C.E.M.A.

Virrey del Pino 3210
Belgrano R.
1426 Buenos Aires

TE. 552-3291/9313/7771

MANAGING ARGENTINA'S EXTERNAL DEBT:

THE CONTRIBUTION OF DEBT SWAPS.

Carlos A. Rodríguez
Enero 1990

N° 68

MANAGING ARGENTINA'S EXTERNAL DEBT: THE CONTRIBUTION OF DEBT SWAPS (*)

INDEX

(*) This paper was originally published as Internal Discussion Paper # 0024 of the Latin America and The Caribbean Vice Presidency, The World Bank (Januay 1989).

MANAGING ARGENTINA'S EXTERNAL DEBT: THE CONTRIBUTION OF DEBT SWAPS *

I. INTRODUCTION

As of December 1986, Argentina's foreign debt amounted to US$51,704 million. Interest due for the year was US$4,291 million while the current account surplus, before paying interest, reached US$1,651 million. The situation worsened in 1987, when the trade surplus declined to less than US$600 million, and the current Account before paying interest turned out negative. The unavoidable rollover of the unpaid interest and the revaluation due to the fall of the dollar brought the total debt to US$56.5 billion by the end of 1987.

This paper analyzes the viability of servicing Argentina's foreign debt, most of which is owed by the public sector. The analysis focuses on the country's capacity for servicing the debt and on the possibility of giving domestic assets in exchange for outstanding foreign debt, taking advantage of the substantial discounts of this debt in secondary markets. As of mid-1988 Argentine syndicated debt is trading at about 22% of par value.

The main conclusion of the paper is that no lasting and mutually agreeable reduction of the external debt is possible until the government effectively confronts the internal economic problems of the country. Foremost among these problems is the public sector deficit. This deficit has been substantially reduced from the pre-1985 levels, but still remains at levels that are incompatible with the regular service of the external debt and, worst of all, it is starting to rise again. Further, financial crowding out of the private sector seems to have reached its limits. This closes the door for servicing the external debt with new issues of internal public debt and clarifies the need for adjustment in public sector finances. Nonetheless, schemes for reducing the external debt of the public sector will have to be agreed and implemented once the government undertakes a viable program of economic reform.

Section II presents the basic data on the process of indebtedness and reviews the main domestic problems that lay behind the difficulties to service the external debt. Section III elaborates a theoretical model of debt repurchases that provides the framework for the analysis of schemes for debt reduction. Section IV assesses the feasibility and convenience of alternative schemes. The paper ends with a section of conclusions.

---

* This paper was written as a part of the research project "Managing the Latin American Debt: The Contribution of Debt Swaps" (RPO 674-36) was partly financed by the research project funds.

II. THE ARGENTINE EXTERNAL DEBT IN PERSPECTIVE

1. The Process of Indebtedness

It is very difficult to obtain a consistent time series of Argentina's external debt since this series has been subject to several revisions. A comprehensive survey was taken in 1983 and the numbers for subsequent years were estimated by the Central Bank using balance of payments flows and adjusting the stocks of dollar debt for changes in exchange rates among major currencies. Table 1 presents series for the stock of external debt in dollars and other variables relevant for the subsequent analysis.

Table 1: BASIC TRADE AND DEBT DATA
(US$ millions)

	DEBT	INTEREST DUE	CURRENT ACCOUNT EXCLUDING INTEREST	EXPORTS	IMPORTS
1978	12,476	720	2,554	6,400	3,834
1979	19,034	1,174	624	7,810	6,712
1980	27,162	2,175	-2,593	8,021	10,540
1981	35,671	3,850	-864	9,143	9,430
1982	43,271	4,926	2,568	7,625	5,338
1983	45,079	5,423	2,962	7,836	4,505
1984	46,171	5,537	3,141	8,107	4,584
1985	49,326	5,132	4,179	8,400	3,818
1986	51,704	4,291	1,651	6,900	4,300
1987	56,500*	4,170	- 315	6,360	5,818

Source: Argentine Economic Memorandum, Memorias del BCRA (1982-85). Debt data from the External Debt Department, Central Bank, including adjustments for parity changes in 1983-86.

* All 1987 data are estimates obtained from Carta Económica.

The first fact to be noted from Table 1 is that since 1979 the surplus in the current account net of interest always has been smaller than the interest service of the debt. The difference must be financed through either a loss in gross international reserves, or direct foreign investment, or capital inflows without a debt counterpart or, finally, an increase in foreign debt.

During the four year period of 1983-86, the accumulated current account deficit was US$8.45 billion against which there was an increase in debt of US$8.46 billion, inclusive of valuation adjustments and some occasional revisions. Since there is no data on the exact amount of the valuation adjustments on the stocks of debt, it is not possible to infer that all of the current account deficit for the period was exactly financed by increases in debt.

Table 2 reports data on the nominal and real interest rates paid by Argentina as well as the relevant export and import prices and the terms of trade. Much of the foreign debt was contracted in 1979-81, but the real interest rate paid by Argentina was negative only in 1979-80. The possibility of borrowing at negative real rates may be one of the facts explaining the high rate of borrowing in 1979-80. The rise in the real interest rate happened together with a sharp deterioration in the country's terms of trade, a process that had already started in 1980.

Altogether, the debt originated in a period of negative real rates of interest and favorable terms of trade. When the international environment changed sharply, the country had no alternative but to accept the new unfavorable conditions given the fact that repayment was totally out of the question. The unfavorable conditions persisted until early 1988. The accumulated real interest rate charged in 1981-86 was 152.5 percent, implying an annual average compound real rate of 17 percent for the six-year period. The terms of trade of Argentina also suffered a sharp deterioration after 1979, thus affecting the ability of the country to generate the surplus with which to pay for the rising real charges. In 1987, the terms of trade were at only 65.2 percent of their 1979 level.

Table 2: INTEREST RATES AND TERMS OF TRADE

	AVERAGE NOMINAL INTEREST (%)	EXPORT PRICE (1978=100)	IMPORT PRICE (1978=100)	REAL INTEREST (%)	TERMS OF TRADE (1978=100)
1979	9.4	128.3	130.5	-15.4	98.3
1980	11.4	122.4	174.1	-1.3	70.3
1981	14.2	123.1	176.8	13.0	69.6
1982	13.8	115.8	171.9	19.0	67.4
1983	12.5	121.9	157.6	14.5	77.3
1984	12.3	127.7	157.1	9.9	81.3
1985	11.1	113.4	152.5	19.6	74.4
1986	8.7	94.0	139.6	24.7	67.3
1987	8.1	96.6*	150.8*	12.3	64.1

The interest rate is obtained as the ratio of the interest service of one year to the stock of debt at the end of the previous year. To obtain the real interest rate we construct a geometric index of dollar export and import prices with equal weights (0.5).

Source: Export and Import prices: FIEL, Indicadores de Coyuntura (end of year).

* Estimates from Carta Económica (year average).

The external debt increased by US$6.62 billion in 1984-86, partly on account of new net compensatory borrowings and partly because of valuation adjustments due to changes in parities. This represented a compound annual rate of growth of 4.67 percent (in dollar terms) which contrasts with the compound rate of decrease in the U.S. WPI of 0.88 percent for the same three year period, or with the compound rate of decrease in the combined index of Argentina's export and import prices of 6.83 percent. The country's current account surplus (net of interest) was US$8.97 billion during the three years. This represented a substantial improvement over the US$4.66 billion surplus during the previous three year period (1981-83) Thus, in spite of a 92 percent increase in the current account surplus (before interest payments) over the previous three year period, the real stock of debt continued increasing at an annual exponential rate of between 5.5 percent (using the U.S. WPI deflator) and of 12.3 percent (using the index of Argentina's traded goods). In the same period GNP grew at an annual compound rate of 1.08 percent, well below any measure of the real increase in the foreign debt.

It can be concluded that while substantial efforts were made in terms of refinancing interest, rescheduling amortizations, and improving the country's current account balance, those efforts have not been enough to ensure a viable solution to Argentina's external debt problem.

One controversial issue in Argentina is the uses given to the external debt. One common mistake is to compare the flows of debt with the flows of net investment made in the country during the period. This is incorrect because foreign debt foster real investment only insofar as it is used to transfer real resources from abroad and the resources are invested rather than consumed. If resources are transferred from abroad, one must observe a larger current account deficit than otherwise.

There are, however, other uses for foreign debt. One is the accumulation of international reserves by the Central Bank. Another one is the acquisition of any type of foreign assets by Argentina's private sector. In these two cases, the gross debt increases, but the net debt remains unchanged. In particular, when the debt is used to finance the acquisition of foreign assets (e.g. capital outflows), there may be a servicing problem if the agent getting in debt is different from the agent acquiring the foreign assets.

This suggests two questions: (1) Was the debt used to finance real transfers of goods or capital outflows?, and (2) If it was used to finance capital outflows, who are now the owners of those foreign assets?

The evidence in Table 3 is indicative of how the increase in external debt has been used. 1/ A large amount of the increase in foreign debt during 1979-83 was used to acquire foreign assets, that is, to finance capital outflows. Of the total supply of funds of US$37,707 million during the 1979-83 period, only 39.3 percent was used to finance current account

---

1/ A detailed analysis of the process generating the capital outflows during 1978-81 can be found in Rodriguez, C.A.: "Argentina's Foreign Debt; Origins and Alternatives" (December 1987).

Table 3: SOURCES AND USES OF FUNDS: 1979-1983

	SOURCES OF FUNDS	
	Increase in External Debt:	$ 32,603 million
(Plus)	Decrease in Gross Reserves	$ 2,684 million
(Plus)	Direct Foreign Investment	$ 2,420 million
(Equal)	TOTAL SUPPLY OF FUNDS	$ 37,707 million
	USES OF FUNDS	
	Current Account Deficits	$ 14,837 million
(Plus)	Increase in Gross Foreign Assets	$ 22,870 million
(Equal)	TOTAL USE OF FUNDS	$ 37,707 million

Source: Central Bank: Balance of payments. Debt from Table 1.

deficits. As much as 60.7 percent of the increase was apparently used to finance the unreported acquisition of foreign assets by Argentinians. Thus, the origin of Argentina's foreign debt has little to do with real markets and its explanation is to be found in the working of the financial markets at the time the debt was accumulated.

With respect to the second question, it should be noted that many of those who acquired the debt do not have the dollars but devaluated peso assets. Some may have the dollars invested abroad but this operation is impossible to track as investigations carried on after 1983 by Congress and the Judicial System have shown and, therefore, is irrelevant for practical purposes. The investigations were unable to discover any significant illegalities in the process of generation of the debt. Furthermore, the Government gradually acquired the debt of the private sector, thereby implicitly recognizing it as legal.

2. The Public Sector's External Debt

In 1979 and 1980, the Government owed about 53 percent of the total external debt while 47 percent was owed by the private sector. Both government and private sector shared equally in contracting the debt. But they have not been sharing equally in the burden of paying for that debt. By the end of 1986, the shares of private and public sectors in the total external debt had changed sharply, with the government owing 88 percent of the total external debt. The process ended with the agreement signed with the creditor banks on August 21, 1987. With the significant exemption of short-term commercial credit lines, the remaining private Argentine debt has been transferred to the public sector.

The transfer of private sector's external debt to the government started around mid-1981, after the end of the Martinez de Hoz administration. The new administration, pressed by large foreign exchange demands on account of debt service, offered to sell foreign exchange insurance (FEI) to cover

private renegotiations of external debt service payments and new capital inflows, provided they were done for a period of no less than 540 days. The price of foreign exchange in those contracts was indexed for the first 180 days by an interest rate set by the Central Bank and to the price level for the remaining period to maturity (CAMEX 1-2, June 5, 1981). At the same time the government implemented a policy of successive macro devaluations that more than doubled the real exchange rate. Private sector's debt was substantially reduced thanks to the capital gains realized on the foreign exchange insurance contracts at the expense of the Central Bank. About US$5.1 billion in FEI was granted under this system which ended in December 1981.

In July 1982, the FEI was reintroduced by offering renewal to those contracts originated in 1981 and close to coming due, provided the term of the foreign obligation was extended for a minimum of one year and a maximum of five years (Com. A 137). The same terms were also offered to all remaining private loans outstanding as of July 6. This operation involved substantial losses to the Central Bank since it had to pay the price differential accumulated until then on the FEI contracts being renegotiated. The monetary effects of this losses were sterilized by determining that all earnings due to the compensation of the FEI contracts be invested in a newly created Monetary Absorption Bond or used to cancel subsidized credit lines.

By the end of 1982 the amount of private debt covered by the FEI was more than US$10 billion. The average exchange rate for the first contracts coming due in December 1982 was about one-tenth of the prevailing official rate. Worse than that, the Central Bank did not have the foreign exchange to pay for those obligations. On November 17, 1982, (Com. A-251) the Government assumed responsibility for all payments on foreign debt covered by the exchange rate insurance regime originated in Com. A-31 that were not renewed by October 22, subject to the previous cancellation of the contract, in pesos, by the private debtor. As collateral for the substitution of the Government as debtor, the foreign creditors received a new government debt instrument denominated BONOD (Com. A-278, January 26, 1983) or, alternatively, a promissory note (PN) from the Argentine Government. Private parties could continue their own arrangements provided the loans were renegotiated in terms of maturity no shorter than those of the BONOD or the PN's. In this case the Government would supply, upon request, BONOD or PN's as collateral to the loan.

The remaining private contracts covered by the FEI regime that were renewed under Com. A-137 continued being transferred gradually to the Government in exchange for new issues of BONODs and lately, for Promissory Notes. As of December 1986, the total amount of BONOD and Promissory Notes issued amounts to US$5.4 billion.

Table 4: COMPOSITION OF EXTERNAL DEBT BY BORROWER
(US$ billions)

	Public Sector (1)	Private Sector (2)	(1)/(1)+(2) (%)	BONOD+PN
1978	8,357	4,319	66.9	-
1979	9,960	9,074	52.3	-
1980	14,459	12,703	53.2	-
1981	20,024	15,647	56.1	-
1982	28,342 a/	14,901	65.5	-
1983	31,698	13,381	70.3	1,450
1984	35,875	10,703	77.0	3,766
1985	41,048	7,027 b/	85.4	5,030
1986	42,640	5,875	87.9	5,468

a/ Includes US$3.7 billion of previously unreported public debt.

b/ Net of US$918 million of previously reported and non-existent private debt.

Source: 1978-82: IMF Argentina-Recent Economic Developments, 1984.
1983-86: Argentine Economic Memorandum 1987, Ministry of Economics and Central Bank. Values not adjusted for parity changes after 1983.

3. Public Finances and the Service of External Debt

Whenever a foreign debt has to be serviced, two things must happen. First, the debtor must generate an excess of income over expenditures equal in value to the amount of the debt service. Second, this surplus must be transferred into foreign exchange in order to service the debt as stipulated. When the debtor is the government, this means that it has to generate a fiscal surplus equivalent in value terms to the debt service due. Since this surplus is not likely to be in terms of foreign exchange, the relative price of traded versus non-traded goods has to adjust so that the domestic resources freed by the fiscal surplus can be transferred into traded goods. There are, then, two required adjustments: the first involves the generation of an excess of income over expenditure and the second allows the expenditure switching towards non-traded goods.

Table 5 shows the deficit of the consolidated public sector on a budget execution basis as well as the amount of contractual interest service for the total of the external debt for each year since 1981. The public sector deficit in Table 5 includes the contractual interest on public debt. Since 1981, the deficit has exceeded the amount of total contractual interest. Total interest is larger than interest on public external debt because there is still some private debt, but the public sector has a deficit before paying any interest on the external debt.

Table 5: GOVERNMENT DEFICIT AND CONTRACTUAL FOREIGN DEBT SERVICE
(US$ billions)

	PUBLIC SECTOR DEFICIT	INTEREST ON TOTAL EXTERNAL DEBT	TRADE SURPLUS
1981	20.92	3.85	-0.28
1982	12.52	4.93	2.29
1983	13.04	5.42	3.33
1984	11.97	5.54	3.52
1985	5.55	5.13	4.58
1986	4.63	4.29	2.60
1987	5.62	4.17	0.54

Source: Deficit as a fraction of GDP: 1981-87: IMF, RED, July 1987.
1987: Estimated at 7 percent.
Dollar GDP: 1981-87: Carta Economica, No. 54, Nov. 1987.
Interest Service: Argentine Economic Memorandum 1987.
Trade Surplus: 1981-87: BCRA.

The data in Table 5 points to the major problem with the service of Argentine foreign debt. Since 1981 the major debtor, the public sector, has been unable to generate any surplus with which to buy the foreign exchange to pay the interest on its external debt. Resources were not freed by the public sector that could be devoted to the generation of the required external surplus. We should not be surprised, therefore, that the observed trade surpluses did not come close to the amount of contractual interest.

However, there were some trade surpluses in 1981-87 and the government did pay some interest. This was possible because the private sector spent less than its income in order to allow the resource shift required to generate the trade surplus. In addition, the private excess of income over expenditure was transferred to the public sector through the inflation tax and the accumulation of internal public debt. With the proceeds from the growing internal debt and the inflation tax, the government financed the acquisition of the foreign exchange for partly paying interest on its external debt. The excess of contractual interest over actual payments was refinanced by creditors. In conclusion, the public sector has been servicing interest on its external debt with resources from: the inflation tax, the issuance of internal public debt, and the new money from foreign creditors.

In the period since the Austral Plan (June 1985) and through September 1987, the internal public debt increased from US$6.7 billion to US$11.3 billion or by 68.6 percent. While it is difficult to assess the level of real interest rates because of the use of selective price controls, it is very likely that the private sector's financial funds are now close to being totally dried up. In late 1987, the marginal cost of domestic

borrowing was around 40 percent annually in dollar terms, and inflation was accelerating quickly. The public sector was being forced to look for other sources of financing unless the economic situation deteriorates to unbearable levels, as in early 1985.

The Limit to the Inflation Tax

There is a limit to the amount that can be obtained through the inflation tax without forcing the economy into hyperinflation. Precise calculation of this limit is difficult because of difficulties in the actual estimation of the demand for money, especially in Argentina, where the actual structure of the financial system is subject to frequent changes and interventions, as well as the frequent use of price controls. There are also some complications due to the use of compulsory reserve requirements as well as a system of charges and compensations on non-compulsory reserve requirements and deposits.

Taking all these factors into consideration would require detailed work that is outside the scope of this study. However, in order to get an estimate of how much revenue could be obtained through the inflation tax, we have assumed that the base of the inflation tax is just M1, or currency plus demand deposits in the hands of the private non-banking sector. The amount of real cash balances (M1) is a good approximation to the base of the inflation tax, thanks to the workings of the Monetary Regulation Account. Central Bank pays interest on bank's reserves and collects interest on demand deposits.

Using monthly data from the period January 1970-June 1987, we have estimated a demand for real cash balances (RM1=Nominal M1 divided by the Consumer Price Index) as a function of the inflation rate in the following form: 2/

```
Log(RM1) = 0.184 -0.0180596*Log.RM1(-1) -0.00373*INF -
             (1.75)  (-1.75)                (-4.09)
           -0.00078*INF(-1)+0.00095*INF(-2)+).000146*INF(-3)+
            (-2.55)           (1.71)              (3.54)
           +0.00073*INF(-4)
             (1.15)
```

2/ Instrumental variables were used in order to correct for the simultaneous determination of INF and RM1. The instruments used were the lagged values of INF, Log.RM1(-1) and the rate of nominal expansion in M1, current and with one and two lags. Price level and nominal M1 were seasonally adjusted before constructing RM1 and INF.

The INF coefficients were estimated using the method of Polinomial Distributed Lags, of quadratic form and no zero constraints. Other parameters of the regression are:
Adj.R2= 0.3456
D-W= 1.95
F Stat.= 27.9
T-Values are in parenthesis.

Sum of INF.Coeff.= -0.00136
(-1.79)

In order to compute the long-run sustainable inflation tax we assume that inflation remains stationary as well as real cash balances. With these assumptions, the above regression yields the following long run demand for real M1:

(1) Log.RM1 = 10.1962 - 0.0753xINF

The sustainable inflation tax (ITAX) is defined as:

(2) ITAX = INFxRM1(INF)

Maximization of (2) subject to the functional form for RM1 given in (1) gives INF* as the inflation rate that yields the maximum revenue:

(3) INF* = 13.279 percent per month.

The amount of real cash balances implied by INF* and the corresponding TAX* are:

(4) RM1*= 9859.7 Million Australes of November of 1987, and

(5) ITAX* = 1309.28 Million Australes of November 1987 of tax collection per month.

Converting that maximum revenue into dollars, using the commercial dollar rate for November 1987, yields a monthly collection of US$373 million. Annually this amounts to US$4,476 million, or 5.59 percent of estimated 1987 GNP (US$80 billion).

Since in 1987 the fiscal deficit was in the order of 7 percent of GNP, we see that it could not have been financed totally with the inflation tax without running the risk of falling into hyperinflation. Some increased use was being made of the inflation tax, as inflation accelerated from an annual equivalent rate of 107 percent in the first semester of 1987 to 262 percent in the second semester and up to 321 percent as of June 1988.

The annual stable inflation rate implied by INF* is 346 percent. This rate is not much larger than the one experienced during the first semester of 1988. This means that the economy is getting closer to the maximum inflation tax at which point if faces the danger of falling into hyperinflation. Since the fiscal deficit is still larger than ITAX*, the above means that other sources of financing must be found for the fiscal deficit.

The Limits to Internal Public Debt

It is impossible to ascertain through econometric methods what is the response of real interest rates to the level of internal public debt because of the lack of consistent time series on this last stock. We do know, however, that in the last two years real interest rates have been at levels well above any reasonable normal rate of return on investment.

Figure 1 shows the real value of 1 Austral of debt taken at the start of the last stabilization plan (August 1985) up to December 1987. It is assumed that the debt was continuously rolled over at the prevailing monthly lending rate for prime private borrowers; the nominal debt so constructed is deflated by the index of wholesale non-agricultural prices. The data used to compute the real interest rate index of Figure 1 indicate that, between July 1985-July 1987, the annual equivalent real interest rate charged to prime borrowers was 40.3 percent. For the total period the annual equivalent real rate is somewhat lower, 30 percent annually, mostly due to the upsurge in inflation that took place in the second semester of 1987, which was not incorporated fully into the nominal lending rates. In any event, real interest rates of 30 percent per annum are well above those consistent with financing of investments conducive to a sustainable growth rate. In fact, gross fixed per capita investment stands at about one-half of the level in the late 1970's. 3/ Given the level of real interest rates and the significant fall in investment that has been taking place since 1981, we feel there is no room for further increases in the level of internal debt of the public sector.

The creditworthiness of the public sector is actually lower than that of the private sector. The borrowing rates paid by the public sector on non-compulsory issues of internal debt are larger than those paid by the private sector. Recent issues of Treasury debt are in indexed terms as the market would not take any fixed nominal interest rate obligation except for periods of less than 15 days. According to Carta Economica, as of September 1987, the rates of return being offered by the different outstanding marketable titles of indexed internal public debt implied the following dollar rates of return:

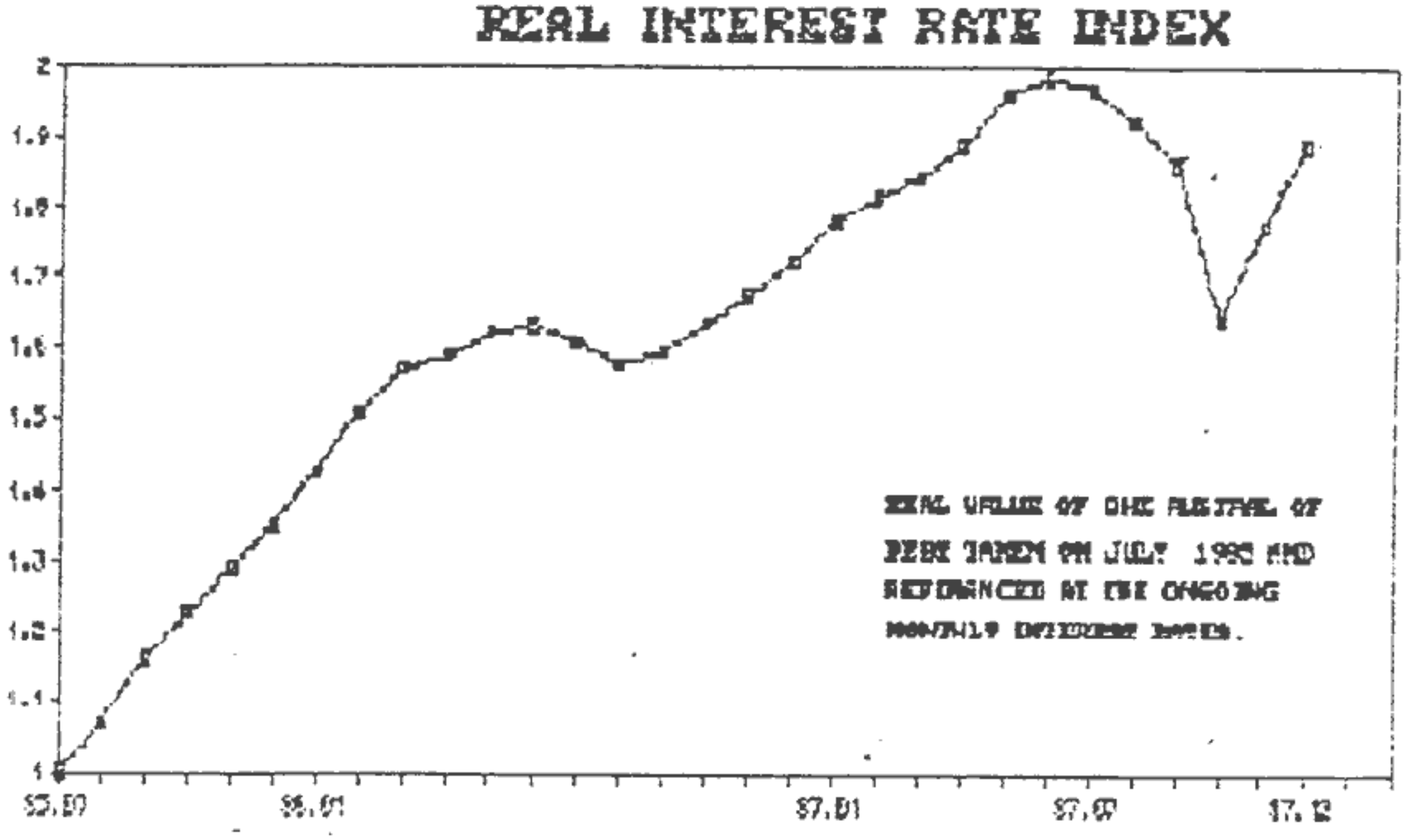
TITLE	Indexed to:	Dollar Rate of Return a/
BARRA	Floating Int. Rate	26.8%
BAGON	Commercial Dollar	56.9%
TIDOL	Black Market Dollar (BONEX Coupon)	76%-110%

Source: Carta Economica, Buenos Aires, No. 54, November 1987.

a/ Annual Rates of Return measured in terms of commercial dollars.

3/ For more detailed analysis of the interaction between government debt, inflation taxes and the growth of Argentina, see Dornbusch and De Pablo "Debt, Inflation and Growth: The Case of Argentina," manuscript, M.I.T. December 1987.

Figure I-1


REAL INTEREST RATE INDEX
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
87.09
87.01
87.05
87.09
87.13

The total existing stock of Treasury-indexed bonds was issued in 1987 and by September, the sum of the face value plus accumulated interest was in the order of US$2,094 million (at the commercial exchange rate). The stock does not seem to be significant in relation to GNP or M1, but if such a small stock induces the government to pay dollar equivalent rates as high as those indicated above, the possibility of new issues is clearly nil.

General Assessment of the Fiscal Situation

We are left with a grim picture regarding the possibility of continuing with the present situation. The rate of inflation is dangerously close to that where hyperinflation starts, and the revenue from this inflation tax is still less than the actual deficit. There is little possibility of additional domestic borrowing, as the rates being paid are clearly incompatible with any stable financial situation. Maintenance of the inflation rate at levels close to that yielding the maximum revenue is highly dangerous, particularly in an indexed economy like Argentina. Hyperinflation would be just around the corner.

Inflation will have to be reduced and with it the collection from the inflation tax. This means that a larger fraction of service on the foreign debt will have to be rolled over unless there is a significant fiscal adjustment. In the absence of external financing of the debt service, the fiscal adjustment is mandatory as the alternatives are either default on the external debt or hyperinflation.

Our evidence suggests that the main problem with Argentine external debt is not the country's ability to generate a trade surplus but the inability of the principal debtor--the public sector--to free any resources with which to service the debt. Despite this situation, the private sector has freed enough resources to generate trade surpluses that averaged US$3.26 billion per year during 1982-86.

III. THEORETICAL ANALYSIS OF DEBT REPURCHASES

1. Introduction

The observation that the debts of several Latin American countries are traded at prices well below par is partly a reflection of the fact that service payments by debtor countries falls short of contractual interest, as was shown in Section II for the Argentine case. The unpaid fraction of contractual interest on outstanding debt is rolled over, and therefore contractual debt rises over time on this account. As debt rises, and with no improvement in the ability of the debtor country to service the growing debt, the price at which this debt is traded in markets tends to fall.

With a continuously falling market price of contractual debt, it is argued that it may be to the advantage of debtor countries to obtain additional funding, other than that devoted to servicing interest, in order to repurchase their outstanding debt at prices well below par. Ideally, the purchases could go up to the point that enough debt is rescued so that actual service payments are sufficient to fully service the remaining debt. At this point the debt problem would have disappeared as the remaining debt would be fully serviced and it would therefore be traded at par. The country would have recovered access to the international financial markets.

There still remains the problem of where to obtain additional funds on top of those normally used to service the foreign debt. One way to obtain funds with which to repurchase outstanding debt is to sell domestic assets or new debt titles offering different terms than the existing ones. These alternatives are discussed later in Section IV.

A variation of the debt-repurchase strategy is the proposal of Roque Fernandez to allow debtor countries to devote all their foreign exchange resources derived from commercial transactions to repurchasing their debt at market prices, while all of the contractual interest is rolled over. Fernandez argues that such a proposal would leave the nominal value of contractual debt constant over time, a result that is verified in the model presented in this Section.

Direct cash buybacks of the country's own debt at market prices below par is in practice precluded on syndicated loans due to the sharing clause. There are signs, however, that banks are slowly reversing this rigid stand. Bolivia has been authorized to repurchase its own debt provided the funds for this purpose come from foreign aid and not from sources that otherwise would be tied to the regular service of the outstanding debt. Recently, Mexico has been authorized to use part of her cash reserves as collateral for a new Mexican bond to be exchanged for outstanding old debt; this transaction closely duplicates the effects of a direct buyback, as will be shown in detail in Section IV where we analyze the effects of collateralized debt instruments. The debt-equity swaps regimes, also discussed in Section IV, can also be seen as a way of debt buyback, not in the form of a direct exchange for cash but for some specified assets of the debtor country.

The possibility of implementing debt repurchases at market prices raises several questions. First of all, under which conditions could the debtor country recover a significant fraction of the "excess" debt at prices below par. Second, to the extent that in the absence of buybacks the price of the outstanding debt converges asymptotically to zero, would it be possible to recover the total of excess debt with just a minimal rate of cash devoted to buybacks per unit of time?

The answers to the above questions depend fundamentally on the strategies played by the participants in this game. In this Section we discuss only one particular strategy, the competitive strategy. Basically this strategy assumes that the debtor country has a fixed amount of cash coming from the trade surplus (T) that it devotes fully to the service of the outstanding debt. At this point we will abstract from the problem of how the debtor generates funds in order to acquire the dollars produced by the trade surplus. We assume that T is the amount actually paid, that may be the smaller of the trade surplus or of the funds the debtor has available to purchase foreign exchange.

The country also has an amount of additional cash (A, probably coming from a donation or from sales of domestic assets) per unit of time that is devoted to repurchasing outstanding debt at the going market price (i.e. the country bids competitively for her outstanding debt). The creditors are fully competitive and have full information about the debtor country strategy and are also willing to sell debt at the going market price. Since the market price at which transactions are carried depends on actual and expected future developments, we assume that those expectations are formed rationally.

2. The Basic Model

In order to simplify the analysis, we make assumptions that are essential for describing the dynamic consequences of debt buybacks. We assume that the debt is structured as a perpetuity, paying a contractual interest equal to the competitive rate, which we denote by i. The total face value of outstanding debt is denoted by B. The per unit of time the debtor has available for interest service, the fixed sum T, which is less than contractual interest service due (i.B). The amount T is distributed proportionally among all existing titles. Each title, therefore is paid an amount equal to T/B. In addition, the unpaid interest is documented as a new issue of debt in an amount of (i - T/B) per existing title of $1.

We may think of debt titles as a growth stock where a fraction of dividends is actually reinvested and the holder gets the return in the form of capital gains. In this case, the unpaid fraction of the interest is returned to the investor, not in the form of a larger price for the title but in the form of a larger quantity of titles. The difference is that since there is no reinvestment, the market price will tend to fall in proportion to the new titles being issued. If, however, the market expected that the titles will be valued at par at some time in the future, there should not be any difference between being paid the interest in cash or in new titles. If that expectation were to be held with certainty, the existing titles should be traded at par, no matter how much of the current interest is paid with

cash and how much with new issues of debt titles. This provides an intuitive explanation for the fact, to be formally proven below, that a successful debt repurchase strategy must eliminate all market discounts from the moment it is announced.

The theoretical model consists of two dynamic behavioral equations. The first one describes the trajectory of the equilibrium market price for the outstanding debt, while the second describes the trajectory of the outstanding debt as a function of unpaid interest and the rate of debt repurchases. 4/

At any moment, the holder of one title of debt promising to pay an interest rate of i in perpetuity faces the following alternatives:

(1) Sell his title at a market price of p dollars per dollar of face value of the debt and reinvest the proceedings at the rate i. The return is i.p.

(2) Keep the title and collect (T/B) in cash and an additional amount of debt titles equal to (i-T/B) on account of unpaid interest; this last payment amounts to the roll over of the unpaid interest and has a market value of p.(i-T/B). In addition, by keeping his debt title, the holder is entitled to the expected rate of capital gain Dpe.

The total return of keeping the debt title is therefore: (T/B) + p.(i-T/B) + Dpe. We will also assume there is a risk premium of a.p that subtracts from the expected return. Since we are assuming rational expectations with perfect foresight, the expected change in the price is equal to the actual change, Dpe = Dp. Throughout the section we use the notation Dx= dx/dt.

Market equilibrium requires that the time path of p be such that the holder be indifferent between keeping the debt title or selling it. This implies that the return be identical under both alternatives:

(1) $i.p = (T/B) + p.(i-T/B) - a.p + Dp$

Equation (1) is equivalent to the following expression showing the actual market price as the present discounted value of all future expected returns on the asset, where the discount rate is the sum of the market interest rate and the risk premium:

$$(2)\quad p(t) = \int_t^{\infty} \frac{[T + p(s).(i.B(s)-T)]}{B(s)} \cdot \exp[-(i+a).(s-t]\ ds$$

4/ We focus on the deterministic aspects of the debt problem in order to analyze fully the dynamic implications of debt repurchases. An analysis of the effects of uncertainty on market prices of debt can be found in Dooley, M., "Market Discounts and the Valuation of Alternative Structures for External Debt", I.M.F. Staff Papers, forthcoming, 1988.

From equation (1) we obtain the following differential equation describing the equilibrium trajectory of the market price, p:

(3) $Dp = (T/B).(p-1)$.

The differential equation (3) describes the path of p given the initial value (still to be determined) and the trajectory of B.

The outstanding stock of debt increases over time on account of the interest unpaid and falls on account of current cash buybacks (A/p):

(4) $DB = i.B - T - A/p$.

Cash buybacks are supposed to continue, i.e. $A>0$, until all excess debt is repurchased. We define the sustainable level of debt as that level that can be fully served with the current trade surplus,

(5) $B^* = T/i$.

Using the concept of sustainable debt, we define excess debt as $B - B^*$. If $B=B^*$, it is assumed that $A=0$ and by (4), B will remain unchanged at the level B^*. Given the values of A, T, i, p(0) and B(0), equations (3) and (4) describe the time path of the stock of outstanding debt and its equilibrium market price.

The initial level p(0), under rational expectations, is determined by the condition that the system converge to its stationary state. Whenever such a stationary state exists, we will show that the initial value p(0) is unique. There are cases, however, in which a stationary state for p and B is not feasible. For those cases, however, there exists a balanced growth path, along which the market value of the outstanding debt, $Z=p.B$, remains constant. We assume that rational traders will choose this balanced growth path as the alternative to the non-existent stationary state; also in this case we show that the initial value of p(0) is uniquely determined.

3. The Model Without Risk Premium

We first analyze the case in which there is no risk premium involved in the discount rate used to calculate the present value of expected future payments. We therefore assume that $a=0$.

Steady State with No Debt Repurchases (A=0)

The dynamic behavior of the market price and the stock of debt is described in this case by equations (3) and (6), assuming $a=0$:

(3) $Dp = (T/B).(p-1)$

(6) $DB = i.B - T \ , \ B > T/i=B^*$

The only steady state is for $p=1$ and $B=B^*$. However, this steady state is not attainable since by assumption the initial stock of outstanding debt is $B > B^*$ and therefore, by (6), B will grow without bounds. We show,

however, that there is an initial value of p(0) consistent with a constant market value of outstanding debt equal to the present value of cash payments being made by the debtor country, i.e. $Z^* = T/i = p(t).B(t)$ for all t. To show this, we use (3) and (6) to obtain the differential equation describing the behavior of Z(t):

$$(7) \quad DZ/Z = Dp/p + DB/B = \\ = (T/Z).(p-1) + i - p.T/Z = \\ DZ/Z = i - T/Z \ .$$

Equation (7) has a stationary state at $Z^* = T/i$ and it is dynamically unstable. Under rational expectations this means that only the value $Z(t) = Z^*$ for all t is consistent with market equilibrium. This means that at all times it will be $p(t)=Z^*/B(t)$. In particular, at t=0, the initial value of p(0) is determined by $p(0) = Z^*/B(0) = T/i.B(0)$.

Over time B grows at the rate $DB/B = i-T/B$ and p grows at the rate $Dp/p = (T/B).(p-1)$. Since at all times it is $p.B = T/i$, it is easy to see that the sum of both growth rates is identically equal to zero at all times. The stationary state solution $Z=Z^*$ is therefore feasible and consistent with the equations describing the behavior of p and B.

In the absence of debt repurchases, the equilibrium market price of outstanding debt is determined by the condition that the market value of the outstanding debt be equal to present value of all future cash payments by the debtor country. If those payments are not enough to pay the full contractual interest, the outstanding stock of debt will be growing over time and p will be falling at exactly the negative of the growth rate in B. Figure 1 describes the equilibrium when A=0. The locus DB=0 is represented by the vertical line at $B=B^*=T/i$ and the locus Dp=0 is the horizontal line at p=1. The arrows indicate the direction of the motion of p and B that follows from the differential equations (3) and (6). The rectangular hyperbola $p=T/i.B$ represents the unique balanced growth path consistent with the rational expectations trajectory for p and B.

Equilibrium Solution for A>0

Assume now the debtor country is granted a gift of A>0 per unit of time to be applied exclusively for debt repurchases at market prices. The gift is supposed to remain in effect as long as $B > B^*$. The dynamic behavior of p and B is now described by equations (3) and (4):

$$(3) \quad Dp = (T/B).(p-1)$$

$$(4) \quad DB = i.B - T - A/p$$

To the extent that A>0 there is a stationary state at the values p=1 and $B=Ba= (T+A)/i > B^*$. Figure 2 shows the face diagram for the case A>0. It is easy to see that the stationary state at (1,Ba) is unstable, meaning that there is no initial pair of p(0) and B(0) that will converge to it other than the pair (1,Ba). Such stationary state is consistent with rational expectations only if by chance B(0)= Ba.

Figure III-1

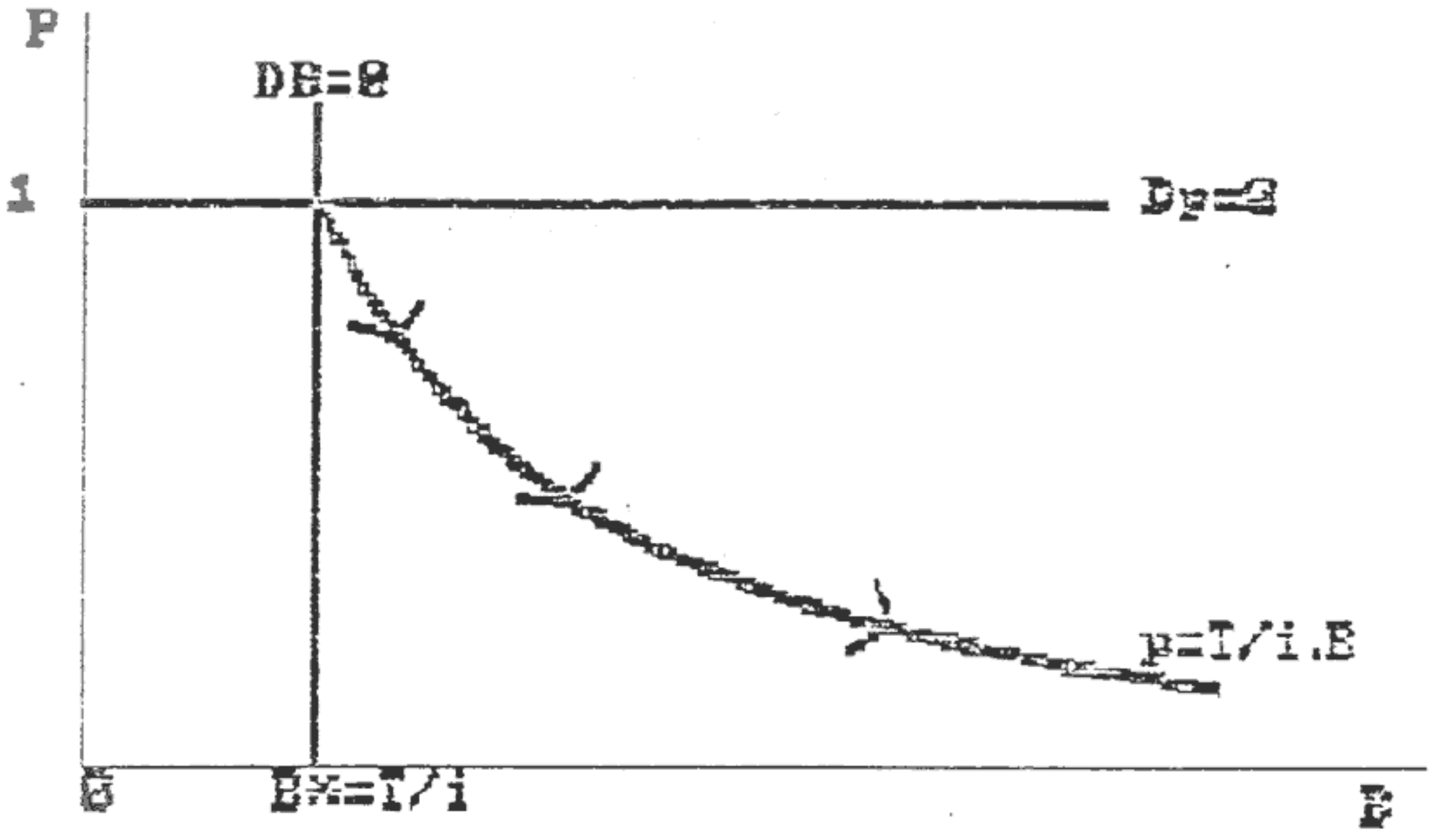
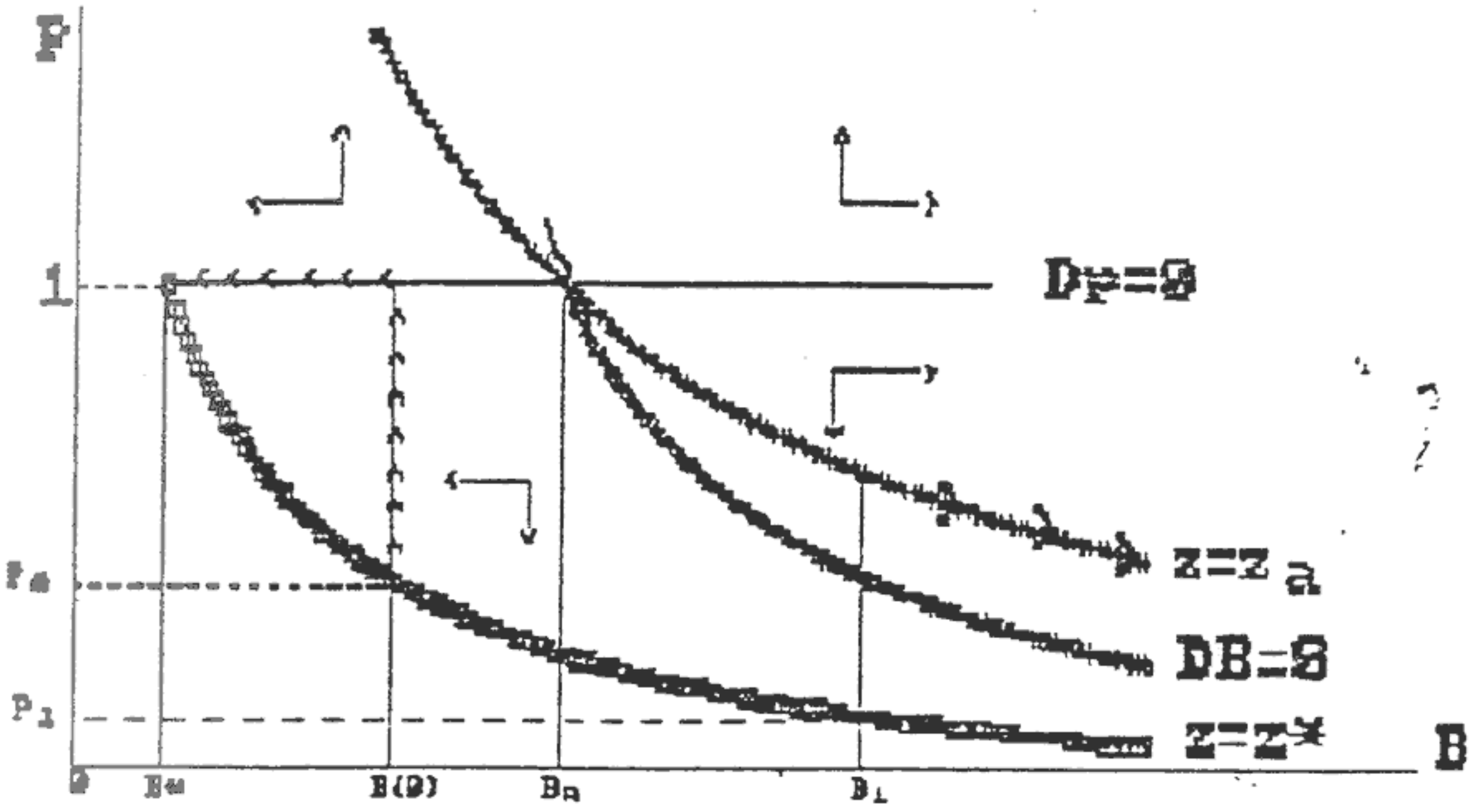


Figure III-2



Notice that B(0)= Ba implies i.B(0)-T=A and therefore a stationary state at (1,Ba) will only be feasible if the amount of cash devoted to buybacks is exactly identical to the initial amount of unpaid interest. If B* < B(0) < Ba , there is a unique rational expectations solution for which p(t) = 1 for all t. For B(0) as drawn in Fig. 2, any p(0) different from unity will lead to p rising or falling without bound or, alternatively, to the stock of debt reaching B* at a time when p differs from unity. These trajectories are ruled out under rational expectations because as B reaches B* it is required that p=1. If at that moment p differs from one, it would have to jump up to that level and this is ruled out under the assumption of rational expectations since it would imply an anticipated infinite rate of return for that instant.

The equilibrium trajectory, therefore, requires p=1 and B gradually falling along the Dp=0 line. As B reaches B*, A becomes zero and the DB=0 schedule reverses to the vertical line at B=B*. The steady state for the new system is at (1, B*) which is exactly where both p and B happen to be at that time. As required for a rational expectations path, there are no jumps in the price of debt at the time that the cash buybacks end.

Assume now that A is less than the amount of unpaid interest at time 0. In that case initial debt must be greater than Ba. Such a level is indicated as B1 in Figure 2. In the absence of buybacks, the market price of B1 would have been p1= T/i.B1, along the Z=Z* rectangular hyperbola.

It can be seen that there is no initial value of p(0) such that it will converge to unity in the exact time that B1 converges to B*. This means that for the actual levels of A and B1, the debt repurchase strategy is not feasible, in the sense that debt cannot be reduced to the self-sustainable level B* along a rational expectations path.

If, however, A were to remain at its present level forever (of course one could wonder why should it?), the rational expectations equilibrium would imply that p and B move along the rectangular hyperbola described by the locus Z = Za = (T+A)/i. This means that p will jump from the level Z*/D1 to the higher level Za/D1. The absolute increase in p as a consequence of the announcement of the A>0 policy is then A/i.D1; that is, p rises by the capitalized amount of the new money available for buybacks. After the initial rise, p starts falling as B rises, both moving along the Z = Za locus. Eventually p will again reach the level it had before the announcement of the buyback policy.

The only successful buyback policy under rational expectations is the one where the amount of money devoted every period for debt repurchase is larger than the amount of interest being rolled over. It is also the case that if the policy is successful, the debt repurchases will have to be made at par. If the unpaid interest is rolled over, there is no debt forgiveness whatsoever in the fact that countries are allowed to repurchase their excess debt at market prices. If debt is finally reduced to the sustainable level, the excess debt would have been bought at par. If the cash buyback is unsuccessful, the market price of debt will rise in response to the capitalized value of the cash devoted to the buyback, but it will eventually fall below the pre-buyback level as debt keeps accumulating forever.

Our conclusion that cash buybacks of outstanding debt may not represent any long run advantage to the debtor country has to be taken within the model in which it was derived. Not only have we assumed perfect foresight and rational expectations but we also assumed that the buyback policy is openly announced. This implies that title owners can discount the fact that all of their titles, actual and forthcoming, will be quoted at par eventually, if the policy is successful. This leads to the only feasible alternative under rational expectations implying that all debt titles start being quoted at par from the very moment the buyback policy is announced.

Roque Fernandez' Proposal

An alternative strategy has been proposed by Roque Fernandez (1987). Basically it consists of allowing debtors to devote all of their cash resources to repurchasing their debt at market prices while the creditors accept rolling over the totality of contractual interest. In terms of our model this amounts to devoting the full amount of T to debt repurchases. Fernandez shows that this proposal, if implemented, should leave the nominal value of contractual debt constant.

Fernandez' proposal can be easily analyzed in terms of our model. Setting T=0 in equations (3) and (4) B and A=T in equation (4), the new dynamic system is represented by:

$$(8)\quad Dp = 0$$

$$(9)\quad DB = i.B - T/p$$

If p is set too low, debt will fall continuously until it reaches B*. At this point the excess debt is non-existent and the repurchases stop as the remaining debt can be fully served with the current trade surplus. It would therefore be required that p be equal to unity. Since, however, p was assumed to be below unity, it would have to jump, a fact inconsistent with a rational expectations equilibrium. A high p is also ruled out as it would imply an ever increasing debt. The only solution consistent with rational expectations is a constant stock of debt and constant price. This is obtained for p = T/i.B. This is precisely the price that prevailed the instant before this strategy is announced. Therefore, we see that the Fernandez proposal will freeze the market price and the stock of debt at the levels prevailing at the time the proposal is instrumented.

The Case of Myopic Expectations

An alternative view is that all repurchases are considered to be the last one by debt holders. In the limit, if they are totally myopic with respect to the buyback policy, they will not consider that A>0 will remain in the future and in consequence will sell their assets along the Z=Z* curve in Figure 2. The market price of outstanding debt will only rise gradually as the stock of debt is reduced by the continued purchases. In this limiting case, the total amount of cash payments necessary to recover the excess debt will be the area under the Z=Z* curve between B* and B(0) plus the value of the accumulated amount of rolled over interest during the period. The length of the period required to repurchase the debt, in turn, depends on the rate of cash buybacks and the initial stock of excess debt.

The length of the period required to repurchase the excess debt under the myopic assumption can be calculated in the following manner.

First solve for B(t) from (4) after substituting p(t)=T/i.B(t). Defining x = (A/T)-1 , the solution for B(t) is:

(10) $B(t) = -(B^*/x) + \{B(0) + B^*/x\}.\exp(-ixt)$

Equating B(t) in (10) to B* we can compute the length of time required to complete the purchase of the excess debt, t*:

(11) $t^* = (1/ix).Ln.\{(1+x)/(1+x.B(0)/B^*)\}$

There will be a positive solution for t* only if $1+x.B(0)/B^* > 0$, a condition that implies that debt repurchases are larger than unpaid interest.

The present value of cash expenditures is therefore:

(12) $PV = (A/i).\{1 - \exp(-it^*)\} = (1+x).B^*.\{1-\exp(-it^*)\}$

Consider now the limiting case where $x= -B^*/B(0)$ for which T* tends to infinity. This is the case where the debt that can be bought by A, at the going market price of $p= T/i.B(0)$, is exactly equal to the amount of interest being rolled over. With fully rational expectations, p will jump to one and the debt will remain for ever at B(0). With myopic expectations regarding the A>0 policy, as A tends to this level (from above), the stock of debt also tends to B* as t* tends to infinity and the present value of cash payments tends to:

$$PV \dashrightarrow PV^* = (1-B^*/B(0)).B^* = \{B(0)-B^*\}.\{B^*/B(0)\}$$

The present value of cash payments per unit of debt bought, PV*(p), is therefore the ratio of PV* to {B(0)-B*}:

(13) $PV^*(p) = B^*/B(0) = T/i.B(0)$, which is identical to the initial price prevailing just before the debt repurchase plan was to be announced.

This shows that with myopic expectations a policy of the minimum feasible cash buyback will in fact repurchase all the excess debt (in infinite time) at an actual net present value identical to the market value of the existing excess debt prevailing the instant before the buyback policy is announced. It would be fully equivalent (in present value terms) to an agreement to purchase all the excess debt at the current market price (equal to $B^*/B(0)$).

The former transaction, however, could never be duplicated in practice with a single repurchase offer for the total stock of excess debt at the current price since the price will immediately jump to unity. Such an offer would imply for the debtor to lose the informational advantage it had thanks to the myopic expectations of debt-holders.

4. The Model with Positive Risk Premium

Perhaps the most relevant conclusion of the model so far is the one implying that with a roll over of unpaid interest and perfect foresight with respect to future buybacks, in any successful strategy of buybacks all purchases will have to be made at par. We now show how this conclusion changes when we allow for a positive risk premium in the discount rate used to evaluate the market value of the assets involved. This is a very rudimentary way to introduce risk into the analysis but we have chosen it because it helps to clarify certain important issues without adding too much complexity to the presentation. For brevity's sake, we discuss only the case where there is roll over of unpaid interest and the market correctly anticipates the whole path of future buybacks.

With a positive risk factor, the two differential equations describing the behavior of p and B become:

$$(17) \quad Dp = (T/B).(p - 1) + a.p \qquad , a > 0.$$

$$(18) \quad DB = i.B - T - A/p$$

The phase diagram describing the system's dynamics is presented in Figure 3. We can see that the Dp=0 schedule now intersects the B=B* line at a value of $i/(i+a) < 1$, and that it is downward slopping.

In the absence of buybacks the DB=0 line is the locus B=T/i=B* as in the case without risk premium.

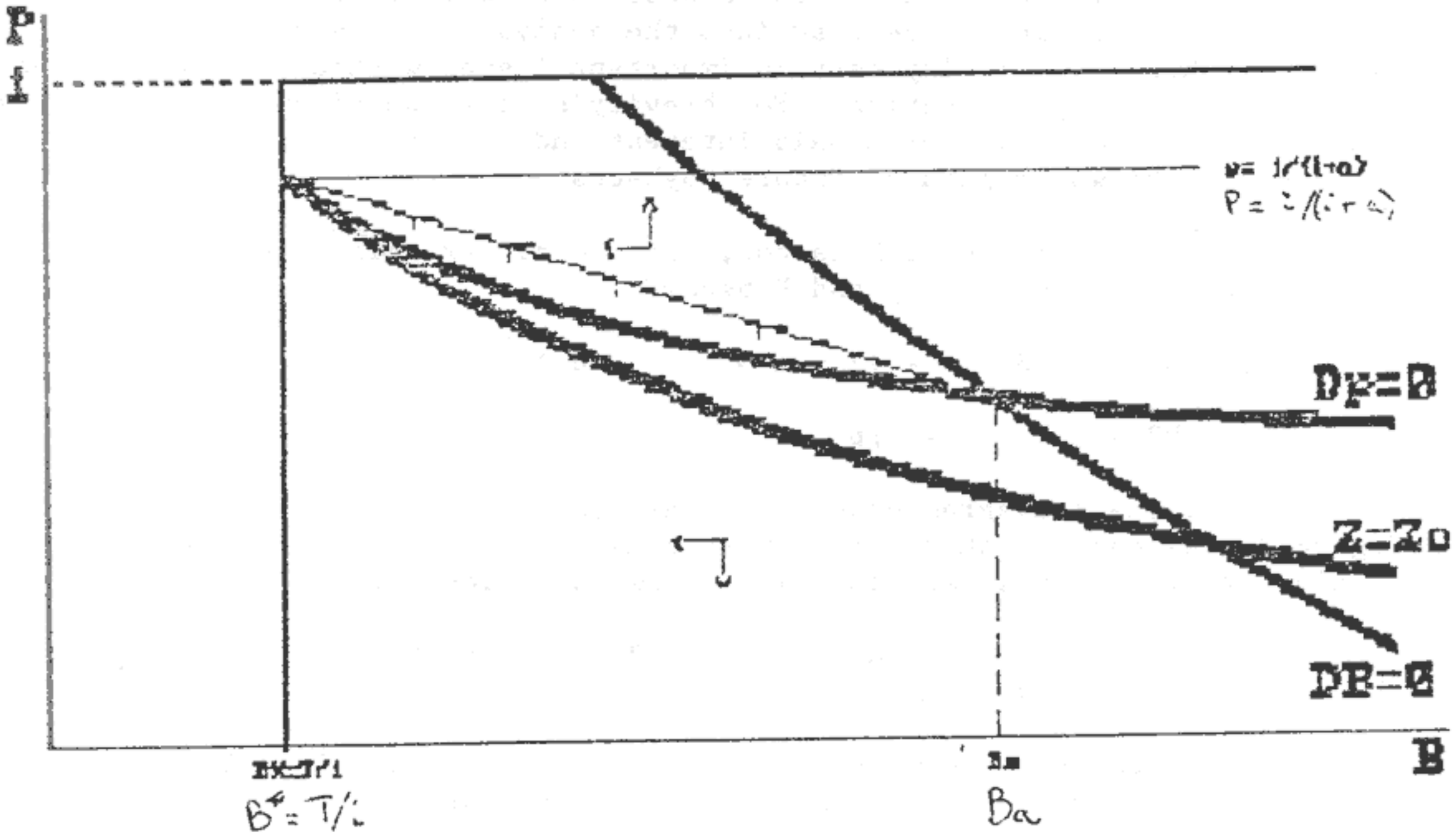
The steady state with A=0 is at p= i/(i+a) and B=B*. It is easy to verify that if B(0) differs from B*, there is no rational expectations path leading to it. As in the previous cases, there is a rational expectations solution that keeps the market value of total debt constant over time. The differential equation giving the dynamics of the value of debt, Z, is:

$$(19) \quad DZ = (i + a).Z - T.$$

The rational solution in this case is a constant Z at the value Z= Zo= T/(i+a), indicated by the rectangular hyperbola Z=Zo in Figure 2. It is easy to see that this value of Z is lower than the one in the preceding section in direct proportion to the magnitude of the risk factor.

With positive buybacks, the DB = 0 schedule becomes the downward sloping line indicated in Figure 3. There is a steady state at the intersection of the Dp=0 and DB=0 lines. This steady state is, however, unstable and there is no rational expectations path leading to it. Denoted again by Ba to the level of B corresponding to this steady state. As in the case without risk premium, there will be a rational trajectory leading to the elimination of excess debt at the precise moment that p reaches the value p* = i/(i+a). Such path, indicated by the dotted line with arrows, can be reached only if B(0) < Ba. Let us now consider what this implies regarding the amount of A necessary for a successful buyback policy.

Figure III-3



The value of Ba is obtained solving simultaneously for Dp=0 and DB=0 and is given by:

(20) $Ba = B^*.(A+T)/[T-(a/i).A]$

The existence of a successful buyback policy requires $B(0) < Ba$, which in turn implies the following condition on the rate of cash devoted for repurchases:

(21) $A > [i.B(0)-T] / [1 + (a/i).(B(0)/B^*) < (i.B-T)$.

It follows from (21) that the condition on A for the policy to be successful is less strong than in the case when there is no risk premium. Previously the critical value of A was exactly the amount of rolled over interest. Now this critical value is smaller than the interest being rolled over, and it will be smaller the larger is the risk premium A.

Consider for example that the country initially is serving half of its debt, so that $B(0)= 2\ B^*$. In the absence of risk premium, condition (21) would require $A > T$ for a successful buyback policy. Suppose now that the risk premium is one half of the interest rate, or $a= i/2$. In this case the condition for success is $A > T/2$. As we can see, the minimum required rate of buybacks for the strategy to be successful is significantly reduced in the presence of a risk premium. The semilog elasticity of the minimum required A with respect to the risk premium is:

(22) $dA/A = -(B(0)/B^*)/[i+a.(B(0)/B^*].da$

For $B(0)=2B^*$ and i=10%, the semilog elasticity (22) evaluated around a=0 is -20. This means that the introduction of a 1 percent risk premium will reduce the required A by about 20 percent.

We can see, therefore, that the introduction of a risk premium decreases significantly the requirements on the amount of cash necessary for a successful buyback policy.

We can also see from Figure 3 that along the path of the successful buyback policy, all purchases will be made, not only at a price below unity, but at prices below the one that eventually will be reached at the steady state.

5. Conclusions

The results of our analysis, in the case when there is no risk premium and traders anticipate future debt buybacks, are that a strategy of announced debt repurchases, under competitive conditions and rational expectations, is not bound to help debtor countries to recover their excess debt at prices below par value. Only when debt holders are myopic with respect to future debt repurchases, can a strategy be devised by which all of the excess debt is repurchased at a price equal, in present value, to that prevailing before the policy is announced.

The above results change if we allow for the existence of a risk premium that does not reflect the country's ability to pay. In this case the conditions for a successful buyback policy are significantly softened and it is also the case that along such a path of repurchases, debt will be bought at prices below the one that eventually will prevail when all excess debt is eliminated (that will still be below par because of the risk premium).

We have only analyzed the competitive case, where creditors are not faced with non-competitive offers of the "take it or leave it" type. All bids for debt repurchase are assumed to be competitively made and openly announced.

Many strategies of debt repurchase other than those presented here can surely be found. The case presented here can be considered to be the competitive frame of reference, within which the other alternatives can be compared and evaluated.

With regards to the actual method for implementing a reduction in debt burden, we may conclude that market prices for debt in secondary markets can be a misleading indicator of the country's ability to pay to the extent that they may be affected by the markets expectation of future developments, even including the discussion over the debt relief strategy itself. Debtor countries can also affect market prices in their favor prior to a negotiation just by showing an un-willingness to pay or generating trade surpluses that are below the country's true potential.

Based on the above, if a phased exchange of debt for other assets or claims of the debtor country is to be implemented, it should be done at predetermined prices, rather than at those prices prevailing at the time each asset exchange is made. Similarly, as market prices may be affected by false expectations generated by participants, they should only be used carefully as an indication of the debtor country's ability to pay.

IV. THE INSTRUMENTS FOR DEBT REDUCTION

1. Introduction

The ability of Argentina to service the external debt has fallen sharply in the last couple of years. Since the beginning of the Austral Plan, the trade surplus has experienced a sustained deterioration that runs parallel to the improved, but yet insufficient performance observed in public finance. The deficit of the consolidated public sector has been negative before any interest on the external debt of the government was paid. Since some interest was paid, it must have been by means of increased issues of internal public debt and increased use of the inflation tax, a situation that, by no means, can be considered sustainable (as discussed in Section II). The effect has been a drastic fall in value for the titles on Argentine external debt in the secondary markets, which at the end of 1987 were being quoted at about only 30 percent of par value (See Appendix B).

The deterioration of the trade surplus, the still unsatisfactory fiscal situation, and the growing unwillingness of creditors to continue with the strategy of refinancing interest payments with new money, have opened up the door for new alternatives for solving the debt problem. The alternatives are based on repurchasing the debt with domestic assets of the country while taking advantage of the significant discounts the debt carries in the secondary markets. However, they are not available directly to the Argentine Government because of the sharing clause present in all its debt contracts with the commercial banks.

The sharing clause is to defend the interests of creditor banks. If it were not for this clause, the debtor country could stop payments until the value of its debt falls to negligible levels and then repurchase it in the secondary market with some form of an "all or nothing bid". The sharing clause requires negotiations with the bank's committee before any substantial debt repurchase is agreed. So far the banks have agreed on several mechanisms that, in practice, imply a relaxation of the sharing clause regarding debt repurchase. Trade of syndicated loans do take place among banks, either for cash or in exchange for other debt titles. Countries have also been allowed to repurchase their syndicated debt in exchange for exit bonds, new bond issues with partial collateral (the case of Mexico), and the well known debt-equity swaps.

All market exchanges of outstanding debt have been conducted with private commercial banks' debts. No trade has been reported involving multilateral (World Bank, IMF, etc.) or bilateral debt (Paris Club). Unpaid interest on Paris Club debt has been systematically added to the existing stock of debt and no trade has taken place so far with this debt in secondary markets. Debt with multilateral institutions has a special status as it apparently has preference in the use of the foreign exchange of the debtor. This means that multilateral institutions get paid first and then, whatever is left over is distributed among the other creditors. If this situation is to continue, the chances of decreasing the amount of existing debt through

debt buybacks at market prices is limited to the debt with private commercial banks.

It is unclear whether, as part of a global agreement to solve the debt problem, preferred creditors will continue to exist. It is known that a few countries have stopped payments, not only to commercial banks, but also to multilateral institutions. If this approach tends to generalize, the most likely outcome is that the system of preferential creditors will eventually disappear. In the absence of a clear indication of what, in effect, will be the final outcome, we proceed under the assumption that there will be no preferential creditors and, therefore, treat all of the countries' debts as potentially subject to debt repurchases at market prices, or other types of exchanges involving a reduction in the present value of the debt burden under the new instrument given in exchange.

Most significant among the mechanisms of debt repurchases or exchanges that have been implemented or are under discussion are the following:

(1) Exit bonds amounting to a reduction in contractual interest.

(2) Debt for debt swap with reduction in face value.

(3) Swaps of old debt for new collateralized debt.

(4) Debt for equity swaps.

(5) Swaps of debt for securities entitling to a fraction of the country's trade surplus.

Regarding the actual method for implementing the debt repurchases or exchanges, we shall keep in mind the results of the model presented in Section III. It was shown there that market prices for debt in secondary markets can be a misleading indicator of the country's ability to pay because they may be affected by the markets expectation of future developments, including the discussion over the debt relief strategy itself. Debtors can also affect market prices in their favor prior to a negotiation just by showing an unwillingness to pay or generating trade surpluses that are below the country's true potential. In consequence, if a phased exchange of debt for other assets or claims of the debtor country is to be implemented, it should be done at predetermined prices, rather than at the prices prevailing at the time each asset exchange is made.

2. The Argentine Exit Bond

The 1987 Guaranteed Refinancing Agreement provided for the creation of an exit bond. This is a dollar denominated bond issued by the Argentine government that is to be exchanged at par value for existing debt with the syndicated commercial banks. The exit bond carries a fixed 4 percent annual interest rate and a maturity of 25 years with 12 years of grace. With LIBOR at 7.9 percent this Bond should be traded at 62.7 percent of par assuming it will be fully serviced. However, Argentine debt carried a discount of about 65 percent at the time of Agreement, due to the fact there is a probability of the debt not being fully serviced. Given that this debt pays about 13/16 over LIBOR, that discount implied that the (constant) probability of service

payments being made in any period is 0.325 (i.e. there is a risk of 0.675 that service will not be paid).

If we assume that the probability of the exit bond not being serviced is the one we derived for the existing Argentine debt, the market value should be only 22 percent of par (a discount of 78 percent). The fact that the exit bond is exchanged at par with the existing debt (with a market value of 35 percent of par) must imply that the banks accepting it must assume that the exit bond carries less risk than the other Argentine debt. In fact, if the exit bond were to have the same market value as the rest of Argentine debt, the probability of the bond not being serviced should be only 43 percent (as compared with 67.5 percent for the rest of the debt).

If Argentina were to honor all payments on the exit bond, it would be exchanging its old debt at a price equivalent to 62.7 percent of par value. This would imply a write off of 32.7 percent on the face value of the debt being exchanged. While the discount would be significant, it still falls short of the actual discount faced by existing debt. On the other hand, it is likely that banks will apply the same risk of default to the exit bond as to the rest of Argentine debt, in which case they will value it at only 22 percent of par and would not be interested in exchanging it for debt valued at 35 percent.

The apparent motivation for including the exit bond in the GRA was that it would be taken by the small banks that were not participating with new funds in the debt renegotiations but were sharing equally in the service collections. These small banks would be acting as free riders at the expense of the fresh funds being provided by the larger banks. The small banks could threat to leave the cartel and sell their debt in the market at a discount. Not only will this lower the price of the Argentine debt but would put more pressure on the large banks to downgrade those assets in their balance sheets. If the small banks were to accept the exit bond, they would in effect leave the cartel to the larger banks that are the providers of the fresh money for refinancing the unpaid services.

The above interpretation is consistent with the fact that the GRA stipulates that the exit bond could not exceed US$1.5 billion and the maximum subscription by any bank would be US$5 million. In synthesis, the committee was not willing to grant (at least without any collateral or additional restrictions on economic policy) a straight 32.3 percent discount on the face value of all Argentine debt. It was willing to accept, however, that this discount be granted for the debts of the smaller banks forming the cartel. These banks, however, did not show any interest in the new exit bond. Only four banks accepted the offer, from a total of about 300. The exit bond was a failure because the small banks were collecting 100 percent of their interest without having to put out new money. It was not attractive to exchange that right for the right to collect about only half of the interest while being left out of the sharing agreement.

The exit bond was a direct way of capturing part of the discount on the country's debt without changing the face value of the debt. The advantage of this alternative is that interest service can be reduced in the same proportion as the market discount. Its disadvantage is that, since this is obtained through a reduction in the stipulated interest rate, the new bonds will trade below par.

In terms of the model developed in Section III, this exit bond can be viewed as the exchange of old debt for new titles stipulating a reduction in the contractual interest rate while keeping the rate used to discount future flows constant. Denote by Ic to the contractual interest rate. Equation (1) describing the market equilibrium condition for the price of the debt now becomes:

$$(1') \quad i.p = (T/B) + p.(Ic-T/B) + Dp.$$

In order to solve the problem of the excess debt, the new instrument must carry an interest rate low enough so that the existing face value of outstanding debt, B(0), can be fully serviced with the available trade balance T: Ic.B(0) = T. Replacing this condition into (1') we obtain:

$$(1") \quad Dp = i.p-Ic .$$

The stock of debt, at time t=0 changes according to :

$$(4') \quad DB = Ic.B(0) - T = 0 \text{ by the definition of Ic.}$$

It follows from (1") and (4') that with B unchanged through time the only rational solution for the market price is:

$$p = Ic / i < 1$$

This means that the equilibrium market price will equal the ratio between the contractual and the market interest rates. By definition of Ic, this ratio equals B*/B(0).

It turns out that this new equilibrium price is exactly the one that would have prevailed just before the change was made to the new instrument. Therefore, the reduction in the contractual interest rate will freeze the market price and face value of debt at the levels prevailing at the moment the change is made.

3. Debt for Debt Swaps

Another alternative, is to grant a partial write off of the face value of the existing debt. If the reduction in face value is enough to guarantee full service of the new debt titles, these titles should trade at par as they are issued at the market interest rate. In terms of the model of Section III, this alternative amounts to a reduction in the value of outstanding debt from the initial value B (0) to the level B*. Since B* is the level of debt that can be fully served at the contractual interest rate, the market price of this remaining stock of debt will be unity.

In any arrangement involving a straight write off there remains the problem of assessing the country's ability to pay and the possibility of changes thereof. Market prices can only be taken as a partial indication of the country's ability to pay as they may be affected by the market's expectation of the agreement itself. It is also possible that given the lack of an agreement, governments instrument policies conducive to a lower than normal trade surplus. If the market price is based on the continuation of this observed trade surplus, it will not be measuring the country's ability

to pay if an agreement is reached whereby the country has larger incentives to generate normal trade surpluses. All of this suggests that market prices at any particular moment are not necessarily indicative of the country's ability to pay.

As discussed in Section II, the ability to pay depends on two factors: the ability of the debtor government to generate a fiscal surplus with which to acquire the foreign exchange, and the ability of the country to generate the foreign exchange to be sold to the debtor government in exchange for its fiscal surplus. It is clearly a necessary condition for the viability of any debt write off scheme that mutually agreeable conditions be set on the fiscal behavior of the debtor government in order to make the new payment stream feasible in a sustainable way.

We assume that before any agreement is implemented, the government generates a surplus in order to acquire dollars generated through the trade surplus. This means that the public sector is freeing resources for them to move into the traded sector and generate the required trade surplus. An annual trade surplus similar to those observed during 1982-86, which averaged US$3,264 million, is not impossible to produce. All that is necessary is for the government to generate fiscal surpluses of a similar magnitude in order to acquire those dollars without having to resort to the inflation tax or excessive increases in internal debt.

The market valuation option, therefore, would be that the international creditors accept a reasonable reduction on the book value of Argentina's debt in exchange for conditions being established whereby the remaining balance will be serviced with complete and unquestionable regularity. This requires, in the first place, that the final amount of the debt be structured over a very long period of time and that the interest rate be the most attractive (the lowest) on the international market.

Regarding what a reasonable valuation of the outstanding debt would be, the mid 1988 price of around 22 percent of par does not represent the long run ability of the country to pay, as it is strongly influenced by the very poor trade results of 1986-87. These poor results are due partly to the policies under the Austral Plan and partly to very disadvantageous terms of trade. Both causes may be reversed in the near future and it may be more conservative to estimate that the ability to pay is better reflected by the average results shown during the period 1982-85 when the market valuation of Argentine debt was about 65 percent of par.

With a 35 percent reduction, Argentina's total debt would decrease to US$33,607 million (at the end of 1986). At that time the LIBOR was at 6.24 percent and therefore servicing the debt would have meant annual interest of US$2,097 million. Since then the LIBOR has increased and, as of the end of 1987, it was at about 8 percent, meaning that the servicing would have risen to US$2,688 million. This amount is slightly smaller than the 1982-86 current account surplus, net of interest payments, which was US$2,740 million per year. With improving terms of trade (as appears to be the case in early 1988) and the unavoidable fiscal adjustment, Argentina should be able to generate a surplus of this magnitude again.

The amount of amortization to pay off each year would depend on the refinancing period but it should not pose a problem. To the extent that the international inflation rate is positive (as appears to be the case since 1987), the payment of nominal interest would already include a measure of real amortization. In any case, the refinancing of the amortization would be almost automatic if Argentina were to service its debt regularly over one or two years. With 50-year maturity, a nominal amortization of 2 percent per annum means an additional US$672 million which, in principle, could be taken care of with the reserves in hand. After one or two years the banking community will start lending again, at least to cover the amortization.

This solution involves a realistic reduction on the current debt and the condition that, if payments are made regularly, the rate established will not exceed the LIBOR rate. Both are exceedingly reasonable conditions. After all, the payment being made would be what the market expected to collect under favorable conditions. Needless to say, for this type of solution to have any chance of being accepted by the creditors, Argentina should offer a guarantee that the reduced debt will be serviced normally. The best way for the country to do this is to accept instrumenting a serious adjustment effort of its economy, probably under the supervision of international institutions. From a practical standpoint, it would be possible to gradually transfer the old debt into the new (smaller) debt pending the fulfillment of the different stages of the adjustment program.

Granted that the agreement should include conditions regarding reasonable fiscal behavior on the part of the debtor, there still remains the uncertainty related to the evaluation of future interest rates and the ability of the country as a whole to generate the foreign exchange. A settlement that seems viable today may stop being so if interest rates rise significantly or if the country's terms of trade deteriorate significantly. The alternative to avoid the problems related to assessing the country's future ability to pay could be somehow mitigated by stipulating that payments be proportional to the actual trade results that eventually take place instead of being tied to a floating nominal interest rate. In this context, debt service may be stipulated as a proportion of the trade surplus or as a proportion of total exports.

The problem of tying debt service to the trade surplus is that under this alternative the country economic authorities would have little incentive to pursue policies conducive to the generation of trade surpluses. In this context, tying payments to export performance would prove more efficient to the extent that the country has need for at least some level of imports, which it has to pay for with exports. This alternative is elaborated further in Section IV.6.

4. Collateralized Debt Instruments

One alternative is to exchange outstanding debt titles for new titles stipulated in terms that reflect more truly the country's ability to pay. The problem arises that the new debt, other than involving smaller services, might have the same guarantee or collateral as the old debt. For example, a recent agreement with the commercial banks, allowed Mexico to effectively use international reserves as collateral for a new issue of bonds that will be auctioned in exchange for the old debt. If the market

capitalizes the lower risk that the new instrument implies, it should have a higher market value than the pre-existing debt, and to that extent it will be exchanged for a more than proportional amount of old debt. Noticing that the extra market value of the new instrument is due to the use of the reserves in order to guarantee the payment, we see that what is being done in effect is to allow Mexico, in a roundabout way, to use reserves to repurchase outstanding debt. In other words, the new Mexican bond is a way around the sharing clause.

The actual workings of the new Mexican Bond (NMB) are as follows. For an investment of US$2 billion Mexico buys from the US Treasury a zero coupon bond with a single amortization payment at the end of 20 years. At the present LIBOR rate of 7.9375 percent (January 1988), the face value of the zero coupon bond will be US$9.215 billion. At the same time Mexico will issue a negotiable bond with a face value of US$9.215 billion, paying LIBOR plus 26/16, at 20 years maturity. Principal is returned in a single payment in year 20 and the buyer receives as collateral for that payment an equivalent amount of the zero coupon bond of the US Treasury.

This NMB not only offers a spread over LIBOR of twice that on the average Mexican debt, but it also has full collateral on the principal. On both counts this new bond should carry a higher market price than the pre-existing Mexican debt. The new Mexican Bond will be auctioned in exchange for old Mexican debt and it is expected that the equilibrium relative market price will be larger than one, reflecting the higher attractiveness of the NMB. Our purpose here is to compare the net results of this scheme with the still unavailable option of using the US$2 billion of reserves to purchase old debt at market value. It will be shown that under certain assumptions the two operations are fully identical in that Mexico will be reducing the par value of her outstanding debt by US$4 billion with a US$2 billion investment, (assuming a market price for existing debt of 50 percent of par; the actual calculations for the case of the Mexican Bond are carried in Rodriguez, C.A. "The New Mexican Bond", unpublished manuscript, IMF Research Department, January 1988).

The NMB is a particular case of what we could call "collateralized debt instruments" (CDI). The NMB has full collateral on the final amortization payment but we can conceive of other instruments where, for example, the full collateralization applies to the interest service of the fourth year and to one third of the final amortization payment. In general, we can conceive of instruments giving collateral for any combination of interest and amortization payments. Whatever the collateralization, an initial cash investment is required in order to instrument the operation. The new instrument will then be exchanged for non-collateralized outstanding debt.

The relevant question is by how much the stock of total outstanding debt will be reduced per unit of initial cash investment. We shall show that the amount of net debt reduction per unit of cash investment should equal the inverse of the current market price for the non-collateralized debt; that is, the results are similar to using the cash investment to directly rescue non-collateralized debt at market prices. We see, therefore, this operation as a way around the sharing clause in the sense that it allows debtors, in a roundabout way, to effectively make use of their cash to rescue debt at market price.

Pricing a Partially Collateralized Debt Instrument

Consider a Bond paying an interest rate of I during N periods and a final amortization payment of A dollars in the last period (this is assumed just for simplicity). The risk free discount rate used by the market we denote by L (LIBOR?). Assume the interest payments of each period have a probability of Qi(t) of being made and the final amortization payment has a similar probability of Qa. Assuming risk neutrality on the part of bondholders, the market price of the bond (p) will be given by the following expression:

$$(1)\quad p = \sum_{t=1}^{N} Qi(t).I.A.(1+L)^{-t} + Qa.A.(1+L)^{-N}$$

Collateralization of a service payment due in period j is provided by depositing enough cash (at the disposal of the Bondholder) earning the risk free interest rate (L) so that when period j comes about, there is enough cash to make up for the payment due. In the case of the New Mexican Bond this is done by depositing the 20 year zero coupon US Treasury Bond that at maturity has a value equal to that of the principal of the Bond. It is assumed that if this is done, the market will consider that the probability of payment being made for period j is unity, e.g., Qi(j)=1 or Qa=1 if the collateralization applies to the principal.

Suppose it is desired that full collateral for the interest service of period j be provided. It is necessary to deposit enough cash so that after j periods the value of the deposit equals I.A. The amount of cash investment (Z) is therefore:

$$(2)\quad Z = I.A.(1+L)^{-j}$$

Suppose the amount Z is so deposited and a new Bond with a face value of A dollars is issued, with Z being the full collateral for the interest service of period j. The market value of the new Bond (p*) will be given by expression (1) evaluated using unity instead of Qi(j). It is easy to verify that p* will be equal to:

$$(3)\quad p^* = p + Z.\{1 - Qi(j)\}$$

It follows from (3) that the new CDI has the face value of the standard Bond but is worth Z.{1-Qi(j)} more dollars at market price. If the new CDI is exchanged for old Bonds at market price, the face value of outstanding debt will fall by the amount Z.{1-Qi(j)}/p.

This last amount is not all that was obtained from this exchange. In addition, the debtor is now free from paying I.A dollars j periods from now since that payment is already provided for by the collateral. If the debtor were to borrow against this improved ability to pay in period j, the market will value his promise to pay I.A in period j at:

$$Qi(j).I.A.(1+L)^{-j} = Z.Qi(j)$$

We may conceive, therefore, of the end result of the operation as providing an immediate reduction in face value of debt of Z.{1-Qi(j)}/p plus a saving in a future payment with a cash value equivalent of Z.Qi(j). Following this line, we might assume, therefore, that the true cash value of the investment was Z minus the cash value of the expected future saving, or:

$$Z.\{1-Qi(j)\}.$$

Therefore, the ratio of reduction in face value of debt to the true cash investment is 1/p .

One direct way to solve the need for this hypothetical comparison is the following. Let the debtor invest an additional p* dollars in rescuing the CDI. The total investment is now the original Z plus p* minus the amount of the collateral which is Z given that now the original debtor owes the CDI. This adds up to just p* of cash investment. Against this cash investment, an amount equal to p*/p of face value of old debt was rescued. The operation is now neat as all transactions take place at the same moment in time. The ratio of face value of debt reduction to cash investment is exactly 1/p (this argument is presented in R. Lamdany, "Some Simple Arithmetic on the Mexico Deal", Office Memorandum, DFS, World Bank, January 1988).

Partial Collateralization

We have seen above that unless the country wants to repurchase the newly issued CDI, the net effects of the swap operation would be spread over time: an immediate reduction in face value of debt plus an expected future saving at the time the collateralized payment is due. We may conceive of this result being due to the fact that the country has made a cash investment larger than was necessary to bring the probability of payment equal to unity. Actually, the market assumed the debtor already would have cash in period j to pay for the amount {1-Qi(j)}.I.A. In order to bring the expected probability of payment in period j to unity, the debtor should provide collateral only for the fraction the market expected would not be paid. This being the case, the amount of cash collateral required would be only {1-Qi(j)}.I.A, and this will require a cash investment of:

$$Z' = \{1- Qi(j)\}.I.A.(1+L)^{-j} = \{1-Qi(j)\}.Z$$

If this operation works, e.g. the market accepts the partial collateral as providing full certainty for the payment due at time j, for a cash investment of {1-Qi(j)}.Z the face value of debt would be reduced by Z.{1-Qi(j)}/p. In this case there are no expected future savings since at time j the country still has a payment to make with an expected value of Q(i).I.A. The expected future stream of payments on the new CDI is identical to that of an equal face value of Bonds rescued and therefore subtracting the face value of the CDI from the face value of Bonds rescued leaves the difference as the only net result of the operation. Here again, the ratio of face value of debt reduction to cash investment is 1/p.

Evaluating the CDI

The methodology of the CDI provides a way to instrument direct cash buybacks of outstanding debt at market prices. We conceive, therefore, it not as an end in itself but as a way to instrument cash buybacks when they apparently are not allowed by the sharing clause on syndicated loans.

It follows that the New Mexican Bond or any other CDI instrument that could be issued should be evaluated in terms of the effects of direct cash buybacks in helping to reduce the debt problem. This subject has been analyzed in detail in Section III. There we found that direct cash buybacks at market prices may be especially attractive to countries facing a risk premium that does not reflect the country's ability or willingness to pay, as may be the case of Mexico.

Our theoretical analysis also suggests that if Mexico plans to continue implementing this type of repurchase deal, it would be better to negotiate a fixed conversion price for its debt as a whole, rather than accepting the going market price at the time each repurchase deal is made.

5. Debt-Equity Swaps

Debt-equity swaps basically refer to an exchange of an interest carrying debt for equity belonging to the debtor. Depending on the agreed rates of exchange between both assets, a discount may actually take place on the face value of the outstanding interest carrying debt. It is expected that this discount may at least incorporate part of the discount observed for this type of debt when exchanged for cash in secondary markets. The fact that the asset given in exchange is probably less liquid than cash and subject to the debtor's country sovereign laws (including taxes and foreign exchange restrictions on transfer of dividends) implies that the actual discount obtained may be lower than the one for cash transactions.

There are no legal impediments for private debt-equity swaps between the debtor and the creditor. The problem arises with syndicated public sector loans covered by the sharing clause. Banks have, however, agreed to a variety of schemes, allowing to swap government debt for equity investment in the private sector. Although one could not rule out the possibility of a swap of a public sector's real asset in exchange for public debt, so far this type of exchange has been of little significance in Argentina.

Swaps of Debt for Local Currency

Ways have been designed for the government to acquire private equity and give it in exchange for its foreign debt. In most cases, this process involves the simple acquisition of the private asset by money creation or new issues of internal public debt. The limit to this process, therefore, is the internal financial market's ability to absorb a growing internal public debt or the required higher rates of inflation tax.

Basically, what is being instrumented in Argentina is a swap of debt for local currency. The Central Bank buys the debt with Australes. The seller of the debt can then use the local currency to purchase local assets. The Central Bank may absorb the new money by issuing internal debt;

otherwise, inflation would rise and the debt would have been purchased with the proceeds of the inflation tax. In Argentina, financial markets can hardly accommodate new demands so the Central Bank should be concerned about the feasibility of the workings of such a scheme at a significant level. As discussed in Section II, the government is making widespread use of the internal financial market in order to obtain funds with which acquire the foreign exchange used to service the interest on its external debt (or rather, the fraction that is actually paid). There is therefore, little additional room for issuing more internal debt or even money to be used for repurchasing external debt.

The "General Principles for Debt to Equity Conversion" agreed to by the syndicate of banks recognized this fact and set a low total amount for these operations during the next five years. The agreement calls for a total of US$1.9 billion of face value of debt to be converted into equity during this five year period. Given that the face value of debt has been growing by at least US$3 billion a year since 1981, this mechanism is not going to have any significant effect. Nevertheless, to the extent that the US$1.9 billion will be exchanged at prices below par, some relief will be obtained. The remaining cost will fall on the private sector through the joint burden of the new internal debt and the additional inflation tax.

The Debt Equity Swap Regime of June 1987

From an instrumental point of view, the capitalization regime approved in June 1987 is more roundabout than the simple description made above. It proceeds as follows: The foreign creditor must exchange at the official exchange rate, one dollar of Argentine debt at par value plus one additional fresh dollar. The Australes so obtained must be used to finance new investments in Argentine private firms. In order to sterilize the monetary effects of this operation, the Central Bank rescues the Australes previously issued by means of a new monetary absorption bond.

In the end, the government has exchanged domestic debt for external debt (the fiscal problem of interest service remains) and the foreign creditors have obtained claims on new private investment projects in exchange for their financial debt titles on the government (the external sector problem still remains as the service of interest on the financial debt has been replaced by dividend service on the new Direct Foreign Investment).

The question arises where do the resources for the new investments come from? On account of the additional dollar capitalized, those resources come from abroad provided they result in larger imports or less exports. The rest must be generated internally, an option that was open with or without capitalization. Basically what is happening is that the government prints money to finance its participation in new investments. Then sells the participation in the new investments in exchange for titles on its foreign financial debt. The ability to do this operation in significant amounts is limited by the size of the domestic financial market. If the market cannot take the new monetary absorption bond at reasonable interest rates, the money printed would remain in circulation and will quickly be transferred into additional inflation. In this case the government would be paying for its acquisitions with the inflation tax.

The alternative of issuing absorption bonds at whatever interest rate the market demands, could imply real rates at levels well in excess of what could be born by a stable financial system. As of the end of October 1987 (when the capitalization regime instrumented in June was abandoned), with a price freeze in effect, lending nominal rates were in the order of 10 percent per month, a level that far exceeds any reasonable value for the marginal productivity of capital. Such level not only stops any private investment project but also proves highly disruptive on account of the fact that most of the existing stock of internal debt is contracted at floating rates (i.e. loans of one week maturity) and therefore those high real interest rates apply not only to new lendings but to almost all existing loans.

The mechanisms approved by the Central Bank in June 1987 by Circular 1037 provide the following rules for debt-equity swaps:

(1) Purchases of Debt at par value are limited to $1900 million over a five year period, starting with US$300 million the first year (June 1987-June 1988) and then US$400 million in each of the remaining four years.

(2) Purchases of Debt by the Central Bank will be auctioned according to the additional amount of fresh money offered by the Debt Title holders (Additional Funds). It is stipulated that a minimum addition should be one fresh dollar for each dollar of debt being capitalized. As of September 1987 there were already conversations leading to eliminating the requirement of the additional dollar, either totally or partially. The Additional Funds can be incorporated in cash or in the form of foreign loans of no less than six years maturity. Upon acceptance of the proposal, the Additional Funds must be put in a special account from were they can be withdrawn only as investment expenses come due.

(3) New investors must wait ten years before being allowed to transfer the principal of the amounts capitalized abroad. They must also agree not to transfer dividends abroad for the first four years on the part accruing to the capitalized debt. On the extra dollar, repatriation of principal and dividends will continue to be ruled by the Laws applying to foreign investments. 5/

5/ According to the Ordered Text of 1980 of the Law of Foreign Investment, repatriation of principal can be made from the third year of making the investment. Repatriation of dividends is not subject to any time or quantity constraint, except for a special surtax on after tax utility that applies only to foreign investments. This surtax taxes at 15 percent any rate of after tax utility in excess of 12 percent; at 20 percent any excess of utility over 15 percent and finally there is a flat 25 percent for any rate of after tax utility that exceeds 20%. Since May 1984, by Presidential Decree, all remittances in concept of repatriation of principal or utility must be made by purchasing BONEX at par at the Central Bank. These BONEX must then be sold abroad at a discount that actually exceeds 20%.

(4) Debt titles subject to capitalization include all titles on private or public debt with the exemption of: (a) Short term trade credits, (b) Debts with Foreign Official Creditors, (c) Debts guaranteed or insured by foreign agencies and (d) Exit Bonds.

The Financial Viability of the Capitalization Scheme of June 1987

Since 1982 there is there is exchange control in Argentina and the parallel rate by mid-September 1987 was 47 percent above the official rate. At the same time the Argentine Titles of debt can be sold in the secondary market at a discount. This means that it may be more profitable for the foreign creditor to sell his debt title in the secondary market at a discount and then sell the dollars so obtained in the parallel market at a premium over the official rate. For capitalization to be feasible, therefore, there is a required relation between the spread on the foreign exchange market(s), the discount on the debt in the secondary market (d) and the additional fresh money required for each dollar to be capitalized (f).

If the operation is through the official regime, the foreign creditor obtains, for each dollar of par value of debt capitalized plus the f additional dollars required, an amount equal to: $(1 + f)*Eo$, where Eo is the official exchange rate. If he sell his debt in the secondary market and goes through the parallel exchange market and invests the same amount of debt titles and dollars he obtains: $(1 - d + f)*Ep$, where Ep is the parallel market exchange rate and $Ep*(1-s) = Eo$.

For capitalization to be attractive through the official regime, the second option must report less Australes than the first, or:

$$(1 + f)*Eo > (1 - d + f)*Ep \text{ , or}$$
$$(1 + f)*(1-s) > (1 - d + f) \text{ , or}$$

$$(1) \quad d > s * (1 + f).$$

The above expression determines the conditions under which the debt-equity swap through the official regime will be attractive to the foreign creditor. Under the actual system stipulating the additional dollar rule, f=1 and the condition becomes:

$$s < d/2 .$$

As of September 1987, the value of s was about .32 and the value of d was about .5. In consequence capitalization through the official regime was not viable.

It should be noted that if the condition (1) is met, capitalization through the official mechanism would not be attractive to the Central Bank as it would do better by purchasing dollars on the parallel market and using those dollars to rescue its debt at discount on the secondary market. Since it is legally precluded from buying dollars on the parallel market, the Central Bank could duplicate this operation by buying stock in private firms with Australes and then selling the stock to foreign investors for dollars. It could then use those dollars to repurchase its external debt on the

secondary market, either directly if allowed to do so, or through the issue of a Collateralized Debt Instrument.

The Capitalization Regime of October 1987

The first debt-equity swap regime approved by the Argentine government in June 1987 proved to be a total failure as no operations were actually carried out. The reason was that the debt tendered to the Central Bank was to be exchanged for Australes (with which the investor would buy the equity) at the official exchange rate. The high Black Market premium made this alternative unattractive as it was more profitable to sell the debt in exchange for dollars on the secondary market and then sell the dollars on the Black Market (there are legal ways of doing this using the BONEX as an intermediate instrument) for a much larger amount of Australes.

Following the creation of a free floating Financial Foreign Exchange market in October 1987, the old debt-equity swap regime was changed for a new one where debt is exchanged for Australes at the financial exchange rate.

The new system operates as follows. For a new investment project the investor is allowed to receive up to 70 percent of the non-imported component of the project in exchange for public foreign debt titles at a certain price. Investors compete for the limited funds available by means of the price at which they offer to exchange the debt title for dollars. The dollars are then exchanged by the Central Bank for Australes at the financial exchange rate. There is no net use of Central Bank dollars in the operation since the Central Bank is really giving Australes in exchange for the debt title. The investor, however, may have purchased the dollars with which to buy the debt title from the foreign bank in the free financial market.

Not everybody can bid at the Central Bank's auction. Only those investment projects previously approved by the Ministry of Economics have access to the auction. Projects must be for new investments, not for the acquisition of existing assets. Only the acquisition of new machinery for the projects counts as investment and no funds are available for financing existing real assets (land or buildings). Finally, only 10 percent of working capital is subject to this type of financing.

Assuming the investor was able to purchase the debt title at 30 percent of par, the 70 percent discount will be shared between the Central Bank and the investor depending on the final auction price. The investor will not accept anything less than 30 percent and the Central Bank will not pay more than par. Where the price will settle will depend on whether there is enough competition among investors for the fixed quotas to be auctioned. The new regime is instrumented as an investment subsidy, something that one could hardly recommend at a time when reducing the size of the government deficit has the highest priority.

As of June 1988, there have been three auctions for a total cash value of US$160 million. Debt rescued amounted to US$323 million of face value. The average price paid was therefore 49.5 percent of par. The price, however, decreased in each successive auction indicating an increasing degree of competitiveness in the process. The prices paid at each auction were 64.3 percent (January 20), 46.1 percent (March 29) and 42.3 percent (June 10).

The profits to the local investors participating in this operation are huge. For the average price of 49.5 percent paid at the auctions, the investor put 10 Australes to buy US$1 with which to obtain US$3.33 of face value of debt. This debt was sold to the Central Bank for US$1.648 which were paid in australes, so the investor received 16.48 australes in return for his initial investment of 10 australes. The subsidy was 64.8 percent.

Our general assessment of the debt-equity swap regime in Argentina, which is based on the fact that the government does not have genuine funds to carry out this operation, is that it offers very limited possibilities for reducing significantly the debt problem. Any success in rescuing debt will be made at the expense of further deterioration of the almost non-existent internal financial market and in the internal economic situation.

The purpose of the scheme should be to rescue as much external debt as possibly with the limited funds of the government. Instead of sharing the discount on the debt with the foreign (or domestic) investor, the government could have used those Australes to purchase one dollar in the financial market and use it to rescue US$3.33 of face value of debt in secondary markets.

The above operation is not allowed by the sharing clause, but there are ways around it. The debt equity swap is one of those ways, although inefficient. Another is the strategy of the New Mexican Bond analyzed before. If the government does have one free dollar purchased on the financial market, it can be used as collateral for a new bond to be exchanged, without intermediation, for outstanding debt titles. As shown in the previous analysis, it is possible for this operation to reduce the face value of debt by an amount close to that of a direct buyback.

6. Tying Debt Service to Export Performance

With minor, but well specified, efforts of internal fiscal adjustment, Argentina's trade surplus could settle at sustainable levels of the order of US$3 billion (the average trade surplus during 1982-86 was US$3.26 billion) an increase over the disappointing outcome of 1987. However, if the full service of the debt is claimed by creditors, Argentina may not have incentive to instrument policies that would attain that trade surplus. It is difficult to provide any incentive to generate a trade surplus for paying interest of a debt that carries a discount of about 60-70 percent in the market. It would be much more profitable for the government to use those dollars to repurchase their debt at 30-40 percent or simply continue with a wait-and-see attitude, paying minimal amounts and observing the discount on their debt rise even further.

Significant new flows of capital will not go to a debtor country unless its debt is fully serviced. From this perspective, a country that cannot fully service its debt gains very little by making partial payments and allowing the rest to accumulate in a growing debt. We observe, therefore, the debt growing because of unpaid interest, debtors making no efforts to improve their external balance, and finally, and worst of all, a virtual end to the process of voluntary capital flows to these countries.

A solution to the debt problem requires that creditors have access to a fair share of the debtor's generation of foreign exchange and that the

debtor have the incentive to generate this foreign exchange. The rollover of unpaid interest serves none of these two purposes. A way out, in the case of public debts, would be to tie the contractual service payments on the debt to actual economic results in the debtor country, allowing for some type of sharing in both gains and losses by both creditors and debtors. An alternative would be total securitization of the country's public external debt, replacing the existing interest carrying debt by securities entitling the holder to a fraction of the country's exports.

This proposal was first described by N. Bailey in "A Safety Net For Foreign Lending", Business Week, January 10, 1983. A variation, linking payments to those things the debtor cannot control but are related to ability to pay (e.g. export prices rather than export value) is presented by Paul Krugman in "Financing vs. Forgiving a Debt Overhang: Some Analytical Notes", unpublished manuscript, MIT, January 1987.

Under the former alternative, securities could be issued entitling the holder to a stipulated fraction of the country's exports during a given number of years. In the case of Argentina, a number in the order of 20 percent of exports during 15 years seems adequate for the present value of the offer to equal the actual market value of the debt. This calculation does not take into consideration the increase in exports that might take place because of the improvement in the incentives to expand trade given by the scheme.

There are several advantages to this scheme. First, since contractual payments are based on actual exports, the country will have the foreign exchange to pay (or claims to it if the exports were credit financed). Second, the country is entitled to keep, say, 80 percent of any improvement in the trade surplus that comes about through increased exports as compared with nothing in the actual status quo. Third, creditor countries will have a clear incentive to implement policies allowing debtor countries to increase their exports to them. Fourth, as guarantee to this global debt-equity swap, an adjustment package, probably under the supervision of multilateral institutions could be implemented in order to foster trade liberalization and export promotion in the debtor countries.

There are also some disadvantages. This package should stipulate conditions on fiscal behavior making it compatible with the payment mechanism. In the case of Argentina, the government should generate fiscal surpluses allowing it to purchase the foreign exchange with which to pay for the dividend on the securitized debt, something that has not happened in any of the last seven years. This has the disadvantage of requiring a lot of flexibility in the budget process. An export boom would require the immediate generation of a budget surplus.

There is also the added disadvantage that the debtor country may choose to generate the fiscal resources by means of an export tax equal in value to the service stipulated as a fraction of exports. While this would be the optimal tax with which to finance a transfer stipulated as a fraction of exports, it would work against the goal of freer trade as well as make the whole package less attractive to creditors to the extent that exports would be less than otherwise. On the other hand, granting creditors the right to collect a stipulated export tax reduces the probability of lack of payment because of a fiscal imbalance in the presence of an export boom.

The Value of a Share in Argentine Exports

We now present an estimate of the market value of an equity entitling the holder to a certain fraction of the value of the exports of Argentina during a certain number of years. To do that one needs a model to project exports during the given period as well as an interest rate with which to discount the flow of payments.

Figure 1 shows the value of Argentina's exports since 1938 in constant 1987 dollars. The constant dollar series was obtained by deflating nominal values by the US WPI, base 1987=1. The variables that best explain the annual behavior of real exports (in constant dollars) for the period 1939-1986 are the country's terms of trade (TT) and real GNP. The results of the estimated equation are given in Table 1.

Table 1: REGRESSION RESULTS ON ARGENTINE EXPORTS

EXPORTS (1987 dollars) = -8.56 + 0.669 * TT + 1.0022 * GNP
(T Value) (-3.4) (2.96) (3.21)

AR(1) = 0.7882 (first order autocorrelation coefficient)
(8.06)
R2 = 0.846
Adj.R2 = 0.836
D.W. = 1.976
F.Stat.= 77.39
Annual data, 1939-86.

All variables are expressed in natural logarithms. The regression was estimated using Two Stage Least Square estimators in order to correct for the endogeneity of GNP. The instrumental variables used were: GNP(-1), TT, TT(-1), Exports(-1).

We estimate that at the end of 1987 the terms of trade will end up being about 10 percent higher than the last recorded data for 1986. In our simulation we assume that TT remains at this estimated value for the whole of the period being simulated.

The historical growth rate for GNP during the period 1938-86 was 2.6 percent annually. We use, however, alternative assumptions of GNP growth for the simulation period, ranging from 0 percent to 4 percent. Since we are interested in projecting exports at constant 1987 dollars, it is proper that we compute the present value of future payments using the real interest rate as opposed to the nominal interest rate. In our simulation we use alternative values for the real interest rate ranging from 3 percent to 6 percent annual.

Table 2 shows the present value of a stream of payments consisting of 20 percent of Argentina's exports during a 15 year period. It is assumed that the terms of trade remain at the 1987 levels (among the lowest in the

Figure IV-1


Real Exports of Argentina
11
10
9
8
7
6
5
4
3
2
1918
1938
1946
1953
1958
1963
1968
1973
1978
1983

last 50 years) and exports are projected using the regression in Table 1 plus the (constant) terms of trade at the 1987 level and the range of rates of growth for GDP indicated in the Table. The real interest rate used to discount the flows is allowed to vary between 3 percent and 6 percent.

Table 2: PRESENT VALUE OF 20 PERCENT OF ARGENTINE EXPORTS DURING 15 YEARS
(Billions of dollars. Terms of Trade remaining at 1987 level)

GDP GROWTH	REAL INTEREST RATE 3%	4%	5%	6%
0.0%	17.0	16.0	15.1	14.3
1.0%	18.4	17.2	16.2	15.3
2.0%	19.8	18.6	17.5	16.5
2.6%	20.8	19.4	18.3	17.2
3.0%	21.4	20.1	18.8	17.7
4.0%	23.2	21.7	20.3	19.1

Source: Author's estimates.

At 30 percent of par, Argentina's debt of US$56.5 billion would be worth about US$16.9 billion. In present value terms, this is equivalent to a certain entitlement of a 20 percent share of the country's exports during 15 years, assuming it grows at 2 percent per year and the real interest rate is 6 percent. This estimation assumes no structural change in the export generating process and a growth rate of GNP lower than the historical average of 2.6 percent.

The exports projections used above are probably downward biased as the regression on which they are based included the period 1982-86. During this period exports fell significantly, partly on account of the highly unstable internal economic situation and the rapidly falling terms of trade. If the debt problem is solved in that the proper incentives are given so as to produce foreign exchange and the adjustment program is even marginally successful, exports should be higher than the values predicted by our regression.

V. CONCLUSIONS

While the foreign debt of Argentina was originated equally by the private and public sectors, the responsibility for servicing most of it has been taken by the public sector. Only about 8 percent of the outstanding debt is now owed by the private sector, this being mainly trade credit lines.

There are two main problems with servicing the public sector's debt. One relates to the ability of the public sector to generate a surplus in domestic currency to service all its internal and external debt. The second problem relates to the ability of the economy to generate the foreign exchange so the domestic resources freed by the public sector surplus can be transferred to foreign creditors.

Using the concepts once developed by Harry Johnson, we may refer to the first problem as one of "expenditure reducing" while the second is an "expenditure switching" problem. It is clear that a debtor must reduce expenditure below income if he is going to serve his debt. Then, the income not spent must be transformed into the merchandise that creditors will accept.

Since 1981, the deficit of Argentina's public sector has exceeded the foreign interest due. This means that the debtor has not freed any resource to service his debt. Some interest was, however, paid during those years thanks to the use of the inflation tax and increased internal debt that induced the private sector to generate the expenditure reduction not done by the public sector. As a consequence, the country was able to generate trade surpluses that averaged US$3.26 billion per year during the period 1982-86.

The internal deficit deteriorated in 1987 and with it the situation in financial markets. The end result was that the private sector was unable to generate any significant amount of forced savings and, consequently, the trade surplus fell significantly to a level below US$600 million. Perspectives for generating again a trade surplus similar to that of 1981-86 are not good unless a significant fiscal adjustment takes place. Currently the situation can be characterized as one where the public sector has totally crowded out the private sector in financial markets and in the process generated real interest rates that in the last two and one-half years have averaged 30 percent annually, well in excess of the marginal productivity of capital. In response to those high real interest rates, investment per capita stands at about one-half of the levels reached during 1978-81.

With the government unable to extract more resources through increased internal debt, fiscal deficit in 1987 stands dangerously close to the maximum that can be financed through the inflation tax and, therefore, the economy remains at the verge of hyperinflation.

While there is room for negotiation of the size and level of interest rates on the external debt, as well as for mutually agreeable exchanges of assets, no substantial agreement can be reached until the debtor has something to give in exchange. The actual state of Argentine public sector finances does not reflect what could potentially be done and in consequence, creditors are reluctant to start any negotiations that take the actual situation as the normal state of affairs.

Argentina has the potential to generate trade surpluses enabling the country to serve a substantial part of its external debt. The rest will have to be written off. Those surpluses will not be generated in a sustainable way, however, until the government does not adjust its revenues and expenditures to levels consistent with the amount of debt service to be finally agreed upon.

Regarding the actual method for implementing a reduction in debt burden, market prices for debt in secondary markets can be a misleading indicator of the country's ability to pay to the extent that they may be affected by the expectation of future developments, including the discussion over the debt relief strategy itself. Debtors can also affect market prices in their favor prior to a negotiation just by showing an unwillingness to pay or generating trade surpluses that are below the country's true potential.

Based on the above, if a phased exchange of debt for other assets or claims of the debtor country is to be implemented, it should be done at predetermined prices, rather than at those prices prevailing at the time each asset exchange is made.

Regarding what assets can be actually exchanged, debt-equity swaps are not an attractive option for the Argentine case. The reason is that the main debtor is the government and it does not want to give any of its assets or public enterprises in exchange for its debt. It therefore resorts to printing money, or internal debt to acquire real assets to give in exchange for the debt. This is a very roundabout method, and most likely it will produce little debt reduction for each dollar of government investment. The reason being that the discount on the debt must be distributed among the government and the various intermediaries in this process.

A more viable alternative is that of a negotiated write off in the face value of the outstanding debt or of a reduction in the contractual interest rate. Exchanging debt for claims to a fraction of the country's exports is attractive to the extent that it helps in inducing debtors to generate foreign exchange as compared with the current situation where any extra foreign exchange earned must go to decrease the amount of interest being rolled over.

REFERENCES

Bailey, N. (1988) "A Safety Net for Foreign Lending," Business Week, January.

Carta Economica, Edited by M.A.Broda y Asociados, various issues.

Dornbusch, R. and De Pablo, J.C. (1987) "Debt, Inflation and Growth: The Case of Argentina," unpublished manuscript, M.I.T. December.

Dooley, M. (1988) "Market Discounts and the Valuation of Alternative Structures for External Debt," forthcoming in IMF Staff Papers.

Fernandez, Roque (1987) "Debt Transactions in Secondary Markets," manuscript, C.E.M.A., Buenos Aires, April.

Fiel, Indicadores de Coyuntura, various issues.

Krugman, P. (1987) "Financing vs. Forgiving a Debt Overhang: Some Analytical Notes," M.I.T. manuscript, January.

Lamdany, R. (1988) "Some Simple Arithmetic on the Mexico Deal," Office memorandum, World Bank, DFS January.

Rodriguez, C.A. (1987) "Argentina's Foreign Debt: Origins and Alternatives," paper presented at the Conference of Latin American Debt Issues, organized by the Un. Catolica de Chile, December.

_____. (1988a) "The New Mexican Bond," unpublished manuscript, IMF Research Department, January.

_____. (1988b) "The Strategy of Debt Buybacks: A Theoretical Analysis of the Competitive Case," IMF Working Paper No. 88/20, Research Department, January.

APPENDIX A

The Process of Renegotiation: 1981-87

Foreign debt, and its service, became a visible problem in Argentina after March 1981, when the new economic team led by Minister Sigaut took place. The change in administration and the expectation, later confirmed, about the abandonment of the exchange rate rule sustained during the previous years generated speculative capital outflows that substantially depleted the reserves of the monetary authority. After the peak of US$10.1 billion of 1979, gross reserves of the Central Bank decreased to a low US$3.7 billion by the end of 1981.

Minister Sigaut attempted to maintain convertibility of the currency by means of two policies: successive macro-devaluations and offering incentives for the renegotiation of debt services coming due. As it was explained in the last section, this policy led to a substantial transfer of debt from the private sector to the public sector. This experience marks the first important attempt to renegotiate the country's external debt based on indirect renegotiation guidelines set by the Central Bank. These guidelines referred mainly to required term extensions on obligations coming due and being renewed under the incentive scheme of the FEI system.

Developments in 1982

A new economic administration (Minister Alemann) assumed in December 1981. The South Atlantic conflict (April 1982) substantially disrupts the Argentine economy. Convertibility of the currency is suspended, the country suffers a trade embargo, and service of the debt is temporarily suspended. Arrears started accumulating and, by June 1982, total arrears amounted to US$3.7 billion, an amount that was reduced to US$2.5 billion by December 1982.

At this time, June 1982, new economic authorities (Minister Pastore and Central Bank President Cavallo) restored the Foreign Exchange Insurance system. Those contracts coming due out of the US$5 billion in FEI insurance given during 1981 were renegotiated (introducing the BONOD and Promissory Notes) and an additional US$5 billion were granted. This provided a total refinancing of about US$10 billion. Authorities also resorted to two additional instruments that already existed but had not been widely used: foreign currency swaps and new issues of BONEX.

(1) Swaps. Swaps were used first in December 1981 when the incentives given by the Central Bank induced private short-term inflows (180 days) in the amount of US$500 million. Generous terms were again offered in July 1982. Basically, the Central Bank would buy the foreign exchange proceeds of the swap at the high financial rate and guarantee to sell at maturity, part of the foreign exchange at a lower preferential rate. By December 1982 total swaps stood at US$1.4 billion. As the swaps started to come due, the Central Bank did not have the reserves to face payment and

resorted to forced renegotiation. Since then, the outstanding stock of swaps has been gradually reduced, reaching US$640 million by December 1986.

(2) BONEX. These are internationally traded obligations of the Argentine government issued in dollars and various denominations. The government has an unbroken tradition of paying regularly for their interest and amortization. Even though since 1982 they sell at a discount in the market, this discount is substantially lower than for other types of Argentine marketable foreign debt. The regularity in their service is without doubt one factor contributing to their relatively good market performance. Another factor is that BONEX have wide acceptance among Argentinians, who use them to arbitrage operations between the legal and parallel foreign exchange market, and as legal collateral for private loans.

As a consequence of the debt crises, BONEX started selling at discount since mid-1982 and the government resorted to various incentive schemes to guarantee acceptance of new issues at par. One of them, not really much of an incentive, was the mandatory cancellation of profits remittances, as well as royalties and dividends, through BONEX, this being in effect since April 1982. At times BONEX have been also sold at preferential exchange rates. During 1982, a total of US$1.6 billion were issued. The stock of BONEX rose to a maximum of US$2.47 billion by 1984 and, since then, it has stabilized at around US$2.0 billion. Although there are no legal constraints on issuing new series of BONEX, authorities have been conservative in this respect, by not aiming at inducing falls in the parity of these instruments in response to new issues.

BONEX, swaps and arrears became the principal source of net financing during 1982. Joint financing with those three sources amounted to US$5.0 billion for the year. The other significant source of net financing was a fall of US$700 million in reserve assets.

Total gross financial requirements emerging from the foreign debt for the year 1982 were US$19,526 million (US$14,600 million amortizations and US$4,926 million interest). Other than the four sources mentioned above (BONEX, Swaps, Arrears and Reserves), that produced US$5.7 billion, authorities relied on the renegotiation of private debt under the FEI system and also intervened directly in the negotiation with creditors by obtaining a bridge loan for US$1.1 billion. This loan was negotiated in the context of the Contingency Credit asked to the IMF, that would be delivered in 1983. The final agreement was signed on the last day of 1982 with 263 financial institutions participating in the loan. Funds started to be delivered in 1983.

Authorities began negotiation of medium-term credit with a syndicated group of 288 banks in the amount of US$1.5 billion. They were also able to start negotiations on a rescheduling package for about US$6 billion of public debt coming due in 1982 and 1983. Finally, the country had the real source of US$2.5 billion produced by the current account (net of interest service) and an additional US$1 billion in direct foreign investment. Table A1 summarizes the sources of funds obtained during 1982.

Table A1: SOURCES OF FUNDS DURING 1982
(US$ millions)

---

(1) SWAPS = 896
(2) BONEX = 1,583
(3) ARREARS = 2,540
(4) FEI = 9000 (Estimate of rescheduling obtained in private debt)(*)
(5) CURRENT ACCOUNT (NET.OF.INT.) AND DIR.F.INV.= 3,500
(6) RESERVE ASSETS = 715
(7) OTHER SOURCES= 640

TOTAL FUNDS AVAILABLE= 18,874
TOTAL REQUIREMENTS= 19,526 (Amortization: 14,600 Interest: 4,926)

Source: Central Bank Memories, Argentine Economic Memorandum and IMF, RED 1984.

(*) Amortizations in private debt due in 1982 were US$7.34 billion and interest due that year was estimated in US$1.7 billion (equal to 0.345 share of private debt in total debt as of 1982 times total interest due), for a total due of US$9 billion. We estimate that the amount was rescheduled thanks to the outstanding US$10 billion in FEI contracts.

Table A1 is as close as we can come to describing the gross flows of financing the foreign debt during 1982, the year the debt crisis started. Continuous ex-post revisions in the values of the different items preclude us from deriving at an exact description of the flows of funds involved.

Developments in 1983

This was a complicated year in Argentina as general elections were called for the month of October, the first in 10 years. Nonetheless, a Stand-By Agreement with the IMF was signed in January. The agreement provided fresh funds in amount of SDR 1.5 billion to be used between January 24, 1983, and April 23, 1984. It also provided an additional SDR 520 million as a compensatory loan for fall in exports. Overall, IMF funds were used in amount of US$1,221 million during the year of 1983.

In that year, about one half of the total debt was due to come for amortization. Exact numbers are not available, since the debt reported in the Memoria del Banco Central for December 1982 is US$38.9 million, whereas, after the 1983 revision this debt jumps to US$43.2 million. Political conditions were not set for a comprehensive renegotiation as the new authorities to assume in December announced their intention to revise everything that was done in the context of acquiring and renegotiating the debt.

An agreement was reached with a syndicate of 288 banks for a medium-term loan of US$1,500 million. In November the first trench of the loan was delivered in an amount of US$500 million. The money was used to cancel part of the Bridge Loan of US$1,100 million obtained in December 1982 and to cancel part of the arrears in the public sector.

Public sector debtors were instructed by the Central Bank to renew their obligations coming due on a quarterly basis. In general, the renewals carried a rate of LIBOR plus 2-1/8 or, alternatively, a plus of 2 percent over prime rate. Work started on the preparation of refinancing packages for public sector debt. The renegotiation of the debt of the State Airline, Aerolineas Argentinas, became the model expected to generalize to the rest of the public sector debt. However, a court order stopped the execution of any refinancing deal pending a global revision of the debt situation by the new authorities.

Overall, rescheduling of amortizations continued along the path set in 1982 with regards to private sector debt.

The current account deficit of US$2,461 million plus the capital account deficit of US$111 million required compensatory financing of US$2,572 million. Net inflows to cover this amount came basically from four sources: (1) accumulation of arrears by US$682 million, (2) IMF disbursements of US$1,178 million, (3) new issues of BONEX by US$492 million and (4) US$1,250 million from deliveries of US$500 million of the medium-term bank's loan and US$750 million of the 1983 Bridge Loan. These four items provided compensatory financing of US$3,603 million. The excess of US$1,031 million was partly spent in the devolution of blocked funds of US$387 million, a change in Reserve assets net of valuation adjustments of US$191 million and a few other minor items.

The changes in gross reserve assets and valuation adjustments recorded in this year's balance of payments require some additional explanation. Up to 1983, the Central Bank counted as reserves some deposits at the Banco Nacion branch in New York in an amount close to US$1.2 billion. The proceeds of these deposits, however, had been lent to public sector firms in Argentina. In 1983 the Central Bank eliminated that amount from its gross reserves assets. The loans to the public enterprises as well as the deposits at the Banco Nacion were recorded as domestic operations. To avoid the sharp fall in reserves that this elimination of deposits at Banco Nacion would imply, the Central Bank resorted to revaluation of its gold stock, from US$42 to US$325 the fine ounce. This revaluation implied an increase in reserves of US$1236 million, an amount quite similar to the loss in reserves due to the downgrading of the Banco Nacion deposits.

The maturity structure of Argentine debt at the end of 1983 shows an improvement over 1982, but still maintains a significant concentration in the very short term (one year or less). Against a total debt reported for the end of 1983 of US$45 billion, there were US$15.8 billion in amortization payments coming due during 1984. In addition, there was the additional burden of the interest service of US$5.5 billion for the year.

Developments in 1984-86

After the virtual impasse of 1983 regarding debt negotiations, the newly elected government took power in December 1983. At this time both the new government and the creditors were fully conscious of the need for a comprehensive solution to the debt problem. This solution should necessarily start by defining the negotiating teams. In this respect, Congress allowed the Executive Branch of Government to conduct negotiations. The commercial

banks are represented by the Steering Committee, led by Citibank, and several bilateral loans began negotiation within the context of the Paris Club.

During this period, efforts were conducted mainly on two fronts: rescheduling of debt and the provision of refinancing for unpaid interest and arrears.

(a) Rescheduling of the Principal

Those three years were marked by the effort of the new elected administration to negotiate the rescheduling of the country's debt as well as to obtain new funds to cover for unpaid interest. Those efforts were made in the face of a complicated internal economic situation that put the country at the verge of hyperinflation by mid-1985, giving rise to the stabilization plan of July 1985 that, with minor modifications, is still being applied as of September 1987.

A Stand-By Agreement was signed with the IMF on December 28, 1984. In the first quarter of 1985 it was observed that the conditions on which the Stand-By Agreement was contingent were not being fulfilled. The Stand-By was set for revision, and final agreement was obtained in July 1985, parallel to the announcement of the new stabilization plan.

An important rescheduling package began negotiation with the debtors in 1984. The package was finally agreed upon in January 1985 with the Paris Club and in August 1985 with the commercial banks. It provided for rescheduling of of US$13.3 billion in debt due through the end of 1984 and US$3.6 billion falling due in 1985. Table A2 reports the main amounts and creditors with whom the rescheduling was obtained.

Table A2: DEBT RESCHEDULING IN 1984-1985

	INTEREST	PRINCIPAL	TOTAL
PARIS CLUB	699	1,438	2,137
Due in 1884	397	919	1,316
Due in 1985	302	519	821
COMMERCIAL BANKS	-	14,168	14,168
Due in 1984	-	11,457	11,457
Due in 1985	-	2,706	2,706
OTHER CREDITORS	-	633	633
Due in 1984	-	543	543
Due in 1985	-	95	95
TOTAL RESCHEDULING	699	16,239	16,938
Due in 1984	397	12,919	13,316
Due in 1985	302	3,320	3,622

Source: IMF, RED 1986.

The new agreements substantially reduced the short-term burden of amortizations. Whereas, amortizations scheduled for payment during 1984 were US$15.7 billion, the new structure, as of the end of 1985 provided for payments on account of amortization and arrears of US$10 billion during 1986 and US$6.3 billion for 1987. This information is based on provisionary data reported by the 1985 Memoria del Banco Central.

Further rescheduling continued during 1986. The External Debt Department of the Central Bank reports the maturity structure of the debt as of September 1986 as that shown in Table A3. Out of a total debt of US$51.7 billion, as of September 30, 1986, 53 percent fell due within three years.

Table A3: MATURITY STRUCTURE OF EXTERNAL DEBT AS OF SEPTEMBER 30, 1986

	STOCK Sept/1986	Payments due in: 1986	1987	1988	1989	1990	REST
MULTILATERAL	5,441	216	905	771	976	811	1,762
BILATERAL	5,189	804	602	536	597	515	2,135
BANKS	34,361	5,842	5,577	3,326	2,425	2,088	15,103
BONDS	3,609	113	722	629	636	618	891
OTHER	3,104	1,230	1,129	211	124	120	290
TOTAL	51,704	8,205	8,935	5,473	4,758	4,152	20,181

Source: External Debt Department, Central Bank, June 29, 1987.

Since the Current Account of Argentina had no perspective to turn positive in the short run, it was obvious that the maturity structure of the debt as of 1986 would still have to be renegotiated.

During 1986 a serious attempt was made to solve the two basic problems with the service of Argentine debt. The first problem was to find genuine funds to avoid the rollover of the unpaid interest and, therefore, of a growing stock of debt. The second problem was to obtain a global refinancing agreement that would give a realistic profile to the maturity structure of the debt. Some answers to those two problems are to be found in the agreement reached with the commercial banks, finally signed on August 21, 1987, which will be later discussed.

(b) Paying for the Interest

During 1984-86, the accumulated deficits in the current account amounted to US$5.98 billion. The capital account provided fresh funds in the amount of US$1.56 billion, making for a total financing need of US$4.42 billion.

During this period the country received net compensatory financing from the IMF, Paris Club and banks for US$7.53 billion. Out of this net inflow the country paid arrears for US$2.74 billion and accumulated gross reserves for US$1.26 billion. This provided net financing in amount of US$3.53 billion. The difference between the needs of US$4.42 billion and the net financing of US$3.53 billion comes out of other minor accounts of the balance of payments, including US$868 million of items denominated Previous Period Adjustments. Table A4 summarizes the net flows of funds during the 1984-86 period and compares them with those of the period 1981-83.

Table A4: COMPARATIVE FLOWS OF FINANCING
DURING 1984-86 AND 1981-83

	1984-86	1981-83
NEEDS OF FINANCING		
Current Account	-5,985	-9,533
Capital Account	1,560	-2,764
Total Financing Needs	4,425	12,297
SOURCES OF FINANCING		
Reserve Assets	-1,256	2,768
BONEX and Swaps	-662	3,224
Arrears	-2,378	3,222
IMF	1,115	1,178
Paris Club	2,514	--
Commercial Banks	3,904	1,250
Previous Period Adjustments	868	--
Other	320	655
Total Sources of Financing	4,425	12,297

Source: Argentine Economic Memorandum: Balance of Payments 1981-87.

The frequent changes in parity values between the major currencies and their effect on the value of the country's debt make it impossible to trace the relation between the net financing flows and the actual change in the stock of debt. It is clear, however, that the country's creditors supplied the bulk of the funds required for the financing of the current account deficit. Between the IMF, Paris Club and commercial banks, fresh funds in excess of cancellation of arrears amounted to US$4.79 billion for the period, enough to finance 80 percent of the current account deficit for the period.

One should also note that BONEX and Swaps were not a source of financing during this three-year period. Actually, the combined stock of debt on account of BONEX and Swaps was reduced by US$662 million.

The substantial cancellation of arrears during this period brought the stock of outstanding arrears to only US$485 million, the lowest value since the debt crisis started in 1982 and considerably lower than the maximum value of US$4.1 billion reached at the end of 1984.

The 1987 Financial Plan

Between 1982 and 1987 the country "muddled through" the debt problem. The details of the negotiations conducted during this period are discussed in the Appendix. During 1987 authorities developed an ambitious program regarding the external sector. The program was structured around a Stand-By Agreement with the IMF and important negotiations with the commercial banks regarding debt rescheduling, new money flows and the development of alternative instruments for the servicing of the debt.

A Stand-By Agreement was reached with the IMF in February 1987. Execution of the Stand-By was conditional on the commercial banks agreement to participate with new funds of US$1,950 million. Such an agreement was finally obtained in August 1987.

The Stand-By Agreement provided for total support of SDR 1113 million plus SDR 388 million under the Compensatory Financing Facility. A total of US$1,380 million was to be delivered during 1987.

The agreement reached with the Working Committee (representing the commercial banks) is the most comprehensive reached to date. Basically it covers three areas:

(1) Provision of new funds in amount of US$1,950 million.

(2) Substantial rescheduling of the debt with commercial banks.

(3) Creation of the Alternative Participation Instrument (or Exit Bond) and instrumentation of a Debt-Equity Swap Regime.

(1) Provision of New Funds

Total funds agreed amount to US$1,950 million. Of these funds, US$1,550 million come from the Term Credit Agreement and US$400 million from the 1987 Trade Credit Facility. Delivery of the Funds is stipulated in trenches coinciding with the four agreed conditional drawdowns under the 1987 IMF Arrangement. First delivery of US$750 million was scheduled for the month of September. Second delivery of US$500 million was scheduled for October. The last two deliveries of US$550 million and US$150 million were scheduled for December 1987 and February 1988. From the second delivery onwards, they are conditional on the fulfillment of the conditionalities agreed with the IMF under the Stand-By Arrangement.

The agreement accepts the use of LIBOR rate for all obligations denominated in US dollars. For the new funds provided, the spread over LIBOR

is set at 7/8 percent for the US$1,550 million of the Term Credit Agreement and 13/16 percent for the US$400 million of the Term Credit Facility.

(2) Debt Rescheduling

The Agreement provides for rescheduling of all public debt contracted on or before December 9, 1982, and of most of the remaining private debt with amortization payments coming due from January 1, 1986 onwards.

Refinancing of public debt covers about US$26 billion being rescheduled to a 19 years maturity and an additional seven-year grace period. Payments of principal are scheduled to be made in 25 installments, beginning on May 1994 with an amortization rate of 1 percent and ending on May 2006 with an amortization rate of 7.5 percent. Over the 25 installments, the amortization rate rises gradually, from the low of 1 percent in the first installment to the highest of 7.5 percent in the last. The prime rate is eliminated for the dollar obligations and replaced by the LIBOR or the cost of medium-term (90 to 180 days) certificates of deposit (Domestic Rate Option), both with an additional premium of 13/16 percent.

Private debt with or without FEI, including Swaps, maturing on or after January 1, 1986, is subject to refinancing under conditions similar to those of the refinanced public debt. Excluded from this refinancing are loans or extensions of credit granted after December 9, 1982. The Government becomes the guarantor of the agreements by means of the issuance of notes. Table A5 details the schedule of payments of principal under the new agreement.

Table A5: NEW AMORTIZATION SCHEDULE OF ARGENTINE SYNDICATED DEBT

Semester	% of Amortization per Semester
1-14	0.00
15-16	1.00
17-18	1.50
19-20	1.75
21-22	2.00
23-24	2.50
25-26	3.00
27-28	5.00
29-30	5.25
31-32	5.50
33-34	5.75
35-36	6.00
37-38	7.00
39	7.50

Source: _____

The agreement also provides for the issuance of a new Consolidated Note (CN) to replace the wide range of debt titles previously in circulation. The issue of this Consolidated Note was finally regulated by the Argentine Government on November 16, 1987. The CN will be exchanged for the previous debt titles at stipulated dates upon the request of the creditor. The new CN carries an interest rate of LIBOR plus 13/16 or, at the option of the creditor, the dollar CD rate for deposits of 180 days plus 13/16. Creditors must choose one of the interest options and cannot change it afterwards. Basically, the new CN respects all of the terms reached with the commercial banks under the 1987 Guaranteed Refinancing Agreement and the 1987 Refinancing Program for Argentine Private Sector Borrowers. Therefore, we do not foresee any impediment to the banks' signatories of that agreement eventually transferring all of their debt titles into the single Consclidated Note.

Creditors can sell or transfer the CN only to "foreign financial institutions" (Decreto Reglamentario de Consolidacion del Banco Central, November 16, 1987), although these institutions may have representations in Argentina. As we will see, this restriction is fundamental to the workings of the Debt Capitalization Regime which was instituted in October 1987. The Central Bank of Argentina must be given notice of the transaction, name of the new holder of the CN and bank account were payments have to be made. Those CN given as collateral for private sector debts can only be transferred to the original Argentinian debtor.

(3) Alternative Participation Instrument (Exit Bond)

This is the first instrument to provide for some reduction in the burden of the debt other than the rescheduling of payments and the reduction of spreads. It allows small banks that do not want to continue participating with additional funds to exchange their old instruments for this new Exit Bond. Although the exchange of principal is made at par value, there is an important reduction in the burden of the debt since the interest rate stipulated in the Exit Bond is substantially smaller than the prevailing rates at which the rest of the debt was renegotiated.

The new Exit Bond has a maturity of 25 years with a 12-year grace period and pays a fixed interest rate of 4 percent annually, payable semi-annually in arrears. The contractual agreement with Commercial Banks stipulates that Exit Bonds subscription by each creditor bank is limited to a maximum of US$5 million. Given the current value of Argentine debt in secondary markets, the Exit Bond does not seem to be an attractive option for the banks.

Present Market Conditions

Significant reforms in the financial markets were introduced in mid-October 1987 simultaneously with the started negotiations with the IMF aimed at obtaining a waiver on the Stand By Agreement in effect since July. Most interest rates were allowed to be determined by market forces, although there still remains substantial intervention of State Banks (belonging to the National or Provincial governments) through their borrowing or lending operations. A free floating foreign exchange market for financial transactions was instrumented. There are no restrictions for operation in

this market for individuals or institutions. The gap between the black market exchange rate and the official rate that was in excess of 40 percent in September was reduced to about 13-15 percent by mid-November (this time being measured by the gap between the Financial and the Commercial rates) and rose again to the 30 percent (plus) level by mid-December as internal economic conditions continued deteriorating.

The large foreign exchange gap that prevailed in the period July-October was the primary reason for the complete failure of the Debt-Equity swap regime instituted in July 1987 (to be discussed in detail in Section IV). The reason was that under this system the foreign debt was converted into Australes at the official exchange rate and, given the high black market premium, it turned out to be more profitable to sell the debt at discount for dollars and then exchange those dollars in the black market obtaining, in that way, more Australes than with the legal capitalization regime. No transactions were carried out under this regime and it was abandoned for a new Debt-Equity Swap regime regulated through Com. A1109 of the Central Bank, dated October 28, 1987. In this new regime, to be described in detail later, debt being repurchased is transferred into Australes at the financial exchange rate.

Transfers of Dividends and Royalties (regulated by the Law of Foreign Investment) can also be made through the financial foreign exchange market. Previously they could only be made by purchasing BONEX (Dollar denominated bonds issued by the government) at par, which in fact implied a loss of about 20-25 percent on the dollar.

APPENDIX B

Pricing the Argentine Syndicated Debt

From the beginning of the debt crisis (mid-1982) until 1986, Argentine debt with commercial banks traded at about 65 percent of par value, even though few transactions were actually made. During 1987 this price fell to a level of around 30 percent. In this section we develop a simple model for the pricing of the Argentine debt that provides an explanation for this significant fall in the market price.

The model assumes that the market price of a debt title will be equal to the expected present value of the service stream that the title promises to yield. The expected service stream is equal to the contractual service stream times the probability that the payments will be made. We assume that this probability, at any moment, is expected to remain constant over time and denote it by Q. We further assume that Q is formed according to the recent behavior in the ratio of the current account net of interest to the contractual payments. This implies the market expects there will be no privileged creditors in the sense that all foreign exchange available will be distributed among creditors in strict proportion to the size of their credits. While this may not be necessarily the case in the future, is is apparently what the market expected during the period we analyze.

For the period 1982-1985, current account net of interest added up to US$12,850 million and contractual interest service was US$21,018 million. The estimate of Q for this period is then 61 percent. For 1986-87, the Current Account deteriorates sharply, yielding a current account net of interest of US$1,336 million, versus contractual interest payments of US$8,461 million. The estimate of Q for this period is then around Q=15.8 percent.

Argentine syndicated debt is structured to 19 years maturity, with semestral payments starting in the eighth year according to the schedule of Table 1. It pays semestrally the equivalent of LIBOR plus 13/16.

For the period 1982-85, syndicated debt was tied mostly to the US prime rate and, since no global rescheduling had been attained, we will assume for purposes of present value calculations that the amortizations were scheduled as they are at present. For that period, the average prime rate was 11.9 percent annual and Argentina paid a spread over prime of about 1.5 percent.

The formula we use for computing the expected present value of a dollar of Argentine syndicated debt is:

$$(1) \quad PV = Q\{ \quad (1 + Iarg + Ai) \times (1+I)^{(-i)}$$

where

PV: Market value of $1 of Argentine syndicated debt.
Iarg: Interest rate paid by Argentina (semestral).
I: Interest rate used to discount (Prime or LIBOR).
Ai: Amortization payment according to Table 1 (Ai=0 for the first 14 semesters).

For the period 1982-85 we use the following semestral values into Equation 1 in order to obtain the market price for the period:

VALUES 1982-85:

I=PRIME=5.95 percent (per semester)
Iarg=PRIME + Spread (24/32) = 6.7 percent (per semester)
Q = 61 percent.

With the above values, Equation 1 yields a market value of $1 of Argentine debt of 67 percent of par. This estimate compares very well with the estimated value of 65 percent that prevailed at the end of 1965. For the period 1986-87 we use the following values for the relevant parameters:

VALUES 1986-87:

I = LIBOR = 3.9687 (per semester, rate applying at the end of 1987)
Iarg = LIBOR + Spread(13/32) = 4.375 percent (per semester)
Q = 28 percent.

The estimated value of $1 of syndicated debt for the 1986-87 period is of 17 percent of par. This number is smaller than what the Argentine syndicated debt was trading at at the end of 1987. However, the market price kept falling and, by mid 1988, it traded at about 22 percent of par, a value much closer to our estimate. Table 5 summarizes the main results of the simulations.

We believe the above evidence is strong enough to justify the implication that the market valuation of Argentine debt has been highly related to the results of the foreign trade accounts rather than on other expectational factors like the probability of a politically motivated default. By no means, however, does our analysis suggest that this later type of consideration could not play a relevant role at a future time. So far, it seems reasonable to assume that the drastic fall in the price of Argentine debt in the secondary markets during 1987 is a reflection of the sustained deterioration in the trade surplus experienced since mid-1985.

Table 5: ESTIMATION OF THE MARKET VALUE OF ARGENTINE SYNDICATED DEBT

	1982-85	1986-87
PROB.OF PAYMENT= (C.Acct.Net of Int/Contract.Int)	61%	15.8%
CONTRACTUAL INTEREST RATE (per semester)	6.700%	4.375%
DISCOUNT RATE (per semester)	5.950%	3.969%
ESTIMATED MARKET VALUE	67%	17%
ACTUAL MARKET VALUE	65%	30-35% (22% in mid 1988)