nearly 80 percent of the resources coming from the capitalization process: automobiles, tourism, in-bond assembly plants and capital goods. This is not surprising since these were the sectors in

which most investment had been taking place in Mexico after the adjustment measures of 1985-86. The evolution was not uniform over time. At the beginning of the program most of the investments went into automobiles while later the in-bond assembly plants took the lion's share.

Origin of the Debt

An interesting aspect of the swap scheme is the origin of the UMS paper exchanged in the operation. Prior to its start, there was a lot of talk about the reluctance of the US banks to sell debt at a discount. Nevertheless, most swaps involved loans from small and medium-size American banks. The distribution of the debt according to the country of origin is presented below:

Table V.6: ORIGIN OF THE DEBT
(percent)

United States	43.3
United Kingdom	12.7
West Germany	11.9
Japan	8.3
Panama	6.5
Spain	5.9
Others	11.4
Total	100.0

Source: Secretaría de Comercio.

Effects on Foreign Investment

It is beyond the scope of this paper to measure the effects of the swap scheme on direct foreign investment; still, one can make some tentative statements. Foreign investment measured in dollars increased by 185 percent between 1985 and 1986. Fifty percent of DFI in 1986-87 was financed through swaps. Since a tax on capital gains on swaps was likely (a 30 percent tax

was being considered), the discount acted as a temporary investment tax credit. Furthermore, since mid-1987 the suspension of the swap scheme was likely, and therefore the discount itself was considered temporary. As is known, a temporary investment tax credit has a stronger impact on investment than a permanent fall in the cost of capital. Hence, although no definite judgement can be made at this point, the swap mechanism might have promoted direct foreign investment significantly. A complete model to measure its impact should control for the fact that a real devaluation took place in 1986 making Mexico more attractive to foreign investment.

Table V.7: DIRECT FOREIGN INVESTMENT
(billion dollars)

1970	200.7
1975	295.0
1978	385.1
1982	708.7
1983	373.8
1984	391.1
1985	490.5
1986	905.5
1987*	1418.7

* January - September

Source: Banco de México

Effects on the Money Supply

Between January and September, 1987, the monetary base increased by 2,927.6 billion pesos (a 37.2 percent increase). The disbursements of the Bank of Mexico to finance foreign investments through the swap program were 969.0 billion pesos during this period, amounting to 33.1 percent of the growth in the monetary base. Measuring the inflationary impact of the swap scheme would require a complete macro model, but the disbursement by the Central Bank contributed in a non-trivial way to the increase in the monetary base.

Regarding its inflationary impact, the timing of the program was particularly ill-chosen. Although the swap program cannot be blamed for the high inflation of 1986-87, which was the result of both fiscal disequilibrium and the fall in oil prices--to which the government reacted with a real depreciation of 30 percent--any increase in the money supply was likely to be disastrous. Ramos-Francia (1987) and Fernandez (1987) estimated that the inflation tax was maximized around a monthly rate of 6 percent. The monthly rate of inflation for January - October, 1987 is presented below:

Table V.8: MONTHLY INFLATION 1987
(percent)

January	8.1
February	7.2
March	6.6
April	8.7
May	7.5
June	7.2
July	8.1
August	8.2
September	6.6
October	7.5

Source: Banco de Mexico

Hence, to sustain the mounting fiscal deficit a drop in the real monetary base would have to be compensated for by an explosively large increase in the inflation rate. The accumulation of international reserves and the prepayment of external debt through the swap program were paid for dearly. The expansion of the money supply gave rise to such a high inflation rate that the total revenues from the inflation tax started to fall. The marginal effect of the swaps on the money supply was particularly severe at such a critical level of inflation.

The lack of a long-term internal debt instrument forced the government to print money to finance the swaps. The program was cancelled finally when the situation became untenable in October 1987.

Using the framework developed in the previous chapter, we can see that the swap program gives us evidence of the existence of room for negotiation between Mexico and (at least) some of the creditor banks. The low discounts accepted by the Government imply that either V_{MEXICO} is close to 100 percent or the country overpaid for debt reduction. In any case, the country could be more successful in capturing the distance $V_{\text{MEXICO}} - V_{\text{banks}}$ if the swaps were assigned through some competitive scheme such as an auction. The asset (A) used by Mexico to exchange for debt was money (domestic credit). This asset was particularly costly, as stated above, given the existing rate of inflation. Any marginal increases in domestic credit could push Mexico into the explosive region of the inflation-tax Laffer curve.

2. The Mexican Bond

Since 1987 Mexico's Ministry of Finance had started exploring the possibility of debt reduction through securitization. Proposals were prepared by Salomon Brothers, Drexel, Shearson-Lehman and Morgan Guaranty. They included various alternatives; an oil indexed bond and a security where the principal could be backed by a peso coupon bond issued by the American Treasury, among others. Finally, the Mexican government leaned towards this last alternative, which had been suggested by Morgan Guaranty. The new bond would have a 20-year maturity and carry an unsecured interest of LIBOR + $13/8$, twice the spread of the existing Mexican loans. The principal would be backed by a special zero coupon bond issued by the American Treasury. Mexico

could use part of its reserves to purchase the bond that would capitalize and be equal to the amount due as principal payment 20 years from the day of the operation.

A major hurdle for such a scheme to work was the sharing clause of the Restructure Agreement of 1985. All banks had to sign a waiver for the bond to be legal. Through coordinated pressure from the Secretary of the Treasury and Morgan Guaranty itself, the waiver was obtained but a significant legal problem persisted.

The Mexico bond was de facto senior with respect to the old debt since it was clear that the purpose of backing it with a zero coupon bond was to turn it into an exit security. It was also clear that the idea with the currently existing debt was not to repay the principal when it came due in 2006 but to ask for a rescheduling and threaten with default to obtain it if necessary. Nevertheless, this seniority was never made explicit increasing the risk for the banks that would acquire the new bond.

Another major obstacle was the existing banking regulations in creditor countries that forced banks to take a loss on all of their Mexican loans and not just in the part they were swapping for the new bond. This made it difficult to the banks to accept the new instrument.

Valuation of the New Securities

The standard approach for the valuation of the existing debt, from the creditors' point of view, is expressed by the following (simplified) formula:

$$V_0 = P_i \sum_{t=1} \frac{i_t}{(1+r)^{t-1}} + P_p \frac{B}{(1+r)^{19}}$$

Assuming that for the existing debt $P_f = P_p = P$ and that V is correctly reflected in the secondary market price, one can solve this equation for P , the probability that no default takes place. Once this is done, the probability P is used to compute the value of the new security. For example, in the case of the Mexican Bond:

$$P_f = P$$

$$P_p = 1$$

$$i = \text{LIBOR} + 13/8$$

$$r = \text{risk free rate}$$

so applying these values to the original formula, one can get the equilibrium market value of the security. It is straightforward then to compute exchange ratios and therefore the discount at which the old debt would be accepted.

This analysis is incomplete on various grounds. First, from the viewpoint of the country or the banks the valuation is different. For example, one source of difference between creditor and debtor is the value of the guarantee and therefore the probability P_p of the new bond. This problem is particularly serious for commodity backed bonds. For example, oil in the well might be considered a full guarantee from Mexico's viewpoint ($P_p = 1$) but the banks might not agree since the country might decide to stop production as a bargaining strategy ($P_p < 1$).

Second, the probability of default is not exogenous. As Krugman (1987) has pointed out, if a significant debt reduction takes place, the probability of default diminishes. The country has an increased capacity to pay. On top of this, if the country can keep some of the proceeds coming from internal (fiscal) adjustment for its own use, there is additional incentive, lowering again the probability of default. Thus, to value a new security that is going to be exchanged for large amounts of the old debt, the probability of default cannot be taken as given.

By December 31, 1983, the FICORCA debt amounted to US\$12.13 billion, broken down as: private sector, US\$11.52 billion, and public sector US\$0.61 billion. The private FICORCA debt amounted to 56 percent of the total long term private debt. A total of 1,121 firms were signed up in FICORCA, of which 13.4 percent of them held 80 percent of the total debt; the fifty largest firms held 57 percent of the total debt.

Most of the FICORCA debt was to be paid between 1988 and 1991. In the 1986 rescheduling, the government proposed the inclusion of the FICORCA debt. The creditor banks were given the choice of participating or not in this FICORCA Restructure Agreement at their will. Those who participated accepted freeing the guarantees given by the firms to the banks as soon as the firms ended their payments to FICORCA. (Thus opening the possibility of prepayment to the firms.) The money that FICORCA would obtain through these prepayments would be made available for relending either to public or private institutions. (FICORCA Relending Agreement.) If the creditor chose not to participate, it would get the rescue value and FICORCA would end the contract with the Mexican firm. Furthermore, all the debt that would remain in FICORCA would now carry a rate of LIBOR + 13/16.

The firms were given the option of keeping the original contract, rescheduling their debt with the creditor to 20 years maturity with 7 years of grace, prepaying FICORCA or canceling their contract and dealing directly with their original creditor.

The firms were allowed to prepay in UMS paper to take advantage of the secondary market discount. Almost 25 percent of the total debt swapped in the debt-for-equity program were used to prepay FICORCA.

In October 1987, the debt capitalization program was suspended. The Bank of Mexico claimed that the inflationary effect of the scheme made this

measure necessary. Both the investment and the FICORCA repayment deals were eliminated. As a result of this measure, the price of the UMS paper declined from 58 cents on the dollar to 45 cents on some interbank operations. While the price of FICORCA debt went from 86 cents on the dollar in June to 78 cents by mid-October and to 70 cents by the end of the month. Given these discounts many companies borrowed from the Mexican financial system to buy dollars in the free market and cancel their FICORCA debt. Nearly US\$3 billion of FICORCA debt were thus prepaid between October and November of 1987 putting severe stress on the free exchange rate market. The Bank of Mexico was unable to identify the resulting demand of currency to prepay FICORCA and regarded the market pressure as a speculative attack against the peso. This happened because the companies had a month from the time of the prepayment to the moment when they reported it to the Bank. These events precipitated the devaluation of the peso in November 1987.

Evaluation

The FICORCA scheme was very successful according to its own objectives. It allowed the firms to face their liquidity crisis in 1982 preventing a chain of bankruptcies. At the same time, the only subsidy involved was allowing the companies to buy dollars at the controlled exchange rate, but, on the other hand, it created a profit since the domestic interest rate was well above its parity level during most of the period.

The prepayment option of 1986 is another example of debt reduction by changing old debt for a new asset. Since the financial situation of most firms was very healthy by then, (some of them after failing to pay FICORCA and having major workouts with their creditors) either prepaying FICORCA or withdrawing from it and prepaying directly to the creditors became very common. Although no hard figures exist for total private debt, common wisdom places it below US\$12 billion by mid-1988.

CHAPTER VII

PERSPECTIVES FOR DEBT REDUCTION AND FORGIVENESS

The projected public debt service (between 5.5 percent and 7.5 percent of GDP) 11/ is well above the 2.5 percent that the Mexican authorities have considered as compatible with a sustained 5 percent real growth of GDP. Hence, two distinct scenarios seem likely for the future:

(1) A continuation of the time-inconsistent game where more "new money" from the large banks may be combined with an exit bond (with better guarantees and lower rates) for the smaller banks which refuse to lend more with an eventual collapse in the future; or

(2) A significant pro rata reduction following a Mexican default. In this case, the solution probably would include oil price indexation and conditionality to enforce resource allocation towards investment.

Under the first scenario, the resulting uncertainty and political pressure for the Mexican government will continue for some time. Unfortunately, to the extent that the past helps to forecast the future, a continuation of the time-inconsistent game seems quite likely.

The outlook for the future of the Mexican debt seems to offer a possible solution to the crisis but it requires a longer term perspective from both the banks and the country. On the one hand, Mexico must realize

11/ Depending on how the 1988 GDP is corrected for overvaluation of the peso, one can get 5.5 percent with no correction or 7.5 percent using the 1987 exchange rate adjusted by the US inflation.

that its debt capacity is hopelessly attached to oil prices. Therefore, a long-term agreement in which the banks receive more when oil prices increase is not a relinquishment of national sovereignty over national resources but a reasonable linkage between debt service and debt capacity. It is also necessary to address the legitimate concern of the banks that the resources freed by debt reduction be directed to productive investment rather than to present consumption. Given the political pressures that the government is going through after years of declining real wages, it is unlikely that the government will be able to allocate the resources to investment on its own. Conditionality at a microeconomic (resource allocation) level would play an important role.

In terms of the bargaining process, it is very unlikely that Mexico will obtain pro rata reductions from the banks unless Mexico presents them with a fait accompli. From the viewpoint of the large banks it is very difficult to forgive debt because of the fear of being sued by their shareholders, even if their stock prices are down and they have built up reserves. On the other hand, if Mexico stops paying while announcing its willingness to negotiate, the banks will not be giving away the family silver, but rather recovering what they can.

So far, the main obstacle has been the short view taken by all the players. This short view in itself is another example of time-inconsistent behavior. From the banks' side, they prefer to throw in some money each period rather than forgiving the debt under the expectation that maybe things will turn better. From the Mexican side, the government has accepted new money rather than stopping payments and demanding debt reduction in the hope of avoiding confrontation. These views are inconsistent with the previously derived capacity to pay figures.

We have stated that even when a potential space for negotiation exists between the country and its creditors, this does not imply that a solution will take place. The scarcity of an asset that can be exchanged for debt is a major obstacle to reach a solution. Most assets are either too few (international reserves, money raised from taxes) too costly (internal debt, inflation tax) or too politically touchy (the main state-owned enterprises) to represent a real potential for significant debt reduction. Although a menu of these schemes could and should be pursued to its limit, it is unlikely that the required reduction given Mexico's public sector capacity to pay can be obtained by any or all of them.

From the banks' point of view, the excess debt limits the incentive of the country to adjust and brings the risk of social collapse and a moratorium. If debt reduction has a potential for Pareto improvement, why is it that there seems to be widespread opposition by the banks to any forgiveness scheme not involving swapping an asset?

The basic reluctance of the banks comes from a doubt: what will Mexico do with the freed resources? Will it invest them wisely and hence increase its future capacity to pay or will it use them for present consumption? This asymmetry of information about the country's objectives is a major hurdle for debt forgiveness.

One possible approach would be to require enforceability and conditionality on the use of these resources. Nevertheless, this sort of agreement would be hard to negotiate between a sovereign nation and a group of private banks. The creditor banks' low level of confidence in the IMF and the World Bank enforcing conditionality also limits the possibilities for an agreement.

The banks could try to discriminate countries through self-selection by offering a menu of contracts to solve the adverse selection problem of having countries interested in growing and others in increasing present consumption. In the appendix to this chapter, we present a principal-agent model where we explore the form of the optimal contracts with and without conditionality. It can be shown that the optimal contracts involve debt forgiveness and that conditionality leads to higher utility for both banks and debtor nation.

The practical problems mentioned above--namely: (a) difficulties of enforcing conditionality in deals between a sovereign nation and private banks; and (b) lack of credibility in the IMF and the World Bank by the creditor banks--leads us to think of the possibility of a two stage solution for the Mexican debt problem. In the first stage, Mexico would need a loan of an asset from an international agency such as the World Bank through a debt facility. This asset has to be large enough as to allow a significant debt reduction in line with Mexico's capacity to pay as discussed in Chapter III. The asset could be used as collateral for a security (or set of securities) to be exchanged for the outstanding debt. Access to this debt facility should be restricted to acceptance of full conditionality on the use of the liberated resources along the lines of the model presented in the appendix. The use of these resources for productive investment would increase the capacity to pay and would alleviate the growing social tensions.

In his inauguration speech, President Salinas stated that during his administration he would ask for reduction of the principal and interest to reduce the debt service to 2.5 percent of GDP. Mexico has been exploring the possibility of issuing a new bond with the World Bank, with a guarantee on the interest payments provided by the Bank or the Treasuries of the G-7. So far, no agreement has been reached.

APPENDIX

Here we will look at the possibility of debt reduction when the bank is not sure as to whether the country will invest these resources or use them for present consumption.

The model has two periods. At the beginning of period 1, each bank faces two country types, A and B. Each country knows its own type but the bank does not.

Country A has a utility function such that:

$$(1) \quad U_{A1} = C_1, C_2 \leq C$$

while the utility function of country B is:

$$(2) \quad U_{B1} = C_1 + \delta C_2 \quad \text{and} \quad V_B \geq C \quad \text{for } t = 1, 2$$

where C_1 and C_2 are the consumption levels of periods 1 and 2, and δ is a discount factor.

For every period and any type of country, income is defined as follows:

$$(3) \quad Y_1 = C_1 + I + B_1$$

$$(4a) \quad Y_2 = aI = C_2 + B_2 \quad \text{if } B_2 \leq D$$

$$(4b) \quad Y_2 = aI = C_2 + D \quad \text{if } D < B_2$$

where B_1 is debt service in the first period, B_2 debt service in period 2, and D the cost of default in T_2 . Both types of countries have a debt overhang problem, that is:

$$(5) Y_1 - \bar{c} (1 + \delta) + I (a\delta - 1) < B_1 + \delta B_2$$

so even if the country stays at the minimum consumption level (\bar{c}) during the two periods, it cannot pay its debt as stated in the initial contract. The country has, however, enough resources to cover the costs of default in period 2:

$$(6) Y_1 - \bar{c} (1 + \delta) + I (a\delta - 1) \geq B_1 + \delta D$$

hence, $D < B_2$.

To avoid bargaining issues, we assume that if the country has the capacity to pay, it does. Furthermore, the bank is able to capture only a fraction γ of the costs of default and without loss of generality it uses the same discount rate δ .

A priori, the bank believes that the probability of default is equal to Π :

$$(7) \Pi = \text{PROB} [aI - C_2 < B_2]$$

Given our assumptions, country A solves:

$$(8) \text{MAX } Y_1 - I - B_1$$

which yields: $i = \frac{\bar{c} + D}{a}$

so, country A invests this minimum amount to solve his future consumption requirements and cover the default costs.

For country B, the problem is:

$$(9) \text{MAX}_I (Y_1 - I - B_1) + \delta (aI - D)$$

$$\text{s.t. } C_2 \geq \bar{c}$$

$$aI - D \geq \bar{c}$$

To solve this problem, we can plot U_B as a function of I . The minimum acceptable level of I is given by:

$$(10) \quad i = \frac{c + D}{a}$$

which yields a utility level of:

$$(11) \quad U = \gamma_1 - \left(\frac{c + D}{a} \right) - B_1 + \delta c$$

Given B_1 , the maximum level of investment is

$$(12) \quad I_{MAX} = Y_1 - c - B_1$$

yielding:

$$(12) \quad U_{MAX} = c + \delta (aY_1 - ac - aB_1 - D)$$

The maximum problem has a bang-bang type solution. I_{MAX} gives a higher utility level if

$$\delta a > 1 \text{ and } Y_1 - c - B_1 > i = \frac{c + D}{a}$$

which holds whenever (6) is satisfied with strict inequality. Therefore, if investment is productive and resources are left after paying B_1 and covering the costs of default, the "good" country always invests but even then, it will not be able to pay B_2 as originally agreed with the creditor.

Being aware of this situation, the banks would like to renegotiate the contract modifying B_1 and B_2 to extract more resources from the country and avoid default. Nevertheless, the banks face an adverse selection problem. They know that only with probability $(1-\Pi)$ will the country really invest and grow, but that with complementary probability (Π) , every easing of today's constraint will lead only to more present consumption. This seems to be a major concern for the creditors. Debt forgiveness might not increase the debtors' capacity to pay if the additional resources are not productively invested.

Full Information Equilibria

If the bank had full information about the nature of the country but conditional contracts were not allowed, the optimal contract for country A ($B_1 (A)$) would be:

$$(13) \quad B_1 (A) = Y_1 - \bar{c} - \left(\frac{\bar{c} + D}{a} \right)$$

$$(14) \quad B_2 (A) = D$$

To the extent that (6) holds with strict inequality, $B_1 (A) > B_1$ leaving the country at its minimum consumption level and recovering $B_2 (A)$ instead of γD .

The optimal non-conditional contract for country B is:

$$(15) \quad B_1 (B) = 0$$

$$(16) \quad B_2 (B) = a Y_1 - \bar{c} (1 + a)$$

The bank would allow country B to invest up to the maximum level in period 1 and then extract the surplus at time 2.

If we denote by $V(A)$ the value of the contract to A and by $V(B)$ that of B, we have:

$$(17) \quad V(A) = B_1(A) + \delta B_2(A)$$

$$(18) \quad V(B) = \delta B_2(B)$$

and if (6) holds with strict inequality and $a\delta > 1$ then:

$$(19) \quad B_1 + \delta B_2 > V(B) > V(A) > B_1 + \delta \gamma D$$

Pooling Equilibria

Here, we look at the opposite case where there is asymmetric information and the bank cannot separate the two types of countries. So, this equilibrium represents the status quo of the LDC debt. B_1^* and B_2^* will be the burden imposed to all countries once the problem is solved. Now, the bank knows that B_1^* can be paid today, but it is uncertain as to whether B_2^* will ever be received and Π is:

$$(20) \Pi = \text{PROB} \left[aI - \varepsilon < B_2^* \right]$$

The problem for the bank is now:

$$(21) \text{MAX}_{B_1^*} \left[B_1^* + \delta E \left[B_2^* \mid B_1^* \right] \right]$$

Solving (21) we get that if

$$(22) 1 - a\delta (1-\Pi) > 0$$

then

$$(23) B_1^* = B_1(A) = Y_1 - \varepsilon - \left(\frac{\varepsilon + D}{a} \right)$$

$$B_2^* = B_2(A) = D$$

But if (22) holds with the reverse sign then

$$(24) B_1^* = B_1(B) = 0$$

$$B_2^* = B_2(B) = aY_1 - \varepsilon(1-a)$$

Hence, the optimal solution depends of Π . If the banks believe a priori that Π is large ($\Pi \rightarrow 1$) then the contract for country A is offered to both countries regardless of their type. This equilibrium is self-fulfilling since both countries behave alike given $B_1(A)$ and $B_2(A)$, investing only the minimum necessary amount for survival.

To the extent that (6) holds with strict inequality, the new contract $B_1(A)$, $B_2(A)$ strictly is worse for the country than B_1 and default

in the second period. Therefore, the maximum transfer is bounded by the individual rationality constraint of the country:

$$(25) \quad B_1^* + \delta B_2^* = B_1 + \delta D$$

or
$$B_1^* + \delta B_2^* = B_1(A) - \eta + \delta D = B_1 + \delta D > B_1 + \delta \gamma D$$

Hence, the maximum acceptable transfer at time 1 is:

$$(26) \quad B_1(A) - \eta = B_1^*$$

and at time 2

$$(27) \quad D = B_2^*$$

Screening

The bank can improve over the pooling equilibrium by offering different contracts to the countries which would then select for themselves from a menu of alternatives.

The bank now solves:

$$(28) \quad \text{MAX } \pi (B_1(A) + \delta B_2(A)) + \delta(1-\pi) (B_2(B))$$

that's equivalent to:

$$(28') \quad \text{MAX: } \pi (B_1(A) + \delta B_2(A)) + [\delta a(\gamma_1 - \bar{c} - B_1(A) - \delta B_2(A)) - \delta c_2 - \delta^2 a D] (1-\pi) \Pi$$

subject to:

$$(29) \quad U_A (B_1(A), B_2(A)) \geq U_A (B_1(B), B_2(B))$$

$$(30) \quad U_B (B_1(B), B_2(B)) \geq U_B (B_1(A), B_2(A))_A$$

$$(31) \quad U_A (B_1(A), B_2(A)) \geq U_A (B_1 + \delta D)$$

$$(32) \quad U_B (B_1(B), B_2(B)) \geq U_B (B_1 + \delta D)$$

Equations (29) and (30) are the incentive compatibility constraints which state that each country prefers its own constraint (the self-selection condition), while (31) and (32) are the individual nationality constraints.

The problem yields the following solution:

$$(33) B_1(A) = Y_1 - \varepsilon - \left(\frac{\varepsilon + D}{a} \right) - \eta$$

$$B_2(A) = D$$

$$(34) B_1(B) = 0$$

$$B_2(B) = a\gamma_1 - \varepsilon(1 + a) - \epsilon$$

The well-known result in the literature holds in this model, the Individual Rationality (IR) constraint holds with equality for country A while the Incentive Compatibility (IC) constraint holds with equality for B. The other two constraints are not binding. The proofs are omitted here but are completely straightforward. Therefore, country A is left with a utility equal to:

$$(35) U_A(B_1(A), B_2(A)) = e + \eta = c_1$$

which is the same as it obtained with the original contract B_1 .

For country B, we get:

$$(36) U_B(B_2(B)) > U_B(B_1 + \delta D).$$

Hence, we can reach the following conclusions:

- a) The new contract increases the utility of the bank and country B, leaving country A at its individually rational level.
- b) The new contract permits country B to invest more in a voluntary way.
- c) The non-conditional contract includes debt forgiveness (through η and ϵ) and allows, at least in one period, a level of consumption above ε .
- d) The optimal solution involves a menu of contracts, one for every type of country. The contracts involve a different profile of debt services.

Screening with Conditionality

If the creditors, perhaps through an international agency, can force the debtor country to invest in order to honor a freely agreed upon contract, a different solution is possible. In the previous section, through a menu of options, the bank was able to allow country B to invest and therefore increase its capacity to pay. Country A nevertheless, stayed at the minimum level of investment. Now consider the same maximization problem for the banks as before but the new contracts are:

$$(37) \quad B_A = 0 \quad \text{at time 1}$$

$$B_A = aY_1 - \tau(a + 2) - a\eta \quad \text{at time 2}$$

$$\text{with } C_1 = \tau + \eta \text{ and } C_2 = \tau$$

$$(38) \quad B_B = 0 \quad \text{at time 1}$$

$$B_A = aY_1 - \tau(A + 1) - \epsilon \quad \text{at time 2}$$

$$\text{with } C_1 = \tau \text{ and } C_2 = \tau + \epsilon$$

Once again IR holds for A while IC does for B. Furthermore, ϵ and η are not independent of each other. In order to have the IC constraint holding with equality:

$$(39) \quad \tau + \delta\tau + \delta\epsilon = \tau + \delta\tau + \eta$$

So, we get: $(40) \quad \delta\epsilon = \eta$

It can be shown that the bank is now better off with both countries investing than it was with only type B growing.

Hence, we have shown that the optimal contract involves both debt relief and conditionality. All types of countries where investment is productive ($a\delta > 1$) should be allowed to invest and grow, but debt relief to

promote investment should be accompanied by conditionality. The available resources should be invested in a compulsory manner. This prevents the "bad" countries from deviating and eating their cake today.

We have spelled out the differences between default and negotiated debt reduction. It has been shown that the latter can be Pareto improving, particularly if accompanied by conditionality, even in the case where countries care only about today's consumption. In terms relevant to Mexico, what we have shown is that negotiated debt reduction can be Pareto improving under certain conditions. Three parties need to be involved: the country, the creditor banks and a monitoring agency to impose and supervise the conditionality. Conditionality goes far beyond the macro reforms required by the IMF and it comes closer to the IBRD project financing scheme but on a much wider base. The funds released from debt service because of the reduction (rather than "new money" coming from abroad) have to be allocated to productive investment. In practical terms, the conditionality package could include use of funds for public investment in infrastructure, elimination of barriers for most foreign investments and a tax reform that would allow the government to capture some of the newly created surplus and thus improve its capacity to pay the (public) debt.

REFERENCES

- Andrews, Suzanna. El perdón de la Deuda Gana Terreno, Institutional Investor, Sección Banca, April 1988.
- BANCO DE MEXICO S.A. Análisis de la Propuesta de México a la Banca Internacional de Intercambio de Deuda Externa Existente por Deuda Vieja, Pascual O'Dogherty y Agustín Carstens, January 1988.
- BANCO DE MEXICO S.A. Nuevas Propuestas de Solución al Problema de la Deuda, Javier Maldonado, Boletín de Economía Internacional, Jan.-March 1988, 44-62.
- BANCO DE MEXICO S.A. Informe Anual Banco de México, Several Issues.
- BANCO DE MEXICO S.A. Indicadores Económicos (carpeta)
- Bazant Jan. Historia de la Deuda Exterior de Mexico 1823-1946, El Colegio de México, México 1968, 173-228.
- Berg, Andrew and Sachs, J. The Debt Crisis: Structural Explanations of Country Performance. Mimeo. Presented in The First Interamerican Seminar of Economics (IASE), Mexico, March 1988.
- Cooper, R. and Sachs, J. Borrowing Abroad: The Debtors Perspective. In G. Smith and J. Cuddington (eds) International Debt and the Developing Countries. World Bank, 1985.
- Dornbusch, R. Our LDC Debts. NBER Working Paper No. 2138, January 1987.
- Dornbusch Rudiger. Debt Problem and the World Macroeconomy, NBER Working Paper No. 2379, Sept. 1987.
- Eaton, Gersovitz, M. and Stiglitz, J. The Pure Theory of Country Risk, European Economic Review, June 1986.
- FIRST BOSTON. Mexican Debt Exchange Proposal, by Allerton G., Smith and Keith T. Anderson, January 1988.
- International Debt Strategies in an Uncertain World. In Cuddington, J. and Smith G. (eds). International Debt and the Developing Countries. World Bank, 1985.
- Krugman, Paul, Financing vs. Forgiving a Debt Overhang. NBER Working Paper No. 2486, January 1988.
- Rodríguez, Carlos Alfredo, The New Mexican Bond. Mimeo, IFM Draft.

- Sachs, J., Theoretical Issues in International Borrowing. Princeton Studies in International Finance. No. 54, July 1984.
- Sachs Jeffrey, Managing the LDC Debt Crisis, Brookings Paper in Economic Activity, 1986, 397-431.
- Sachs and Cohen, LDC Borrowing with Default Risk. NBER Working Paper No. 925, July 1982.
- Salomon Brothers Inc., The Mexican Bond Exchange Offer: An Analytical Framework, by Kenneth L. Telljohann and Richard H. Buckholz, January 1988.
- Simonsen, Mario Henrique. The Developing Country Debt Problem. In G. Smith and J. Cuddington (eds). International Debt and the Developing Countries, World Bank, 1985.
- S.H.C.P. Manual Operativo para la Capitalización y Sustitución de Deuda Pública por Inversión, July 1986.
- S.H.C.P. Notas sobre la Operación para la Captura Institucional del Descuento sobre la Deuda Mexicana, January 1988.
- S.H.C.P. Programa de Conversión de Deuda Externa por Capital, Dirección General de Crédito Público, 1988.
- S.H.C.P. La Deuda Externa de México 1982-1988, versión preliminar, June 3, 1988.
- S.H.C.P. Cláusula 5.11 del Convenio de Reestructuración de Deuda Pública Externa, March 20, 1987.