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## **Financial Innovations: Solutions to the External Debt Problem in Latin America?**

by

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# **Financial Innovations: Solutions to the External Debt Problem in Latin America?**

**Marcelo E. Montero  
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It is increasingly clear that foreign debt is not likely to be repaid as scheduled unless its servicing is facilitated by a transfer of technology and resources, and the opening of international financial markets, and/or a significant reduction of the external debt obligations of debtor countries. Given a diminishing pool of resources available to the most indebted countries, new alternatives are needed. These alternatives fall into either of two categories: political solutions (such as debt relief or debt reduction), and innovative financial solutions. These financial innovations primarily include country funds, venture capital funds, and debt conversions (buybacks, capitalization, collateralization, debt-to-equity swaps,<sup>1</sup> debt-bond swaps, equivalent funds, and debt repurchasing funds).

This paper explores the economic arguments for and against financial innovations and evaluates selected economic impacts of these "solutions". Our objectives are two-fold. First, we examine how innovations (which originate in private financial markets in response to the development of secondary markets) operate and potentially contribute to solving the problem of excessive foreign debt. Second, we use economic efficiency and financial feasibility concepts to examine the motivations for a country to adopt a particular financial alternative such as debt-equity swaps.

## **Previous Studies**

Sachs (1986a, 1987, 1989) was one of the first economists to advocate the need for politically-oriented solutions, such as debt reduction and debt relief. Sachs analyzed the strategy supported by creditor governments regarding the debt problem (that is, servicing commercial bank claims by debtor countries). He pointed out the approach is unlikely to permit resumption of significant economic growth in debtor countries. Sachs asserts debt will not be repaid unless its servicing implies a transfer of technology and resources and opening of new markets for the exports of debtor countries and suggests two non-mutually exclusive approaches. One approach is debt relief, which implies partial or total forgiveness of principal and/or interest payments for those countries which have suffered large losses of income and living standards as a result of the debt crisis. The other approach is based on augmenting capital flows, allowing the entrance of new lenders on a senior basis.

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<sup>1</sup> Debt-to-equity swaps will be variously referred to as swaps, debt swaps, and debt-equity swaps.

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Bender (1988) examined several financial instruments and their usefulness in overcoming the debt crisis. He suggested a macroeconomic evaluation of the efficiency of financial innovations in reducing the debt burden. Bender's analysis of debt-equity swaps, debt-bond swaps, equivalent funds, and debt-repurchasing funds casts some doubts on the usefulness of financial innovations in restoring debtors' creditworthiness. The main problems these innovations face is the existence of significant negative side effects when monetary and fiscal requirements cannot be satisfied. Consequently, he suggests the need for structural adjustment programs in order for these instruments to make significant contributions toward resolving the debt problem.

Regling (1988) analyzed the inter-related nature of these financial innovations through a 'menu approach'. This approach was implemented in 1987 and offers a range of options to both creditors and debtor countries while encouraging continued participation by banks in the effort to overcome the debt crisis. It combines traditional financing modalities (currency denomination, interest rate options, interest retiming, on-lending and re-lending, new credit facilities, co-financing, debt conversion, and secondary market transactions) with more recent innovations (fees, alternative participation instruments, securitization, prioritization, interest capitalization, and debt buybacks).

Blackwell and Nocera (1988) focused on the analysis of economic impacts of debt-equity conversion. Although swaps may contribute to alleviate the debt burden by making debt servicing more manageable and new investment more attractive, they suggest there are still significant limitations imposed by fiscal and monetary considerations.

WIDER (1989) examined aspects such as the objectives, resource requirements, and techniques of debt reduction and the participation by banking creditors in the process. The link between these measures and policy reforms, and the incentives for new flows of funds to debtor countries through 'credit enhancement' techniques (e.g., guarantees of multilateral and bilateral lenders) were explored.

Borenztein (1989) provided an interesting theoretical framework to examine the effect of debt on investment. He argues that foreign debt affects investment through two non-mutually exclusive channels: debt overhang and credit rationing.<sup>2</sup> Debt acts as a foreign tax on current and future production which weakens the incentive to invest and encourages capital flight. Credit rationing arises because of the debtor's inability to gain access to international financial markets. Consequently, domestic interest rates will lie above international rates and adversely affect the level of investment in the country.

Finally, Van der Bijl (1990) focused on the most recent instruments, such as country, portfolio, and venture capital funds as they apply to developing countries. These funds consist of pooled investment vehicles developed by the International Finance Corporation (IFC).

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<sup>2</sup> Debt overhang occurs when, as a result of the debtor country's inability to honor its debt in full, debt-servicing is dictated by a negotiation process between the debtor country and its creditors (or a multilateral international financial institution) rather than by the contractual terms of the debt. Actual payments are determined by the debtor's economic performance. If this performance improves, creditors realize part of the return in the form of higher debt payments.

## Latin America's External Debt Problem

During the great lending rush of the 1970s, creditor institutions (mostly large commercial US banks) worried little whether it was riskier to lend to Argentina, Brazil, or Mexico. That is, "country risks" did not constitute a major source of concern. Financial analysts and economists have subsequently learned about the problems to be addressed in Latin America, a region that has been rapidly changing. In the 1990s, creditors will likely concentrate their resources in countries that have undertaken genuine liberalizing reforms and have consistently tried to honor their external debt commitments.

In this context, liberalizing reforms imply the rejection of the protectionist command economy model and adoption of a diversified, export-oriented strategy founded on deregulation, privatization of industry, and liberalization of trade and investment policies. These strategies are being implemented in countries such as Bolivia, Chile, Costa Rica and, more recently, Argentina, Brazil and Mexico. The countries that are likely to make the greatest advances in economic development in the 1990s will be those that have already implemented realistic economic policies and built a consensus favoring their maintenance. Once the international community is convinced that these substantial reforms will be meaningful and permanent, new money may naturally flow to these nations.

It is widely accepted that the best solution to the debt problem from a long-term perspective is an increase in foreign direct investment (Latin American Financial Publications 1989b). Investors take a long-term view of the market and emphasize the manner in which the country's debt problem is being managed. Thus, proper debt management is essential in order to attract foreign investment. Foreign investment packages can also make significant contributions to development through the transfer of technology, production and management skills in addition to international sales capabilities.

In general, the political and economic realities that determined past debt repayment behavior are good indicators of future country risk, including chances of expropriation. Therefore, it is likely that loans will be directed towards self-amortizing, well-collateralized private investment projects. Latin American countries will be considered creditworthy when bank officials have been persuaded that new loans will be repaid, and not because loans have been paid off in the past.

Thus far, a widespread strategy of case-by-case negotiation has focused on the maintenance of the status quo (i.e., maintaining the servicing of commercial banks claims by debtor countries<sup>3</sup>). This is motivated by the prospect of a major financial disaster. A generalized repudiation by debtor countries would have seriously threatened the solvency of the banks, since the world's largest commercial banks had exposures that typically exceeded 100 percent of bank capital.<sup>4</sup> Creditors received large net transfers from debtor countries during the 1980s due to the willingness of the creditor governments to put official funds into debtor countries whenever necessary in order to make interest payments.

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<sup>3</sup> This strategy pivoted around rescheduling existing debt (principal) without interrupting interest payments, and without extending new lines of credit to *problem debtors* (Sachs 1986, 1989).

<sup>4</sup> Sachs (1986b) showed that in December, 1985, the exposure (capital versus nonperforming assets) of the nine largest US banks in all non-oil LDCs was 148 percent. The comparable exposure in Latin America was 125 percent.

Measures in Table 1 reflect changes in the debt-service burden in Latin America between 1970 and 1987. For most economies, debt service rose throughout the early 1980s and peaked around 1987. The trend in the 1990s is expected to be for a further gradual reduction of these percentages. However, the debt burden will remain heavier than the levels of the 1970s. This is because a reduction in debt-servicing requirements is a necessary, but not a sufficient, condition for the economic take-off of these troubled economies. Even with a considerable reduction in debt service obligations, the debt burden will still be highly significant as long as the level of economic activity (measured by GNP) remains stagnant and export prices continue to fall.

The Baker Plan (introduced in 1985) and the Brady Plan (introduced in 1989) were proposals to address the debt problem. The Baker Plan proved to be insufficient since it did not attack the core problem, excessive debt. It endorsed case-by-case negotiations and debt rescheduling (not debt-reduction) tied to economic reforms under the guidance of the International Monetary Fund (IMF). The Brady Plan was the first to recognize that the debt burden was too high to be repaid. In essence, the Brady Plan called on U.S. commercial banks to accept an orderly process of debt reduction (i.e., recognition that all debt could not be possibly repaid).

Some of the debt restructuring options under the Brady Plan included buybacks using cash reserves,<sup>5</sup> debt conversion and guarantees,<sup>6</sup> and debt-equity swaps. Although it pointed in the right direction, the Brady Plan was not enough. It advocated a twenty percent debt reduction which has proven to be insufficient to solve the problems for many countries. Some debtors (Costa Rica, Mexico, the Philippines and Venezuela) benefitted from the plan. Argentina, Brazil, Chile, and Peru needed new alternatives to alleviate the burden of the debt. Large and urgent social demands in those countries could not be satisfied in the short run in the absence of major structural reforms. Implementation of these needed reforms could postpone the resumption of economic growth. Without substantial debt reduction, vigorous economic growth, and more equitable income distribution the region would also remain politically unstable.

Given the problem of unserviceable, excessive debt, a fundamental question needs to be addressed. Is it in the best interest of a country to drive down the value of its foreign debt? If one focuses on the immediate benefits to the debtor country the answer seems to be yes. Costa Rica is a good example. By withholding interest payments to creditors and pushing down the secondary market value of its debt to 15-20 percent, Costa Rica negotiated a larger debt reduction deal than Argentina or Mexico (where punctual payment policies kept prices around 40 percent). Bolivia cashed in its debt for 11 cents on the dollar.

To better understand why those large differentials occur we need to identify the determinants of external debt valuation. The value of the debt in the secondary market is a function of 1) the political environment, 2) the risk qualification of the debtor country, 3) the absolute amount (principal) of the debt, 4) current and forecasted economic conditions in the debtor country, and 5) the situation in international financial markets.

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<sup>5</sup> For example, Bolivia bought back much of its debt on the secondary market at 10 cents on the dollar.

<sup>6</sup> For example, Poland converted \$ 5 million in debt at 11 percent to \$ 2.5 million at 11 percent. In Nigeria, the amount of debt remained at \$ 5 million, but the interest rate was reduced to 5.5 percent.

**Table 1: Alternative Measures of Actual Debt Servicing  
in Latin America, 1970 and 1987**

Country	Debt Service as a Percentage of:			
	GNP		Exports	
	1970	1987	1970	1987
	-----	---per cent---	-----	-----
Argentina	2.1	5.1	21.6	45.3
Bolivia	2.3	3.3	11.3	22.1
Brazil	6.9	2.4	12.5	26.7
Chile	3.1	7.9	19.2	21.1
Colombia	1.7	7.0	11.7	33.4
Costa Rica	2.9	4.5	10.0	12.1
Guatemala	1.4	4.2	7.4	24.9
Mexico	1.9	6.4	23.6	30.1
Panama	3.1	7.5	7.7	6.5
Peru	2.0	1.0	11.6	12.5
Uruguay	2.7	5.6	21.7	24.4
Venezuela	0.6	5.9	2.9	22.6

Source: The World Bank



If the debtor government policies are credible, and the current and prospective economic conditions (such as the inflation rate, the rate of growth of GNP, and the level of unemployment) are favorable, the secondary market value of the debt will increase (the discount will decrease). Compare, for instance, the situations of Chile and Bolivia. The higher market value of the Chilean debt (\$.60 on the dollar compared to \$.11 on the dollar for Bolivia) reflects the more stable political and economic conditions of the former. Conversely, the market value of debt will decrease if either the absolute amount of outstanding obligations, or the risk qualification of the country increases. Finally, the market value of the debt is expected to be inversely related to the international excess supply of funds.

## **Financial Instruments**

Most financial innovations applied to the debt problem fall into one of three categories:

- Country (or portfolio) funds;
- Venture capital funds; or
- Debt conversion schemes  
(debt capitalization,  
buybacks,  
collateralization,  
debt-equity swaps, and  
debt-bond swaps).

Country or portfolio funds, as opposed to direct investment, are innovations that diversify investors' country-risk by allocating pools of funds in the fast-growing economies of industrializing countries. These instruments, mainly developed by the International Finance Corporation (IFC) owe their success to the increasing internationalization of securities markets and the increase in the volume of funds at the disposal of institutional investors. This improvement in international liquidity has made it possible to implement direct investment in Korea, Thailand, Malaysia and Brazil. However, country funds are more difficult to apply in other highly indebted countries such as Argentina and Mexico. Commercial viability, supply of liquid securities, transparency and injection of substantial new funds can greatly affect the attractiveness of this alternative for potential investors (Van Der Bijl, 1990).

Venture capital funds are pooled investment variations of venture capital investments. These funds were also initiated by the IFC and are primarily intended to provide institutional support for entrepreneurship in LDCs. Their contribution to a solution of the debt crisis is long-term. The success of these ventures,<sup>7</sup> and the consequent flow of productive capital to indebted countries, can contribute significantly to the solution of the economic stagnation in debtor nations.

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<sup>7</sup> Venture capital funds have been implemented in Spain (the first in 1978), the Philippines, Brazil, Korea, Kenya, Argentina, and Cote d'Ivoire.

Broadly defined, debt conversion mechanisms are intended to convert external debt into a domestic liability (debt capitalizations and buybacks) or into equity (debt-equity swaps) of the borrower country. The most common variations of debt conversion are briefly described here.

Debt capitalization involves the exchange by a creditor of the external debt (of a borrower) for equity (of the same borrower). No cash payment takes place. A common vehicle in Latin America is that of privatization (i.e., the sale of a state-owned enterprise to private investors). Under these programs, a debtor government exchanges its interest in a state-owned enterprise for debt titles, thereby reducing its debt. For example, under a recent agreement the Argentine government sold ENTEL, the country's state-owned telephone company, to an international consortium headed by Telefonica (Spain) and Atlantic Bell (U.S.). Under the terms of the agreement, Telefonica will pay \$468 million for its 10 percent share in the south region. About \$114 million will be paid in cash and the remaining \$354 million in titles of Argentina's foreign debt with a face value of \$2.7 billion).<sup>8</sup>

Since the market price of these enterprises is generally lower than their book value, these initiatives face political opposition. For example, in 1988 the Argentine Congress soundly defeated a preliminary agreement between the government and Scandinavia's SAS, that provided for the privatization of the state airline. Currently, initiatives to privatize YPF, the large state oil firm, and Ferrocarriles Argentinos, the railroad monopoly, face strong worker and management opposition.

Buybacks constitute the simplest form of debt reduction. The borrower simply repurchases external debt at a discount from a willing seller. The issue here is the origin of the resources necessary to finance the purchase. Private residents would provide funds if the country were pursuing credible stabilization policies that encouraged a reversal of capital flight. This would be the case of a pure debt-cash swap. The resident acquires foreign currency debt and redeems it in local currency. Proceeds from World Bank structural adjustment loans or IMF credits could provide the funds needed. An IMF buyback fund would work as a repurchasing fund (resources in this case could be made available through an increase in quota arrangements). For example, if debt is being traded at a 40 percent discount in the secondary market, the debtor country would be able to buy back each dollar of debt borrowing only 60 cents from the IMF, consequently reducing the burden of the debt.

The appeal of this approach relies on its simplicity. It provides a permanent solution that many creditors would readily accept. Impaired assets would be definitely removed from creditor balance sheets and the mechanism is endorsed by an international monetary institution. However, funding the scheme confronts an important obstacle. Residents are generally reluctant to provide resources while many IMF members would not allow an increase in their quotas. Since the program is ultimately based on international creation of money it would increase the potential for international inflation.<sup>9</sup>

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<sup>8</sup> La Nacion, Buenos Aires, July 3, 1990.

<sup>9</sup> The IMF recently announced an increase of \$60 billion in its budget. A significant portion is directed to help Latin American economies.

**Collateralization** involves an exchange of old debt for a new collateralized liability. This new liability typically has one or more of the following characteristics: lower interest rate, reduced amount of principal, and/or longer term. The collateral can be provided in the form of deposits or in the form of bonds (a debt-bond swap). This alternative may be appealing to commercial banks. If they are willing to accept a lower rate, the interest stream is secured and, therefore, low-risk. One problem is where the resources for the collateral would come from (the IMF has been identified as one source of collateral). Also, deposits must be secure (offshore). Therefore, creditors would need an arrangement outside the borrowing country which is immune from freezing and offsetting claims.

**Debt-equity conversion** has been the major vehicle for debt reduction so far. Under a debt swap, external sovereign debt is purchased by an investor directly from a creditor bank or indirectly through the secondary market. The debt is presented for redemption in local currency for a subsequent equity investment in the debtor country. Thus, the bank loan is converted into share capital.

Debt swaps have become a pivotal issue in Latin American debt negotiation. Swaps may constitute an efficient investment incentive in the sense that they reduce debt ratios and catalyze new investment without negative effects on the balance of payments of the debtor country. Bergsman and Edisis<sup>10</sup> found debt swaps to be a determining factor in one-third of the investments made by multi-nationals in several Latin American countries. Unlike buybacks and collateralization schemes debtor countries do not need additional resources in order to encourage debt-equity conversion. Problems arise when the monetary impact of the swap program is significant, or when there is a big gap in the rate of exchange. Successful balance of payments and anti-inflationary adjustments are difficult to achieve in Latin American economies. Monetary problems such as inflation, higher domestic interest rates and reduced consumption are common.<sup>11</sup>

**Debt-bond swaps** are similar to debt-equity swaps. The main difference is that bond swaps exchange foreign debt for tradable fixed-interest bonds. For example, in 1987 Mexico issued a \$10 billion bond with a 20-year maturity to secure a transaction through which Mexico paid \$1.87 billion for a \$10 billion zero-coupon U.S. Treasury bond with the same maturity. The Mexican bond was accepted by the creditor banks in exchange for Mexican debt totalling \$14.3 billion, thus reducing Mexico's debt by \$4.3 billion. Although creditors would likely prefer this secured and liquid instrument instead of other alternatives, only a small proportion of developing country's debt has been converted to bonds.

Several Latin American countries have implemented variations of the general scheme of a debt conversion. Most of these are rather new. The oldest conversion schemes (Brazil and Chile) have been in place for only about five years. Table 2 contains a summary of debt conversion history in Latin America during the 1980s. Brazil and Mexico have implemented the most comprehensive conversion programs. They alone account for 72 percent (34 percent and 38 percent, respectively) of the total debt that was converted. Chile and

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<sup>10</sup> Bergsman and Edisis examined 101 debt-equity swap transactions in Argentina, Brazil, Chile, and Mexico and found that 54 percent of the projects aimed to export markets were a direct result of the incentive created by the swap (Latin American Finance Publications 1989a).

<sup>11</sup> The recent experiences of Argentina and Brazil are examples.

**Table 2: Debt Conversion History of  
Latin America, 1981-1988**

	1981-84	1985	1986	1987	1988	Total
<b>Country:</b>	- - - - - (US \$ million) - - - - -					
Argentina	0	470	0	35	1273	1763
Bolivia	0	0	0	0	349	349
Brazil	1343	537	176	1380	8476	12412
Chile	11	319	984	1978	3205	6497
Costa Rica	0	0	7	146	na	170
Ecuador	0	0	0	125	245	370
Mexico	0	769	1073	3768	8402	14012
Philippines	0	0	15	266	304	585
Venezuela	0	0	0	0	448	448
<b>Total</b>	1354	2095	2255	8198	22719	36607
<b>Type of Conversion:</b>						
Straight Buybacks	0	0	0	0	648	648
Exit Bonds	0	0	0	15	5125	5140
Equity	1354	1380	1541	3517	7010	14801
Other	0	715	714	4667	9937	16032

Source: The World Bank

Argentina represent 18 and 5 percent, respectively, of the total debt conversions. Equity programs account for 40 percent of the total debt converted during 1981-88. Total volume more than doubled two years in a row (from 1986 to 1987 and from 1987 to 1988). Chile exhibits the most successful experience in retiring its external debt through the swap mechanism. Chile retired \$7 billion, reducing its debt by 30 percent (from \$24 to \$17 billion). If one were simply to extrapolate the 1981-88 figures, the trend is for a greater volume of debt-equity conversions in the 1990s. This trend could be driven by the continuation and expansion of liberalizing economic reforms undertaken in most Latin American countries.

## Illustration of the Debt-Equity Swap Mechanism

A typical debt swap transaction consists of a three-step sequence. First, creditor banks are offered an option to sell their outstanding claims on a debtor country. Second, potential investors buy (finance) part of those claims paying the price prevailing in the secondary debt market. Finally, the debtor government cancels the external liabilities involved in the transaction.

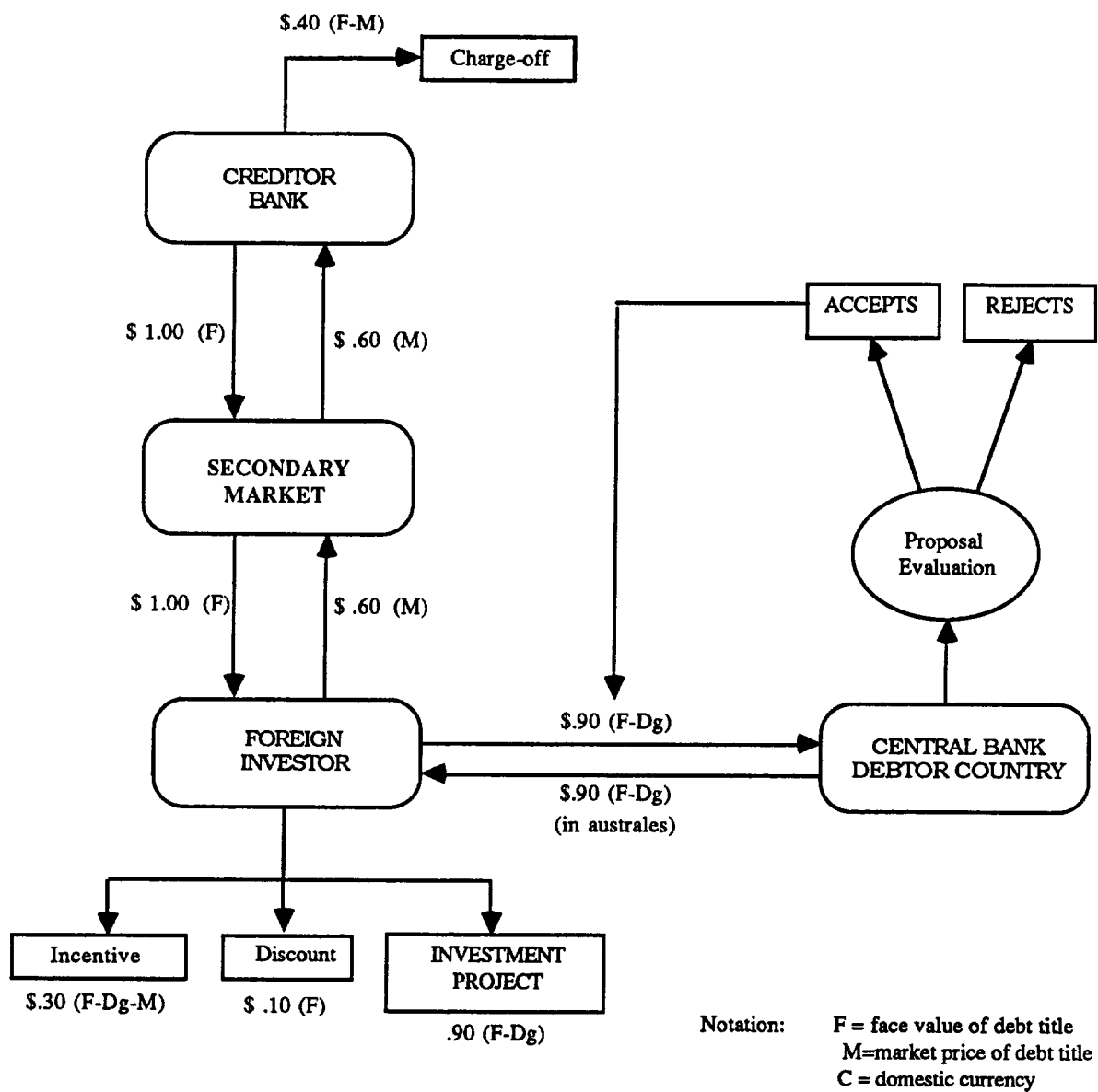
Figure 1 is a simplified illustration of the mechanics of a debt-equity swap. Suppose a creditor bank holds a bond from a typical debtor country with a face value (F) of \$1. Assume this debt is traded at a discount of 40 percent in the corresponding secondary market. A foreign investor, interested in a specific project in the debtor country, is offered a debt-equity swap as a financing option. The investor acquires the outstanding debt from the creditor bank by paying the market price (M) of \$.60<sup>12</sup>, which is the value of the debt title in the secondary market. The investor submits the investment project for evaluation to the monetary authority (i.e., the Central Bank) in the debtor country. The Central Bank evaluates the proposal and either accepts or rejects it. If the project is approved, the investor sells the title of the debt to the monetary authority at face value or at a discount  $D_0$  (10% in this example). The monetary authority pays \$.90 ( $F - D_0 = \$1 - \$.10$ ) in local currency at a predetermined rate of exchange.

For the investor, the swap creates an incentive to invest in the form of a reduction in the total cost of the investment. In the above example, this reduction is \$.30 ( $F - D_0 - M$ ), the difference between the amount effectively invested (\$.90) and its cash outlay or payment to the creditor bank (\$.60). The greater the discount of debt in the secondary market, or the lower the discount offered by the monetary authority, the more attractive the program is to the investor.

A reduction in the initial cost of the investment simultaneously increases the project's rate of return and reduces the absolute amount that the investor has at risk. This is an implicit subsidy given by a more favorable effective rate of exchange for every dollar invested. This constitutes a key difference between swaps and other financial innovations. A numerical example is useful to clarify the impact of the subsidy on the return to an investor.

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<sup>12</sup> For simplicity, all figures are in terms of a dollar face value. Thus, a 40 percent discount implies a secondary market price of \$.60 per dollar of face value.



**Figure 1: Mechanics of a Debt-Equity Swap**

If the government purchases the \$1 face-value instrument at a discount  $D_g$  of 10 percent, the instantaneous rate of return (ROI) to the investor can be interpreted as a return due to a reduction in the amount effectively paid. We denote this rate of return as  $r_1$ .

$$r_1 = (F - D_g - M) / M = ((1 - (.10) - (.60)) / .60) = .50^{13}$$

The investor receives the face value minus the discount  $(F - D_g)$  converted at the official rate of exchange  $E_o$ . Assume the official rate of exchange to be A4.20 (Argentinean australes per dollar). In this example, the investor receives A3.78  $((\$1 - \$.10) \times A4.20)$  in exchange for the \$.60 invested.

There are two important effects that can affect the attractiveness of the swap for a potential investor. The first of these is the volatility of ROI with respect to the exchange rate gap. This gap is defined as the difference between the market exchange rate ( $E_m$ ) and the official exchange rate ( $E_o$ ). For example, if the unregulated (market) rate is A4.80, the purchasing power of the investment in the domestic market ( $M$ , expressed in australes) is now A2.88  $(.60 \times A4.80)$  instead of the original A4.20. In this case, the ROI is significantly lower than the original (no gap) case.

$$\begin{aligned} r_2 &= \frac{(F - D_g)(E_o) - (M)(E_m)}{(M)(E_m)} \\ &= \frac{(1 - .10)(4.20) - (.60)(4.80)}{(.60)(4.80)} = .31 \end{aligned}$$

The 19 percent difference between the two returns ( $r^1$  and  $r^2$ ) can be interpreted as an efficiency cost due to imperfections in the foreign currency market in the debtor country. This cost can be so high that some investors will forego the investment project.

A profit maximizing investor theoretically compares the project's ROI with the opportunity cost of capital when deciding whether or not to invest in a particular project. For example, if the opportunity cost of capital is 11 percent, an increase of 35 percent in the gap (to A5.68) would be sufficient to make the investor indifferent between pursuing the project or not.

$$r_2' = \frac{(1 - .10)(4.20) - (.60)(5.68)}{(.60)(5.68)} = .11$$

A second significant effect results from the requirement of additional funds (known as new money or matching funds). For example, if one additional dollar is required over the original cash outlay, the total outlay required to purchase the \$2 face value becomes \$1.60 ( $M'$ ). The adjusted purchasing power is A7.68  $(1.60 \times 4.80)$ . Assuming no discount the ROI is

$$r_3 = \frac{2(F)(E_o) - (M')(E_m)}{(M')(E_m)}$$

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<sup>13</sup> Note that this rate of return is exactly the same when computed in australes.

$$= \frac{2(1)(4.20) - (1.60)(4.80)}{(1.60)(4.80)} = .094$$

Again, the investor compares this return with the cost of capital and decides whether or not to proceed with the project.

For the creditor bank conversion programs offer an opportunity to diversify, restructure and reduce debtor country portfolios. By selling debt titles (just as it would sell them on the secondary market) the bank can enhance the liquidity of its loan assets. The cost of this transaction occurs when the bank waives part of the value of the loan and realizes the loss (\$.40). Most banks establish provisions against their debt portfolios for these contingencies. However, tax incentives may be necessary to induce management of many banks to write off debt claims, since the impact on short-term earnings could be highly significant. If such incentives are not available, banking regulators may force banks to write off loans in order to reduce exposure. For example, the Interagency Country Exposure Review Committee recently forced the largest U.S. banks to write off (as a loss) 20 percent of their loans to Brazil and increase their write-offs of loans to Argentina from 40 to 60 percent.<sup>14</sup>

### Criteria for Evaluation of Alternatives

From a country perspective, an initiative intended to alleviate the debt problem could be evaluated from at least two angles: financial feasibility and economic efficiency.

An instrument is considered financially feasible if there are no significant restrictions that would limit or prohibit its practical implementation. Specific economic and regulatory conditions frequently constitute the most important limiting factors in this respect. In particular, an instrument will be considered financially feasible if the following conditions are satisfied.

- a) A liquid market exists for the instrument. The recent development of secondary markets allows for an institutional and structured trading place where debtor countries' foreign debt can be traded. However, the mere existence of these markets does not guarantee an instrument's feasibility. It is also necessary that the instrument be liquid (i.e., marketable).
- b) Financial transaction procedures are simple and transparent. Cumbersome and confusing procedures may fail to attract potential investors.
- c) Foreign investment laws and regulations within the debtor country are favorable for the adoption of a particular financial innovation. This is closely related to b). If a country imposes constraints on the remittance of dividends, investors may be reluctant to undertake a particular program due to the implied higher transactions costs and reduced rates of return.

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<sup>14</sup> The Wall Street Journal, July 12, 1990.



- d) The instrument is effectively available. Obviously, if an instrument is not available it is unfeasible. For example, Country Funds are instruments yet unavailable to many debtor countries.

Given the set of desirable objectives to be achieved by the adoption of a particular financial innovation, such an innovation is economically efficient if it is able to generate favorable results with respect to at least one of the objectives without producing negative effects with respect to the others. The improvement in at least one of the conditions is an 'economic gain' derived from selecting a particular alternative over the others. From a macroeconomic perspective, these gains may include monetary, fiscal, and balance of payments effects.

In general, financial innovations can be evaluated according to their contribution to two major and related economic objectives: reduction in the debt burden and resulting new investment. Following Bender (1988), equilibrium in the balance of payments requires

$$\begin{array}{rclcl} \text{Trade} & - & \text{Interest} & = & \text{Net Capital} \\ \text{Surplus} & & \text{Payments} & & \text{Exports} \end{array}$$

As a mathematical expression, we have

$$(X-M)-r*D = K_x-K_m \quad (1)$$

where

X	=	exports
M	=	imports
r	=	interest rate (LIBOR plus a risk premium)
D	=	total debt
K <sub>x</sub>	=	capital exports
K <sub>m</sub>	=	capital imports

Assume that capital exports are equivalent to debt (principal) repayments at a rate  $c$  (i.e., no capital flight occurs). Further, assume that capital imports include new borrowing ( $D'$ ) plus new foreign investment ( $I'$ ). Then

$$\begin{aligned} K_x &= c*D \\ K_m &= D' + I' \end{aligned}$$

By substitution from (2) into (1) we can write

$$(X-M)-(r+c)*D + (D' + I') = 0 \quad (2)$$

Next, we can define the change in foreign indebtedness as

$$\Delta D = D' - cD = K_m - I' - cD. \quad (3)$$

That is, the change in level of indebtedness is the residual after subtracting new foreign investment and debt capital repayment from capital imports. The resulting need for new foreign borrowing,  $D'$ , is similarly defined as

$$D' = (M-X) + (r+c) D - I' \quad (4)$$

where the right side of (4) includes the trade account deficit, foreign debt repayment, and new foreign investment, respectively.

By defining the rate of change in foreign debt as  $d (= D'/D)$ , and substituting for  $D'$  from (4) we have

$$d = (r+c) - \frac{(X-M)}{D} - \frac{I'}{D} \quad (5)$$

Therefore, the rate of foreign debt increase (or decrease) will be associated with three component rates - the rate of debt amortization, the rate at which trade surpluses (deficits) are generated, and the rate at which new foreign investment flows into (out of) the debtor country.

Finally, we can derive a corresponding interpretation of the factors that increase the foreign debt ratio (and, the corresponding debt servicing burden).<sup>15</sup> If we define the debt ratio as  $D/X$ , the expression for the rate of change in the debt ratio can be stated as  $\Delta D - \Delta X = d-x$ . If interest rates and capital repayment rates are fixed, the rate of change in the debt ratio is

$$(d-x) = (r+c-x) - \frac{(X-M)}{D} - \frac{I'}{D} \quad (6)$$

Therefore, reduction of the debt burden can be achieved by the satisfaction of any or all of the following three conditions: 1) the simultaneous reduction of effective interest rates and rapid growth of exports such that  $(r+c < x)$ , 2) the existence of a surplus in the balance of payments trade account  $(X-M > 0)$ , and 3) the attraction of foreign investment  $(I'/D > 0)$ . A financial instrument can be considered economically efficient in reducing the debt burden if it produces favorable results with respect to at least one of these aspects without generating negative effects with respect to the others.

According to Borenztein (1989), the effect of a particular instrument in attracting new investment will depend on the relative effects of debt overhang and credit rationing on productive investment. Although any initiative may affect both debt overhang and credit rationing, its effects may have a greater incidence on one or the other. For example, debt reduction instruments such as buybacks and swaps will likely reduce debt overhang but may not alleviate credit rationing. New loans can ease foreign borrowing constraints and the conditions underlying credit rationing but may not improve debt overhang.<sup>16</sup>

Finally, there is a third aspect that should be addressed when evaluating the appropriateness of financial innovations. The issue of political viability has proven to be a major determinant in the decision by debtor governments to adopt a particular strategy

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<sup>15</sup> We could define the debt-servicing burden as  $s = (r+c) D/X$ .

<sup>16</sup> According to Borenztein, additional lending has a significant positive effect on productive investment. Debt reduction does not have a major impact on investment as long as the country lacks access to international financial markets. He concludes that credit rationing is the leading force which inhibits investment.

regarding the debt problem. A dominant issue is that of foreign ownership and control of domestic assets. For example, Argentina does not allow swaps to be used for privatization initiatives while Chile and Mexico do.

## **The Case of Argentina, 1988**

The Argentine Government implemented its debt-to-equity conversion program during 1987-88. The main objective was to create a lasting program intended to facilitate new productive investments which would not otherwise be made (see the Appendix for an overview of the principal features of the program).

Tables 3 and 4 summarize the results of Argentina's 1988 auctions. With only minor (formal) changes, the conversion procedure was adjusted to the norms and regulations described above. The Central Bank defined a minimum required discount rate for conversion of public debt. After projects were submitted for evaluation, the bank awarded the period quota on the basis of the discount offered.

As can be seen in Table 3, discounts increased over time. Discounts on public debt ranged from 38 percent (in the first auction) to 66 percent (in the fourth). Comparable discounts on private debt varied from 15 to 28 percent. This constitutes a clear indicator of the success of the program in this first stage. Average returns were substantially higher than the opportunity cost of capital. After the program proved to work properly, eligible projects were engaged in increasingly stronger competition for the available quota. This occurred even though the market price of Argentina's debt was declining.

A total of \$211.4 million was converted through public debt auctions into equity from a pool of investment projects worth \$530.4 million (Table 4). The difference between both figures is due to deductions (mainly imports of durable goods, \$ 186.9 million) and additional funds (\$133 million). Investor cash outlays amounted to \$319 million, so that the effective investment (cash outlay plus the \$126.2 million market value of debt) added up to \$445.2 million. Investors gained approximately \$85 million, the difference between the value of projects and the effective investment. This is about 16 percent of the total value of investments. The government earned \$243.2 million which is the difference between the face value of the debt to be converted (\$454.6 million) and the amount eligible for conversion (\$211.4 million). At an average interest rate on debt of 11 percent, this represents a reduction of almost \$50 million in the total annual interest payments. Creditors had to write down the difference between the face value and the market price of the debt (\$328.4 million).

In summary, Argentina's external debt was reduced by \$211.4 million without any apparent cost to the government. This represented a reduction of approximately 3 percent in the estimated \$65 billion of external obligations. Given the low amounts involved, the monetary expansion (approximately \$2.7 billion in 5 years) generated by the program should not have been of great concern. Although the Central Bank actually printed the total volume of australes necessary to buy the debt, the regulations provided for a gradual release of funds as the project evolved, thus reducing the potential for inflation. Nevertheless, the program was discontinued in the first half of 1989. Government officials blamed this decision to the explosion of inflation in Argentina.

**Table 3. Auction Discounts Offered  
in the Argentine Swap Program During 1988**

Auction	Date	D I S C O U N T S			
		Minimum Required	Minimum	Maximum	Average
		(%)	(%)	(%)	(%)
Public Debt					
First	01/20/88	25	35.25	40.20	37.65
Second	03/29/88	35	51.10	57.10	54.15
Third	06/10/88	45	56.15	63.25	58.47
Fourth	09/22/88	45	65.05	69.53	66.17
Private Debt					
First	07/04/88		15.00	15.00	15.00
Second	07/28/88		13.59	16.10	14.95
Third	09/09/88	no	26.00	32.20	27.30
Fourth	10/14/88	minimum requirement	24.05	29.75	27.79

Source: BCRA

(Banco Central  
de la Republica  
Argentina)

**Table 4: Argentina's Public Debt Swap Auctions, 1988**

Item a/	A U C T I O N S				
	First	Second	Third	Fourth	TOTAL
1 Value of Investment Projects	101.9	140.0	185.8	102.7	530.4
2 Deductions (imports funding)	24.7	46.2	87.6	28.3	186.9
3 Net Value of Investment Projects [1-2]	77.1	93.8	98.2	74.4	343.5
4 Amount Eligible for Conversion (Mkt. Price)	54.0	54.1	51.2	52.1	211.4
5 Discounted Market Price/\$ Face Value	0.30	0.28	0.29	0.24	0.28
6 Rate of Exchange (A/\$)	5.00	6.49	10.32	14.70	9.13
7 Discount Offered	36%	54%	58%	66%	0.54
8 Debt to be Converted (Face Value) [4/(1-7)]	84.4	117.7	121.9	153.1	454.6
9 Market Cost of Debt Titles [8x5]	25.3	32.9	35.3	36.8	126.1
10 Investor Cash Outlay [1-4]	47.8	85.9	134.6	50.6	319.0
11 Effective Investment [9+10]	73.2	118.8	169.9	87.4	445.2
12 Investors Gain [1-11]	28.7	21.2	15.8	15.8	85.2
13 Investors Gain (percentage) [(12/1)x100]	28.2%	15.13%	8.53%	14.91%	16.07%
14 Australes Needed [6x(4+10)]	A509.4	A908.5	A1917.4	A1510.0	A4841.2
15 Implicit Rate of Exchange (A/\$) [4/11]	6.96	7.65	11.28	17.28	10.88
16 Government Gain [8-4]	30.1	63.5	70.7	101.1	243.2
17 Creditor Loss [8-9]	59.1	84.7	85.5	116.4	328.4
18 Subsidy to Investments [(15-6)/6]	39.2%	17.8%	9.3%	17.5%	19.1%

a/All figures in US \$ millions, except lines 4,5,6,13,14,15 and 18

Source: Ambito Financiero, 10.13.88

Several reasons can be cited to explain why Argentina chose to use debt swaps ahead of other alternatives. Economic efficiency, financial feasibility and political viability were not considered simultaneously in Argentina. The government followed a sequential approach in selecting the most appropriate financial alternative given the underlying political and economic conditions. The first aspect considered was political viability. Political beliefs imposed restrictions on the range of alternatives effectively available. For example, privatizations were politically not possible in Argentina until late 1989. Strong Congressional opposition ruled out the possibility of engaging in capitalization schemes (in the form of privatization of state-owned enterprises).

Collateralization was not financially feasible since the government had neither the resources required for collateral nor international financial institution financing to substitute for collateral. Buybacks were not viable since the country lacked the funds required to repurchase its debt. Also, the IFC's initiatives were not substantial in Argentina. Country and portfolio funds were aimed mainly to the Pacific Rim developing countries (Korea, Malaysia, Thailand, the Philippines, Hong Kong, and Singapore). Only one venture capital fund (SADICAR) was located in Argentina. According to Van der Bijl (1990) this was attributable to factors such as the nonexistence of a liquid capital market (which resulted in significant divesting difficulties, regulatory shortcomings, and/or the limited amounts involved).

In the case of Argentina two instruments remained for consideration in 1987, debt-equity swaps and debt-bond swaps. The Argentine government decided in favor of debt-equity swaps. How appropriate was the government's choice on economic efficiency grounds?

For Argentina, the debt-equity swap program provided a market-oriented mechanism to reduce foreign debt, increase foreign investment and restructure external financing. The attractiveness of the scheme was based on its potential direct and indirect benefits. The Treasury would experience a reduction of interest accruals up front (direct effect). Additionally, debt-equity swaps do not require the expenditure of the country's hard currency reserves in order to reduce foreign debt. Since a debt swap program typically restricts dividend outflows for some years after a transaction and there is no foregone interest income (because interest-earning foreign exchange reserves are unaffected by the transaction), a swap had the potential for reducing annual debt servicing costs.

Indirect (or secondary) effects occur when the program's financial incentives stimulates the influx of additional foreign investment (I/D increases), which can be channeled into efficient uses through incentive structures such as different discounts. For example, higher direct investment may strengthen the trade balance situation by increasing growth of exports and reducing imports ((X-M)/D increases).

Finally, the success of swap programs in other Latin American countries such as Chile created a significant demonstration effect, encouraging the participation of banks, investors, and government in the Argentine program.

Authorities also analyzed the main problems involved in a debt-equity swap strategy. Theoretically, if the secondary effects failed to materialize the swap program would lose most of its effectiveness. In that case only direct investment would be subsidized (at the expense of creditor banks). One could argue that this could happen anyway without the program. Exports could fail to grow sufficiently and, consequently, the trade balance does not improve. In fact, it may even deteriorate if new borrowings push interest rates upward.

This would likely occur when the risk qualification of the debtor country worsens as a result of adverse trends in the debtor country's balance of payments. In general, the likelihood of this situation arising depends on the extent to which investments made through the scheme are additional (i.e., the swap mechanism is decisive in the investor's decision to make the investment). If the investments would have happened anyway, the swap only substitutes foreign debt for new domestic liabilities. In this case the costs would be greater than the potential benefits of the transaction. While most of the swap programs in Latin America are rather new, many of the investments made in Argentina were in the planning stage for a considerable time. This suggests that relatively few investments were additional. If swaps do not result in additional investment in Argentina, but rather in the exchange of one type of liability for another (and often at bargain prices for the investor), the vehicle will not have been desirable from a macroeconomic point of view.

But undoubtedly, the most serious problem from Argentina's perspective was the potential inflationary pressure posed by the debt swap program. In a swap transaction, the monetary authority exchanges foreign debt for domestic currency. If the monetary authority does not have genuine funds (Central Bank reserves, Treasury savings) in the amount necessary to honor the swap, it will finance the transaction by creating money, unless this expansion is properly sterilized.<sup>17</sup> In the absence of compensatory measures, foreign debt is reduced at the expense of domestic debt.

In an inflationary context such as Argentina's, it is desirable to keep the effect of money creation low in relation to the total money supply. If this is not achieved the expansion of the money supply will have a direct impact on the domestic rate of inflation. If the Fisher effect operates, the subsequent upward adjustment of interest rates will act as a disincentive to investment.<sup>18</sup> In this situation a devaluation of the exchange rate is needed to control inflation. If such adjustment is not done, the resulting real revaluation will put a brake on the rate of growth of exports and increase imports, thus reducing the trade surplus. Both growth of interest rates and reduction of the trade surplus will increase the rate of growth of debt ratios.

If Argentina's foreign-exchange monetary dilemma is resolved, there is still one additional hurdle. To the extent that a swap involves converting external debt into internal debt there is the potential for escalation of the fiscal deficit. Fiscal and budgetary deficits are probably the most important source of money creation. The success of Argentina's swap program calls for the need to reduce the fiscal deficit in proportion to the volume involved in swap transactions. The only genuine source of funds to finance the swap is domestic savings from either the public or the private sector (i.e., reducing consumption). This requires GNP to grow faster than consumption, a rather unlikely case for Argentina and most debtor countries in Latin America.

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<sup>17</sup> For example, buying outstanding domestic debt titles in the open market or reducing the fiscal deficit through higher public savings (i.e., reducing unproductive consumption).

<sup>18</sup> According to the Fisher effect, nominal interest rates will fully adjust to an increase in expected inflation. In order to invest in a particular project investors require a nominal rate of interest sufficiently high for them to earn an expected real rate of return. Thus, an increase in inflation and the corresponding increase in nominal interest rates will disqualify those projects that fail to earn the required (real) return.

## **Conclusions**

The usefulness of debt swaps in providing an economically efficient and financial feasible solution to Latin America's debt repayment problems and restoring international creditworthiness depends on several conditions. Countries must demonstrate

- 1) an ability of the monetary authority to control the domestic monetary impacts (control the money supply),
- 2) an ability of the Treasury to control the fiscal deficit,
- 3) the existence of low inflation expectations,
- 4) the existence of a small exchange rate gap,
- 5) the existence of a liquid secondary market for debt titles,
- 6) simple and transparent procedures for executing financing transactions, and
- 7) political stability.

Unfortunately, the Latin American experience has proven the unlikeliness of meeting all these conditions simultaneously. Brazil, Mexico and Argentina have suspended their debt swap programs citing the need to control inflation by eliminating the creation of money.

Although they may not be sufficient to solve the debt problem, financial innovations will undoubtedly play an increasingly important role in the development of practical resolutions of the excessive foreign debt problem in Latin America. Ultimately, successful debt reduction strategies will involve a mix of political and financial solutions.



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## **Appendix: The Argentine Debt Swap Program**

The Argentine Government implemented its debt-to-equity conversion program in 1987. The main objective was to create a lasting program intended to facilitate new truly productive investments which would not otherwise be made. The main features of the program are summarized here.

### **Eligibility Criteria**

All public and private sector debt is eligible, except in those cases where the conversion would trigger a prepayment obligation or constitute a breach of any other provision of the loan agreement. Eligible investments include: 1) those whose proceeds will be used to purchase new equipment or tangible goods, to create or increase physical capacity of production plants, each in order to produce a net increase in the supply of goods; 2) those which, to the extent applicable, have received any necessary authorizations under the law applicable to foreign investments in general (i.e., a debt-equity swap is treated just as a direct investment under Argentine foreign investment law) and whose proceeds are used in order to reduce an outstanding long-term discount facility or a loan funded by such facility;<sup>19</sup> and 3) other investments or categories of investments explicitly approved by the Government. The Ministerio de Economía (ME) was designated to review eligibility of all investments that were submitted to the swap program.

### **Investor**

An investor is any person that holds eligible debt or causes a foreign creditor to present eligible debt to the BCRA for conversion. This includes Argentine residents. Investments made by Argentines are not subject to Argentine foreign investment regulations.

### **Term of Investment**

Investors cannot redeem or distribute the principal amount of the investment for 10 years from the date of the investment if in foreign currency. If the investment is denominated in australes the term is three years.

Investors do not have the right to have dividends remitted in foreign currency for four years from the date of the investment. Remittance of any such previously accrued dividends after that date are to be made over a minimum of four years in equal semi-annual installments. Such remittances are also be subject to the Argentine laws governing foreign investment in general.

### **Matching Funds**

This provision calls for additional funds to be assigned to the conversion project. The program originally required matching funds on a 1:1 basis (i.e., 50 percent of the project cost). This was later made more flexible by requiring additional funds for only 30 percent of the total cost of the investment project. Matching funds are restricted to include: a) capital investments, which cannot be redeemed or distributed for the minimum years provided by Argentine foreign investment law; b) long term private- source financing with a minimum term of six years and a minimum grace period of four years; and c) par value of BONEX

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<sup>19</sup> A *long-term discount instrument* is an instrument maturing at least two years after the date of the swap transaction.

(government bonds denominated in dollars) purchased in the primary market from BCRA (Banco Central de la Republica Argentina) at .96 of par value.

In every case half of the funds must be either project loans disbursed by the IFC and the International Investment Corporation or funds disbursed in accordance with generally applicable government regulations outside of Argentina. The term of these funds cannot be less than 18 months. The investor's request for conversion must be accompanied by a precise statement of the project's matching funds.

#### Available Amounts

The government has set annual quotas for the first five years of the debt-to-equity conversion program and limits of conversion rights covering two-month periods within each year. Such quotas and limits reflect the existing economic conditions<sup>20</sup> and may be modified by the ME after providing a 60-day notice.

Previous quotas were scheduled as follows:

Year		Annual Quota
		(million)
First	1987-1988 (from 07/01/87)	\$300
Second	1988-1989	\$400
Third	1989-1990	\$400
Fourth	1990-1991	\$400
Fifth	1991-1992	\$400
Total	1987-1992	\$1,900

Source: BCRA

To the extent a limit or quota is not used in a particular two-month period or year, the unused portion may be added to the quota for the following period.

#### Conversion Procedure

All conversion requests are submitted to the BCRA and must be accompanied by a copy of the approval by the office designated within the ME, and a certification that the required matching funds are available. These conversion requests may be made by an intermediary bank or by the investor and must be accompanied by a performance guaranty issued by the intermediary bank in the amount of one percent of the debt to be converted or by an interest deposit in that amount to be made to the account of the BCRA. Such guaranty or deposit is fully refundable and serves as collateral that the eligible debt and matching funds are delivered.

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<sup>20</sup> For example, if inflation is expected, a reduction in the quota will likely take place.

If requests exceed the limit set for a particular period, conversion rights are awarded to those investors who offer the greatest discount (in australes to be received). Special procedures may be developed for large industrial projects. Depending on the scope of the project, consideration may be given to modifying the relevant limits or targets.

Conversions are made through presentation to the BCRA of the eligible debt by the investor or the intermediary bank. The BCRA buys the debt vehicles at the free market rate of exchange. In this way, the swap program is independent from changes in the exchange rate gap. The australes received in exchange for such debt remain on deposit with the intermediary bank until they are disbursed in connection with the investment. This deposit is subject to a 100 percent reserve requirement. The investor receives accrued interest on the eligible debt until the date of conversion. After conversion, australes on deposit bear interest at the unregulated interest rate for deposits in australes or, at the option of the investor, indexed at the official rate of exchange to the US dollar and bear the LIBOR interest rate.

The schedule for disbursements is included and approved when the eligibility of the investment is approved. Disbursements may be made by the intermediary bank in accordance with the schedule, provided that the bank has received satisfactory proof that the costs reflected in the schedule have been incurred. After each such disbursement of australes the intermediary bank certifies to the BCRA that the australes have been invested in the project.