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Costs and Benefits of Debt and Debt Service Reduction

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Contrary to popular views, commercial banks have probably benefited from debt and debt service reduction operations. Debt and debt service reduction make sense to the borrowing country only if they will engender enough indirect benefits (such as increased domestic and foreign savings) to compensate for their heavy direct costs.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to understand the costs and benefits to countries of debt and debt service reduction arrangements. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room S8-042, extension 33722 (August 1993, 38 pages).

Fernandez-Arias evaluates the costs and benefits of debt and debt service reduction (DDSR) from the point of view of five countries that have concluded Brady deals: Costa Rica, Mexico, the Philippines, Uruguay, and Venezuela.

He concludes that, contrary to widely held views, commercial banks have probably benefited from the operations. Commercial bank participation in DDSR is voluntary, so direct financial savings to the country are probably negative at present values. The benefit from DDSR is not that debt is bought at “bargain prices” at the expense of commercial banks. It appears difficult to justify a DDSR operation on purely financial grounds. A more realistic way to look at a DDSR operation is to view it as a “project” that involves a certain financial cost. The return on such a project is how the DDSR operation improves the macroeconomy, or contributes to development.

The main purpose of DDSR is to establish a more efficient arrangement between debtor countries and commercial banks, leading to improved conditions for development. A DDSR operation that does not help development is costly and should not be undertaken.

The impact of DDSR on development is usually measured by the increase in the growth rate of GDP, but it is too soon to measure that for these five countries. A suitable alternative is to look at the change in investment patterns.

A strong policy framework is needed if debt and debt service reduction are to significantly improve development. In Mexico and, to a lesser extent, Venezuela improved and sustained strong adjustment policies have generated the greatest development benefits. Gains have been less in smaller countries where policies were not as supportive.

Fernandez-Arias concludes that for a country to benefit from DDSR, it needs significant indirect benefits (such as increased domestic and foreign savings). Direct benefits are likely to be negative because of the commercial banks’ financial gains and because DDSR operations are frontloaded. DDSR operations cannot be justified solely by direct benefits and savings in cash flow.

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COSTS AND BENEFITS OF DEBT AND DEBT SERVICE REDUCTION

by
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INTRODUCTION

The theory and practice of debt and debt service reduction (DDSR) cost/benefit evaluation is a matter of controversy. In this paper we present relevant theoretical and empirical contributions within an organizing analytical framework in an attempt to shed light on the bottom line: whether DDSR operations are a good idea or not. For this purpose, the empirical analysis is mostly based on the five Brady deals so far (Mexico, Costa Rica, the Philippines, Venezuela, and Uruguay).¹

We define DDSR benefits (or costs) as the valuation of the DDSR from the point of view of the country. We start with the basic premise that to evaluate a DDSR operation it is necessary to compare scenarios with and without the operation. We define DDSR effects as the changes in the relevant variables. Once this estimation is done a valuation procedure is used to summarize the value of the operation. It should be noted that we are mostly concerned with evaluating the net benefits of the operation accruing to the country. A point stressed in the paper is that, from the viewpoint of supporting official institutions, significant DDSR benefits relative to the status-quo situation is a necessary but not a sufficient condition to justify an officially supported DDSR operation. In fact, a DDSR operation yielding large net benefits under these conditions would not be a good use of official money if the benefits associated with the same level of official financing attached to the DDSR operation are even larger in the absence of debt reduction. In this context, for a DDSR operation to have merits it is necessary that it yield positive benefits relative to a situation where the same level of official support is available. In other words, a DDSR operation entailing official supporting financing needs to be compared with an alternative scenario where the same support is provided.²

¹At the time of writing, Nigeria, and more recently Argentina have concluded DDSR operations.

²Strictly speaking, to the extent that risk considerations are relevant for official creditors and the DDSR operation changes the risk assessment, for the same risk-adjusted support lending. Whether the operation increases or decreases risk to official creditors is not clear, because while the risk on the stock of debt diminishes due to the improvement in the country's creditworthiness, the supporting financing, particularly the additional portion, entails new risks due to increased exposure. In any event, this issue is not addressed in this paper, and unless otherwise indicated it will be assumed that official lending is riskless.

This note is organized as follows. Section I sets up a basic analytical framework and decomposes the evaluation problem in three basic components. Sections II to IV take up each one of these components: Scenarios and financial savings, Direct benefits, and Indirect benefits. Section V presents conclusions by putting together the direct and indirect benefits. Annex 1 presents information on some key statistics of the five Brady deals.

I. MAIN COMPONENTS OF THE EVALUATION

A basic analytical framework can be set up by decomposing the evaluation problem in three main components, to which we now turn. This section gives a preview of the next three sections, which take up each one of the three components in more detail.

i) Scenarios and Financial Savings

The foundation of the entire building is an adequate description of the economic relations between the debtor country and its commercial bank creditors both with and without the DDSR operation. On the one hand, the operation usually entails an up-front cost C that the country needs to spend in order to obtain debt reduction in exchange. On the other hand, the subsequent cashflow savings with commercial banks implied by the restructuring operation (S_t in period t , where $t=1,2,\dots$) need to be estimated. A summary of the overall cashflow savings can be obtained by estimating the expected net present value of cashflow savings S (discounting with the risk-free interest rate).

To achieve this, net transfers to commercial banks in the counterfactual scenario (T_t for $t=1,2,\dots$), without DDSR, need to be estimated. The assumptions made for this counterfactual scenario are critical, as we later discuss. Similarly, the cost of debt reduction (C) and net transfers to commercial banks in the scenario with DDSR (T'_t for $t=1,2,\dots$) need to be estimated. Then the cashflow savings subsequent to the operation are $S_t=T_t-T'_t$, which may be subject to some probabilistic distribution over a number of contingencies. The expected present value of cashflow savings S is taken over these contingencies and expectations about discount rates: $S = EPV\{S_t\} - C$.

Disregarding gains or losses that commercial banks may make with parties other than the debtor country as a result of the operation (i.e. taxpayers in creditor countries), S is also our estimate of the commercial banks' financial loss. We define S_t as the DDSR direct financial savings in period t (where $S_0 = -C$ by definition) and S as the DDSR (total) direct financial saving.

ii) Direct Benefits

We define DDSR direct effects as the ones associated with the liquidity effects of DDSR direct financial savings. Direct financial savings would affect consumption and investment through changes in liquidity, leaving aside effects stemming from the incentive structure and other dimensions to be discussed later. These liquidity-induced changes in consumption and investment are the DDSR direct effects. Correspondingly, we define DDSR direct benefits as the welfare benefits associated with the DDSR direct effects. Since in a credit-constrained country discount rates on streams of external transfers are higher than world risk-free discount rates, the time profile of direct financial savings, not only their present value S , is important for the direct benefits.

iii) Indirect Benefits

By exclusion, we define DDSR indirect effects as all the DDSR effects which are not direct, that is those effects beyond the liquidity effects associated with the financial savings with commercial banks, and DDSR indirect benefits as the welfare benefits associated with them. Indirect effects spring from domestic and external sources:

- Domestic sources. There may be additional incentives for investing domestically which would stimulate domestic savings and favor a better policy framework. They essentially spring from a reduction of the debt overhang, low ceilings on debt service, and, possibly, improved conditionality attached to official support.

- **External sources.** There may be also induced changes in the international net transfer of resources beyond those accounted for the direct financial savings whose effects need to be taken into account. They may include additional external financing from official sources, foreign direct investment, capital flight repatriation, and also private credit if some creditworthiness is regained. These sources may be stimulated by improved country creditworthiness and the efficiency features of the new arrangement. However, to the extent that there are free-riders (such as non-participating private creditors) who make capital gains as a result of the operation and improve their ability to extract resources, there may be also a negative impact on external sources of finance.³

II. SCENARIOS AND FINANCIAL SAVINGS

Realistic scenarios for net transfers to commercial banks are needed to estimate direct financial savings. We first estimate the savings in the short and medium run, and then estimate savings in present value terms. Since present value calculations take into account savings over the entire future, they can be regarded as long-run estimations in an average sense.

The cash flows associated with the operations comprise the up-front cost C and the subsequent direct financial savings S_t . The cashflow cost C results from cash buybacks and expenses for collateral purchases (an outflow) and new money from commercial banks (an inflow). The cashflow implications of collaterals are as follows. The so-called principal collateral is actually equivalent to a prepayment of principal. The only difference is that commercial banks cannot freely dispose of that money for a period of time, but interest payments accrue to them. The interest collateral is a rolling-over guarantee. To the extent that interest service is made and the guarantee is not called, it is kept as part of the country's reserves and would accrue interest to the country (which must be taken as an inflow in the

³In this paper we do not explore the possibility of capital gains made by external claimants other than commercial banks. Simulations on this issue can be found in Claessens, Diwan and Fernandez-Arias (1992). For a justification of DDSR support based on capital gains of official creditors due to improved country creditworthiness see Diwan and Rodrik (1991).

subsequent years). However, reserves in the form of interest collateral are absolutely illiquid and would not contribute to the desired import cover of international reserves, which implies that from a cashflow point of view it entails an outflow.

Regarding subsequent savings, in the short and medium run it can be reasonably assumed that the new reduced commercial debt obligations which emerged from these operations are fully serviced.⁴ In relation to the counterfactual scenario, how net transfers would be negotiated and determined is in the realm of bargaining theory and exceeds the scope of this note.⁵ Two assumptions sometimes made include scheduled payments, that is full contractual compliance, and full interest payments with rescheduling, where principal is rolled over at market rates. Additionally, a plausible medium-run counterfactual is one where the country's annual net transfer amounts to the annual average observed in recent years before the operation.

The following table refers to financial savings on commercial bank debt during the first four calendar years succeeding the operation (1991-1994 for Mexico, Costa Rica, the Philippines, and Venezuela, and 1992-1995 for Uruguay). It shows the up-front cost C and the annual service of the obligations after the operations along the lines explained above. It also shows the estimated annual net transfers and financial savings under the three alternative counterfactuals described above. They are: i) scheduled debt service, where net transfers equal the contractual obligations; ii) interest service, where interest service is paid and principal is rolled over; and iii) historic, where net transfers equal the average net transfers over the four calendar years prior to the operations. For the historic counterfactual, subsequent financial savings are also presented as a percentage of exports in the year before the operation.

⁴This disregards the establishment of debt-equity swap facilities in connection to the DDSR operation, which opens the possibility of further debt reduction. These provisions are not taken into account for the determination of the debt reduction achieved through the DDSR agreements under review because commercial banks are generally not obliged to use them. To the extent that banks have the option of not using them, swaps would materialize when they are profitable as a separate transaction. Nevertheless, the option value that these facilities entail for banks would be immediately incorporated in secondary market prices.

⁵See for example the bargaining model in Fernandez-Arias (1991).

Table 1: Medium-run Cashflow Savings

Country	Up-front Cost			Counterfactual 1 (Scheduled Service) a/		Counterfactual 2 (Interest Service)		Counterfactual 3 (Historic) b/			Savings as Percent age of Exports
	Cash for Buy-Backs	New Money	Collateral	Total Cost (C)	Annual Net Transfers	Annual Savings	Annual Net Transfers	Annual Savings	Annual Net Transfers	Annual Savings	
	(1)	(2)	(3)	(4)=(1)- (2)+(3)	(5)	(6)	(7)	(8)	(9)	(10)	
Mexico	-	1,027	7,166	6,139	6,241	3,487	4,157	1,403	3,546	791	2.1
Philippines	670	690	-	(20)	952	428	582	57	544	19	0.2
Costa Rica	188	-	37	225	437	401	142	106	52	15	0.8
Venezuela	647	1,166	1,729	1,210	3,203	1,885	1,687	369	1,911	593	3.8
Uruguay	352	89	111	374	223	143	143	63	225	145	6.1
Total	1,857	2,972	9,043	7,928	11,056	6,344	6,710	1,998	6,276	1,564	2.7

Series in millions of dollars, unless otherwise indicated.

a/ Scheduled principal repayments based on World Debt Tables Data (annual average over the four years after the operation).

b/ Based on the average long-term commercial bank net transfer in the four years preceding the operation (WDT).

c/ Cash-Flow Savings as a proportion of exports in the year before the operation.

Sources: World Debt Tables and author's calculation

We would argue that the historic counterfactual is generally more realistic than the two other counterfactuals. In particular, the assumption of full debt service yields short-run financial savings that are probably too optimistic for these countries, which have rescheduled debt in recent years (and run arrears in the case of Costa Rica). Subsequent financial savings, as measured by the historical counterfactual, are relatively small compared to exports.

With the exception of the Philippines, where new money more than financed the buy-back and the up-front cost C is consequently negative, subsequent financial savings appear relatively small compared to the cost C. This observed pattern is to be expected on theoretical grounds. In the context of debt negotiations commercial banks attempt to extract large net transfers in rescheduling negotiations and would only consider agreements entailing new money as a partial offset of debt service due. The reason why they are not willing to voluntarily provide new money, even at seemingly convenient terms, is that the debtor cannot commit to repay it in the future. An operation

where, in contrast to actual operations, financial savings are positive in the short-run (and possibly negative in present value) would be equivalent to such a transaction, which appeared to be infeasible in rescheduling negotiations. Unless the DDSR operation enables the debtor to improve its ability to commit⁶, negative financial savings in the short and possibly medium run should be expected. The evidence generally confirms this theoretical presumption: Brady deals are front-loaded, with commercial banks receiving an immediate compensation in terms of cash and enhancements which make them very costly in cashflow terms from the debtor's point of view.

One of the roles of supporting official creditors is precisely to alleviate this front-loading. The additional lending and acceleration of set-asides from official sources provide cashflow relief and may lead to an overall short-run positive cashflow impact from the country's viewpoint.⁷ The beneficial effect of official financing will be analyzed in the section IV (Indirect Benefits). It should be noted at this point, however, that the positive short and medium-run cashflow effects of official support should not be portrayed as benefits from the DDSR operation itself. The official financing provided for DDSR would also have a positive cashflow effect if the country received the supporting financing without conducting any DDSR operation. In particular, under the assumption that counterfactual net transfers to commercial banks would not be affected by the official support financing (which holds true by definition if the assumption of full service or full interest service is made), the same positive cashflow effects of official financing can be obtained irrespective of whether a DDSR operation is undertaken. This observation is particularly relevant to official supporting institutions, for which financial support is a policy decision.

In the long run, while the precise net transfers time profile is subject to many uncertainties, in an average sense they can be characterized by S , the expected present value of direct financial savings.

⁶One example may be the establishment of debt equity facilities at terms convenient to commercial banks from which the debtor may find difficult to renege once they become part of officially supported operations.

⁷Set-asides provide only temporary relief, since their acceleration does not exceed one or two years. Additional financing provides longer relief, but eventually it is repaid and also generates compensating outflows. Since we assume that official lending is riskless, cashflow relief in present value would be null (the grant component of these loans is negligible).

A realistic estimation of S would not yield a significant saving, since in theory S can be expected to be negative. The reason is that we should not expect banks to participate in the operation, which is voluntary in nature, unless they expect to make a gain compared to staying out⁸. To the extent that all the payoffs connected to the operation that banks receive are included in S , this amount would be our estimate of the commercial banks loss. To the extent that they do not have any significant informational disadvantage, it is not reasonable to assume that S is positive. We point out that the assumption that S summarizes all the operation-related payoffs to banks is crucial. It implies that third parties such as creditor country governments and other relevant third parties stay along the sidelines, as opposed to having a stick/carrot policy vis a vis commercial banks in matters of regulation, etc. Otherwise S is not sufficient: if third parties help banks if they reach an agreement, then banks may make an overall gain even if S is positive; if third parties hurt the banks if they don't reach an agreement, then banks may be willing to take a positive S in order to avoid the penalties.

Contractual financial savings, to the extent that debt is reduced at a discount, would yield, of course, a positive present value saving S by definition. They probably overestimate, however, a more realistic estimation of financial savings in present value based on more realistic scenarios. Scenarios where contractual debt service is complied with appear unrealistic. The historic record of overindebted countries show that, in the absence of a DDSR operation, debt service obligations can be expected to be eventually rescheduled, either formally through rescheduling agreements or informally through arrears.

The scenario with the DDSR operation is subject to similar considerations. For debt which has not been converted there is no strong reason for expecting major changes. For debt which is converted into the so-called Brady bonds the case can be made that the nature of the relation, and therefore compliance, can be expected to change. The key argument is that bonds are more difficult to reschedule, which would expose the country to the full extent of default penalties in the case of non-

⁸Notice that this conclusion is an implication of the voluntary nature of commercial bank participation and does not rely on secondary market valuations being unbiased estimators of future repayments. Quantitative estimations following this second approach are reported in Claessens, Diwan and Fernandez-Arias (1992).

compliance. This in turn would induce the country to comply. We would argue that, historically, institutions have always emerged to facilitate partial defaults on bonds. Even if they failed to materialize, it is not clear whether bonds would lead to better average compliance. While the frequency of non-compliance may be reduced compared to the syndicated loan case, the payments under those circumstances could be zero instead of a negotiated positive payment. As a practical matter, Brady bonds appear to carry substantial pure country risk discounts, which implies that full compliance may be assumed only in the next few years and that it is not clear that transfers under the scenario with DDSR are significantly less uncertain in the long run.

How negative S can be expected to be depends on the negotiation framework (see Claessens, Diwan and Fernandez-Arias (1992) for a complete analysis). Non-concerted operations, like for example Bolivia in 1988, have attracted criticism because of the fundamental problem that each individual creditor would agree to reduce debt only if the price is not below the fraction of total debt it expects to recover if it holds to its claims and does not sell, which is the so-called average cost and conceptually correspond to the debt secondary market price. However, from the debtor point of view, the corresponding value of a one-dollar reduction, which we will call marginal gain, is generally smaller because of the decreasing probability of repaying additional units of debt. The problem is made worse because the relevant average opportunity cost creditors would individually consider in a non-concerted operation is the ex-post market price, which would be pushed up by the reduction in debt. Banks have an incentive to free-ride on selling banks and would only sell at high prices, which would lead to a significantly negative S .⁹

Concerted operations solve the free-rider problem by making banks to share and therefore internalize the marginal opportunity cost of reducing debt. In the case of concerted operations, abstracting from the internal sharing arrangements among the banks and the heterogeneity among them, they can be treated as a single agent as a first approximation. Then the opportunity cost for them is

⁹It has been shown that non-concerted debt reduction operations are so costly financially that net benefits to countries can be expected to be negative even in the presence of large indirect effects (see Bulow and Rogoff (1991)). See also Claessens et. al. (1991).

only the decline in the expected present discounted value of net transfers associated with the lower face value, that is the financial gain to the country. This opens the possibility of banks being pushed close to their collective status quo position, that is $S=0$ under the assumptions spelled out above. One particular way to achieve concertedness is to present a menu of options where banks not participating in debt reduction have to provide new money (see Diwan and Kletzer (1991)). While this design may be good for discriminating among heterogeneous banks (see Diwan and Spiegel (1990)), other non-of-the-above options would also serve the purpose of concertedness as long as all eligible banks are obliged to participate for the deal to go through.

In order to obtain an estimate of S , the expected present value of net transfers associated with commercial bank obligations can be assumed to be similar to the secondary market value of debt, and therefore, as a proportion of the face value of debt outstanding, it can be assumed to be similar to the secondary market price of debt. It should be noted that in the case of the counterfactual scenario, however, the applicable secondary market price is not the one prevailing at the time the operation was conducted because markets anticipate the financial impact of the operation itself. This contamination makes the counterfactual market price unobservable and leads to the need of estimating it. Prices quoted before the Brady announcement on commercial bank debt reduction (March 10, 1989) are not contaminated. Adjustments reflecting changes in the debt stock, interest rates, and factors affecting country creditworthiness between the date of that announcement and the date the operation was concluded should be made. These adjustments are significant only in the case of Venezuela, which benefitted from positive developments in the period. For the sake of simplicity, these adjustments are disregarded here.

Table 2 shows estimates of S based on market prices, obtained as the difference between the value of the new and the old portfolio of assets that eligible banks hold. The value of the new portfolio is computed in Claessens, Diwan and Fernandez-Arias (1992) as the value of the net cash received by banks (cash minus the expected value of new money) plus the market value of the debt instruments outstanding. In order to match our analysis in table 1, principal and interest collateral

were added to the net cash received by banks (arriving at the cost C) and subtracted from the value of outstanding debt (arriving at the value of debt stripped from the portion which was collateralized, that is risky debt).¹⁰ The value of the old portfolio was computed as the applicable market price times eligible debt. The estimates indicate that banks have not made a loss in any of the Brady operations; in the aggregate, for the five countries considered, S amounts to minus \$8.1 bn.¹¹ It should be noted that only very significant upward adjustments to the pre-Brady prices of old debt would be needed in order to revert this conclusion qualitatively; on average, prices would need to be adjusted by more than a third in order to obtain a positive S.

**Table 2: Present Value of Cashflow Savings (S)
(US\$ millions)**

Country	New Portfolio			Old Portfolio			Present Value of Savings (S)
	Cost (C)	Market Value of New Risky Debt a/	Market Value of New Portfolio	Face Value of Eligible Debt	Applicable Market Price b/	Market Value of Old Portfolio	
	(1)	(2)	(3)=(1)+(2)	(4)	(5)	(6)=(4)*(5)	
Mexico	6,139	13,050	19,189	47,170	0.34	16,038	(3,151)
Philippines	(20)	3,094	3,074	6,600	0.36	2,376	(698)
Costa Rica	225	157	382	1,608	0.14	225	(157)
Venezuela	1,210	8,345	9,555	19,011	0.29	5,513	(4,042)
Uruguay	374	583	957	1,610	0.58	934	(23)
Total	7,928	25,238	33,166	75,999	0.33	25,095	(8,071)

Series in millions of dollars, unless otherwise indicated.

a/ Based on the initial secondary market prices quoted after the operation.

b/ Secondary Market Prices immediately before the Brady Announcement (03/10/89).

Source: Claessens, Diwan, and Fernandez-Arias (1992). See footnote

¹⁰In the case of the principal collateral this is fully justified because it amounts to an implicit prepayment of debt whose present value is equal to the face value of the collateral (neglecting the risk of the foreign bonds used as instruments). The case of the interest collateral is different because it might not be used fully; its prepayment value is model-dependent (see Clark (1990) for a discussion of the issues). In this point, mainly for ease of exposition, this paper departs from Claessens, Diwan and Fernandez-Arias (1992), where the prepayment equivalent of the interest collateral is taken as a fraction of its face value.

¹¹The difference between these estimations of S and those found in Claessens, Diwan and Fernandez-Arias (1992) is explained by differences in the market value of the old portfolio resulting from the use of marginally different counterfactual secondary market prices.

These numerical calculations assume that the secondary market price reflects the fraction of face value debt which can be expected to be repaid in terms of present discounted value of future net transfers. Although the issue is still open, most of the theoretical arguments (for example those based on the insurance guarantee value of risky loans or speculative bubbles) actually point to the price being too high, if anything. Counterarguments based on bankers not being fully informed or rational beg the question of why would we expect government officials, or ourselves as analysts for that matter, to do any better and be in a position to second-guess the market and outsmart the traders. It should be noted also that even if there are significantly misinformed traders in the market, the existence of a few informed traders would ensure that the price is not below fundamentals.

Even granting that market prices may be too low, it is interesting to see how much higher the "right" prices would have to be to justify the operation in terms of S . In Annex 1 we compute contractual financial savings, that is financial savings S under the assumption that contractual obligations both before and after the deal will be honored in present value.¹² In this extreme case where it is assumed that the "right" price should be essentially one, that is to say that no discount should apply to the price of debt, we obviously obtain $S > 0$ because debt is reduced at a deep discount. If we are willing to relax the assumption that no market discount should apply, we can ask how large the market price downward bias has to be in order to obtain $S = 0$.

If the assumption is made that restructured obligations after the deal in the form of exit bonds (or buybacks) and new money bonds will be honored and that the payments associated with the rest of the debt obligations will be the same both before and after the deal, then all savings are made on restructured debt. Then the pre-deal implicit discount on debt prices necessary to obtain a break-even situation can be easily computed by dividing the contractual financial savings by the face value of restructured debt (shown in Annex 1). In table 3 below it is shown that on average, all countries

¹²Strictly speaking, contractual financial savings would be equal to S under this assumption only if the contractual market rate involves no spread over the LIBOR rate (the discount rate). With a positive spread, in order to obtain S contractual savings need to be multiplied by a factor $f > 1$ which depends on the spread and the schedule profile. The factor f is bigger the longer the maturity; in the extreme case of a console, contractual financial savings would amount to estimating S with a discount factor equal to the market rate.

combined, the implied break-even downward bias of market prices is 32 cents on the dollar. Alternatively, if market prices on risky debt are assumed to systematically underestimate the countries' expected future debt service both before and after the operation, an average downward bias of 30 cents per dollar would be needed to arrive at $S=0$. Both sensitivity exercises show that very substantial biases are needed to reverse the qualitative conclusion that the present value of direct financial savings is likely to be negative. As explained before, this result can be interpreted as characterizing average direct financial savings over the long run.

Table 3: Sensitivity Analysis of $S < 0$
(cents on the dollar)

	Break-even Bias	Market Prices	Proportional Bias
Mexico	0.33	0.34	49%
Philippines	0.14	0.36	28%
Costa Rica	0.27	0.14	66%
Venezuela	0.43	0.29	60%
Uruguay	0.05	0.58	8%
Total	0.32	0.33	49%

Source : Author's calculations.

It should be noted that both the scheduled payment and the full interest service scenarios (counterfactual scenarios (i) and (ii) in table 1 above) would lead to a present discounted value of transfers above the face value of debt (because market interest rates include a risk premium over the risk-free rate). Therefore the implied market price, which is the ratio between this present discounted value and the face value of debt, would be above one. The deeply discounted market value of debt indicates that both scenarios are inconsistent with the market. It is interesting to notice that the implied prices would differ across countries only if different spreads and schedule profiles apply; since these variations are minor they would result in only marginal differences across countries. Therefore the discrepancy between these scenarios and market prices is larger the more creditworthy the country.

For completeness, the implied debt prices under these two scenarios are computed in table 4 below (assuming a LIBOR rate of 8 percent and a spread of 13/16).

The corresponding implied price for the historical counterfactual (scenario (iii) in table 1 above) is also calculated in table 4 under the same LIBOR rate assumption. It is interesting to notice that the continuation of net transfers at their historical levels (as shown in table 1) for the entire future is overoptimistic too. In effect, the associated implicit price is above the applicable market price. Finally, for future reference, market-consistent net transfer payments are presented. For this purpose, as explained above in connection to table 2, the new portfolio of instruments was decomposed into the up-front net compensation that banks received (the cost C) and the outstanding debt obligations stripped off the collateralized portions (risky debt). For simplicity, it is assumed that net transfers on account of risky debt obligations, both before and after the operation, amount to a constant stream of payments, whose present value equal the market value of risky debt. Therefore their implied prices are equal to the relevant market prices.

**Table 4: Market-Consistent Cashflow Savings
(US\$ millions)**

	Counterfactual 1 (Scheduled Service) a/ Implied Market Price	Counterfactual 2 (Interest Service) Implied Market Price	Counterfactual 3 (Historic) b/ Implied Market Price	Market Consistent Subsequent Annual Net Transfers		
				Old Debt	New Risky Debt	Savings
Mexico	1.049	1.102	0.940	1,283	1,044	239
Philippines	1.043	1.102	1.030	190	248	(57)
Costa Rica	1.009	1.102	0.401	18	13	5
Venezuela	1.036	1.102	1.256	441	668	(227)
Uruguay	1.048	1.102	1.743	75	47	28
Total	1.045	1.102	1.032	2,008	2,019	(11)

Series in millions of dollars, unless otherwise indicated.

a/ Scheduled Principal Repayments based on World Debt Tables Data.

b/ Based on the average long-term commercial bank net-transfer in the four years preceding the operation (WDT)

Source: Author's calculations

In summary, theoretical considerations lead us to believe that direct financial savings are negative, both in present value and in the short, and possibly medium, run. The insignificance of the direct financial savings of the DDSR operation is not only a theoretical presumption based on rational expectations and a long horizon, but also a straightforward short-run implication of the way Brady deals are structured.

To obtain positive direct financial savings in present value terms would require the assumption that banks grossly miscalculate repayment prospects and that market prices are severely biased downward.

Positive market discounts are not consistent with the assumption of full debt service, possibly with reschedulings at market rates such as in the assumption of continuous principal roll-over and full interest payment. Short-run financial savings would be similarly biased if unrealistic scenarios inconsistent with the recent historical record are assumed. These biases are larger the larger the market discount and the poorer the payment record of the debtor. Therefore the use of uniform scenarios across debtor countries, like full contract compliance, would unduly favor operations conducted by less creditworthy countries.

III. DIRECT BENEFITS

Changes in domestic absorption would follow the direct financial savings. In this section the liquidity effect of direct financial savings will be described and the possibly magnified outcome due to fiscal and foreign exchange constraints explained. This magnification would justify the use of large discount rates for discounting the cashflow savings. Finally, we compute the internal rate of return (IRR) of direct financial savings under a variety of scenarios and show that under realistic scenarios the return is likely to be below the critical discount rate, which indicates that direct benefits of DDSR operations can be expected to be negative.

A debtor country in a one-good, perfect neoclassical world would divide one unit of additional foreign exchange between current consumption and investment according to the corresponding marginal propensities, this implying that investment would be affected by a fraction of a unit. Consequently, the impact of net transfers on investment is bound to be relatively small. The deviations from that model which appear to be relevant for the case at hand are the ones described in foreign exchange two-gap models and the ones associated with fiscal rigidities and the limitations to government policy, because the liquidity effect would be in the form of foreign exchange and would accrue to the government (since most debt is public). The first set relates to foreign exchange constraints and the second set to fiscal constraints.

Two-gap models assume that investment goods and intermediate inputs are very difficult to substitute domestically. They also assume that exports are very inelastic; otherwise, as soon as foreign exchange becomes more valuable because of its importance for profitable investment, exports would expand and increase the supply of foreign exchange. In other words, domestic substitution would be achieved through international trade. Under those conditions it is possible for the impact of additional foreign resources on investment to be very high, even higher than unity. It should be noted that these pessimistic ideas about export elasticities, which were at the root of the import substitution policies in many of the overindebted countries in past decades, are now being repudiated, which makes the case doubtful.¹³

Since commercial debt being converted is public debt, it directly affects the liquidity of the public sector. Given the economic and political constraints to cut public consumption expenditures, these liquidity effects may be very sizeable. If complementary public investment is cut, the impact on total investment would be magnified. If revenue is increased in a distortionary way, which would be

¹³An assessment of the importance of the magnifying effect of the foreign exchange constraint certainly cannot be obtained by measuring the average incidence of imported investment goods in total investment: countries which almost don't rely on foreign goods would be assigned an astronomical multiplier linking additional foreign exchange and domestic investment. While this constraint may be severe in some countries, its relaxation would not lead to the realization of magnified direct effects on investment unless the savings constraint is also satisfied. In order to assess the actual, as opposed to the potential, value of relaxing the foreign exchange constraint this needs to be established.

the case if inflationary financing is used or least-resistance changes to tax codes are made, inefficiencies would arise. Similar allocative inefficiencies may arise if domestic debt is expanded to a point that crowds out private investment.

The best available econometric evidence for credit-constrained countries on the subject is in Cohen (1990). There it is shown that in the last decade, overall, one additional unit of foreign exchange liquidity can be expected to translate into additional domestic consumption and investment in proportion two-thirds and one-third respectively, which is broadly consistent with the neoclassical model. This evidence leads us to be cautious in estimating large effects of external finance on investment, and suggests that both consumption and investment move in the same direction in the face of external cashflow shocks.

It should be noted that irrespective of the relative importance of the implicit multiplier linking external cashflow savings and investment, to the extent that cashflow savings are negative the investment impact would also be negative. In the last section we showed that the direct financial savings are likely to be negative, both in the short-run and in the long-run (as measured by present value calculations), which suggests negative investment effects. Based on the econometric evidence, which shows that the investment effect is partial and that, therefore, consumption and investment move in the same direction, it appears that both the corresponding consumption and investment direct effect would be negative. To the extent that there is a negative investment impact, there is also a negative dynamic component further contributing to the negative consumption static direct effects.

The internal rate of return (IRR) of the stream of direct financial savings provides a summary of the direct benefits of DDSR operations, that is the welfare implications of these direct effects. In a credit-rationed debtor country the marginal return on investment (as well as the marginal cost of foregone consumption) is presumably larger than the international risk-free rate, both for liquidity and risk reasons. Therefore, such a country should discount future streams more heavily than banks. This would be particularly true in the case of the stream of direct financial savings being analyzed to the extent that their effect on the allocative efficiency in the domestic economy is magnified due to the

relaxation of constraints on efficiency, as suggested above. Therefore, direct benefits would be positive if the IRR of the direct financial savings exceeds the domestic discount rate, that is some critical level which can be expected to be above the risk-free international rate.¹⁴ (This statement is true under the assumption that subsequent cashflow savings are positive; if subsequent cashflow savings are negative, then direct benefits would be positive if the IRR is below the critical level.)

In table 5, the IRR is estimated based on three counterfactual scenarios: i) Interest service; ii) Historic; and iii) Market. The first two counterfactual scenarios are similar to the ones used in table 1 for the first four years after the operation but extended to the entire future. Regarding restructured debt, it is assumed that Brady exit bonds are fully serviced and mature in year 30 generating a cash inflow equal to the applicable interest collateral (Brady exit bonds are 30-year bullet maturity bonds with collateralized principal). Remaining outstanding debt not in the form of Brady exit bonds is assumed to receive full interest service with principal roll-over (as in counterfactual (i)). For the market scenarios, by contrast, the cashflow savings stream, both before and after the operation, was derived based on the uniform market-consistent net transfers estimated in table 4 above.

**Table 5: Internal Rate of Return of Cashflow Savings
(in percent)**

Country	Interest Service	Historic	Market
Mexico	22.93	13.72	3.89
Philippines	NA	NA	287.00
Costa Rica	46.9	8.01	2.42
Venezuela	30.55	49.02	NA
Uruguay	17.02	38.79	7.51
Total	25.25	19.91	

Source: Author's calculations

¹⁴In World Bank project lending, for example, the critical level for IRR is about 10%.

Under the assumption of full interest payments, the IRR is very large in all countries¹⁵ (in the extreme case of the Philippines, where C is negative, IRR does not exist). On average, all countries except the Philippines combined, it is around 25 percent certainly above the critical level. Under the assumption of scheduled debt service, the IRR would be even larger because the savings stream would be more front-loaded. As explained above, these scenarios are not consistent with market valuations and lead to overly optimistic estimations, in this case very large IRRs. Under the historic assumption, except Costa Rica whose IRR is about the assumed risk-free rate of 8 percent, direct benefits appear to be positive as measured by a sufficiently large IRR. However, as noted above, this scenario is also generally inconsistent with the market and would, therefore, lead to optimistic IRRs. (Note that in these two scenarios the subsequent cashflow savings are positive, and therefore large IRRs imply positive direct benefits.)

The market scenario, by contrast, is, by definition, consistent with market valuations. In the case of Mexico, Costa Rica, and Uruguay, subsequent savings are positive because $C+S > 0$ (an up-front payment larger than banks' financial gains buys subsequent savings). In this case, their IRRs below the critical level (especially in the case of Mexico and Costa Rica) imply negative direct benefits. These dismal IRRs are the combined result of negative cashflow savings in present value, that is $S < 0$, and the front-loading of the operation (large C). In effect, it can be easily checked that, as a share of the risk-free discount rate, the IRR is equal to $1+S/C$. If $S=0$, the IRR would coincide with the risk-free rate (assumed to be 8%). The lower the overall savings S and the larger the front-loading C, the lower IRR. Finally, in the case of the Philippines and Venezuela subsequent savings are negative and significantly negative direct benefits also result (in the Philippines the IRR is very large and in Venezuela it does not exist).

¹⁵To the extent that debt is reduced at a discount, the IRR is necessarily larger than the risk-free rate.

In summary, both in the short-run and in the long-run, direct effects on both consumption and investment are likely to be negative as a result of negative direct financial savings. To the extent that foreign exchange and fiscal constraints are significant, negative direct effects would be even more significant due to the dynamic effect of lower investment.

Direct benefits as measured by comparing the IRR of direct cashflow savings with a critical level appropriate to credit-constrained countries appear to be negative too. This is the result of the negative present value direct financial savings ($S < 0$) and, in most cases, the front-loading of the operation ($C > 0$). To the extent that the country's particular circumstances imply that direct financial savings would relax important foreign exchange or fiscal constraints inefficiently depressing the level of investment, the critical level for IRRs would be larger and negative direct benefits would be even more significant.

IV. INDIRECT BENEFITS

We know little about indirect effects. What follows is a tentative presentation of these effects and their interaction. The sources of indirect effects can be classified into domestic and external sources.

a) Domestic Sources

One set of indirect effects relates to incentive effects on investment and macroeconomic policy due to the reduction in the debt overhang, both in terms of debt stock reduction and ceilings on debt service. The standard debt overhang hypothesis states that the accumulated debt acts as a tax on future output, discouraging investment, since an improvement in the economic performance of the indebted country benefits the creditors in the form of higher debt repayments.

The theoretical case of debt overhang effects has been made so emphatically that the possibility of a declining debt value function (a debt Laffer curve) was taken seriously by many scholars. Being on the declining portion of the Laffer curve would allow to avoid an unpleasant world of trade-offs;

both parties would benefit from debt forgiveness. The only party to benefit for sure in the debtor country: To the extent that private creditors have not found it in their interest to condone debt claims without quid pro quo the Laffer curve remains an intellectual curiosity. But a Laffer curve is not needed to rationalize DDSK. Relatively weak disincentive effects would lead to inefficiencies that may be alleviated by DDSR.

Leaving aside the uncertainty over future payments that a debt overhang may induce, which is conceptually separate from the original argument, as a practical matter, the average implicit debt overhang tax appears to be small if measured as the fraction of GDP which is paid in the form of net transfers to commercial banks (certainly less than 5%). More specifically, what would be relevant for gauging the likely incentive effect of debt reduction is the change in the rate. This change depends on the probability of the portion of debt reduced being ever repaid; in the extreme case where that probability is zero, expected net transfers, and therefore the market value of debt and the implicit tax rate, would be unaffected. What matters for the change in debt burden and, to a first approximation, the change in the implicit average tax rate, is not the face value of debt reduction per se but its market value, which captures the effect on future net transfers. It is apparent that so far debt reduction has been limited, as shown in table 6, particularly when, as previously suggested, it is measured in terms of value reduction (shown in the last column of table 6). Therefore, unless debt reduction is very comprehensive, the change in this implicit average rate can be expected to be negligible if debt is deeply discounted.¹⁶ Conceivably, the change in the marginal rate, which is the relevant one for an incentive viewpoint, may be more significant. Even then, it should be noticed that private investment would react to a relaxation of the debt overhang only to the extent that private agents are able to foresee a corresponding lower future capital taxation as a result of debt reduction, which may not be realistic unless there is an explicit policy statement and commitment to that effect. Furthermore, the incentive effect of debt overhang is only part of the story. Its income effect could conceivably offset

¹⁶Nevertheless, the establishment of a relatively low scheduled debt service profile in 30-year bullet-maturity Brady bonds, for a given total amount of debt, provides a positive incentive compared to the situation where amortization due would immediately capture any upside shock favoring the country.

it and lead to efficient levels of investment (as it is sometimes argued in the case of savings inelastic to interest rates).

**Table 6: Debt Reduction
(US\$ millions)**

Country	Total External Debt		Commercial Bank Debt		
	Pre-Operation Stock of Debt	Debt Reduction as percent of Pre-operation Stock of Debt a/	Eligible Debt	Debt Reduction as Percent of Eligible Debt a/	Debt Market Value Reduction as Percent of Market Value of Eligible Debt b/
Mexico	95,416	17	47,170	43	19
Philippines	28,468	2	6,600	10	-30
Costa Rica	4,603	22	1,608	73	30
Venezuela	32,491	13	19,011	26	-51
Uruguay	3,707	18	1,610	50	38
Total	164,685	14	75,999	37	-1

Series in millions of dollars, unless otherwise indicated.

a/ Based on the reduction in the present value of risky commercial bank debt obligation.

b/ Based on market value of risky bank debt.

Source: Claessens, Diwan and Fernandez-Arias (1992) and author's calculations.

Nevertheless, debt overhang effects may be more sizable than what the previous analysis may suggest. First, while the direct effect on private investment may be in fact insignificant to the extent that the change in expected capital taxation and other return-relevant variables may be small for the reasons discussed, the effect on public policy may be substantial. In this context, investment is any activity imposing up-front costs which improves future output and debt collections, such as structural adjustment. On the one hand, due to the debt overhang effect, sound growth-oriented policies are made more attractive by virtue of debt reduction. The public sector, compared to the private sector, may be in a better position to internalize the debt overhang disincentive effect and may therefore react more strongly to debt reduction. On the other hand, sound public policy is facilitated by an environment more conducive to political consensus. If fiscal constraints impose substantial

inefficiencies on the policy framework, these beneficial effects may entail significant improvements in the policy framework, domestic investment, and welfare.¹⁷ It is important to note, however, that the available empirical evidence of the disincentive effect of external debt on domestic investment in indebted countries is so far limited, and the studies that have been done can be described as inconclusive.

Second, another set of indirect effects from domestic sources relate to the beneficial effects of the reduction of uncertainty on investment and on macroeconomic policy sustainability and credibility that the reduction in the debt overhang may produce. Since debt reduced amounts to an unallocated potential claim on the country, it can be argued that in connection with uncertainty reduction the relevant measure of debt reduction is nominal reduction rather than its market value. As shown in table 6, nominal debt reduction is much more significant than its market value and may lead to a significant reduction in uncertainty. Furthermore, the conversion of syndicated debt into bonds may further reduce uncertainty to the extent that they are more difficult to renegotiate and therefore actual payments are more predictable. Since investment is for the most part irreversible at the country level, uncertainty may lead to a wait-and-see attitude, particularly if uncertainty is expected to be resolved soon. Waiting may be more valuable than investing. An uncertain environment is not conducive to efficient public policy either, because future policy itself becomes uncertain. This in turn would have real consequences on the economy immediately.

Additionally, the feasibility of government policy may be called into question and adverse expectations may develop destabilizing the system, such as expectations of devaluation. We know little about how the expectation dynamics might magnify the original impulse and become self-fulfilling, but casual evidence suggests that this magnification may be significant. To the extent that the expectations are not fulfilled, the government incurs losses, since the adverse expectations are incorporated in the premium of public domestic debt. This additional financing requirement makes the fiscal situation more

¹⁷An example of this fiscal mechanism in the context of debt negotiations is given in Fernandez-Arias (1991), where the implicit tax rate on output which obtains through bargaining is sensitive to fiscal constraints and translate into a strong tax on sound public policy and inefficient policy frameworks.

unstable and tends to absorb increasing volumes of domestic savings and crowd out private investment through increases in the expected real interest rates in the economy at large.¹⁸ Another similarly destabilizing factor may be the perception that the government may be more likely to default on its domestic debt.¹⁹ To the extent that fiscal adjustment is inefficient, as suggested above, the implications for the policy framework and the domestic economy may in turn be substantial.

However, the reduction in uncertainty produced by the restructuring is certainly not complete. In effect, market discounts indicate that sizeable country risks persist. Even if it is true that bonds cannot be rescheduled, uncertainty would persist and may be sizeable because of the all-or-nothing nature of the payments under this assumption.²⁰ Nevertheless, it is fair to say that uncertainty is likely to be reduced at least in the medium term when debt service appears feasible, which may have a dramatic effect on the sustainability of macroeconomic policy, credibility, and, as explained before, interest rates and the investment climate. Its significance in the long run is more doubtful, but it might be also less important if the economy takes off.

A related argument states that by conducting the DDSR operation the debtor signals its seriousness and commitment. This in turn would affect the general perception of the Government and lead to increased confidence on the part of domestic and foreign investors, which in turn would boost investment. Arguments based on perceptions should be taken with caution, however. Cheap signals are not credible. For a signal to convey information and therefore be credible it has to be the case that the wrong type, that is a "bad" government, would incur additional production costs in producing the signal beyond the point where it has an incentive to produce it (i.e. that a "bad" government would not see a benefit in pretending that it is in the right track and subscribing to a DDSR operation). In any

¹⁸See van Wijnbergen (1991).

¹⁹See Dooley et. al. (1990) for a model along these lines.

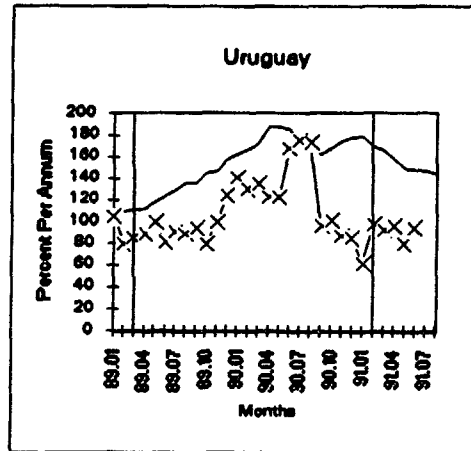
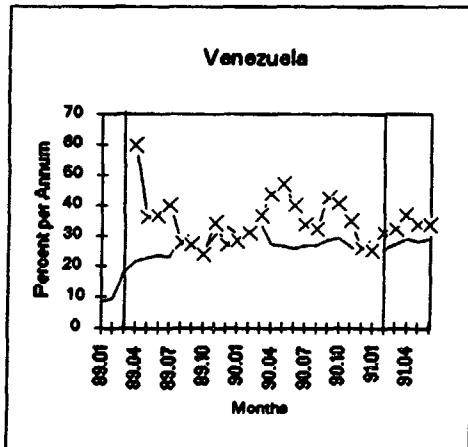
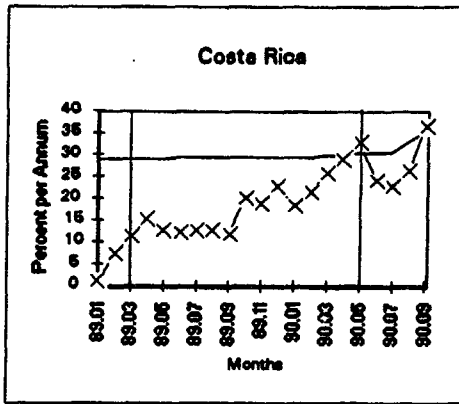
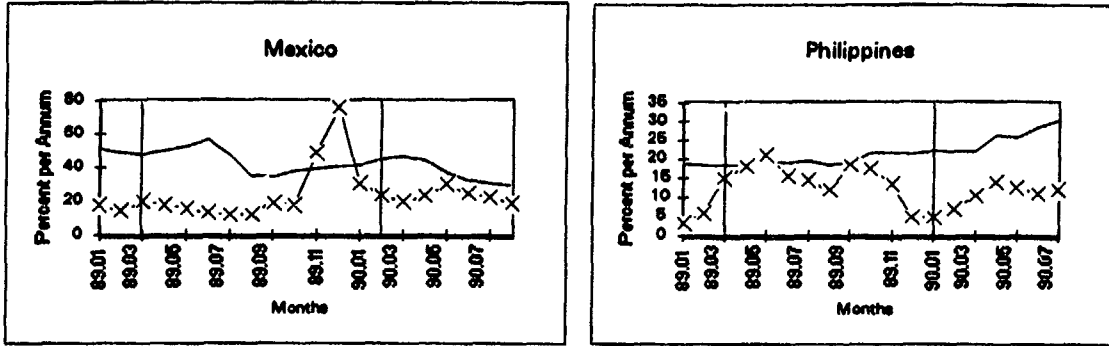
²⁰Similarly, conversion to fixed nominal interest rate is not necessarily significantly more certain in real terms than floating interest rates, since it depends on how well LIBOR and international prices correlate. Downside contingency provisions parallel to the recapture clauses stipulated in most of the agreements would be another way of reducing uncertainty which has not materialized so far.

event, this case needs to be made rather than taken for granted.

Finally, the role of international financial institutions (IFIs) may be also important for the policy framework. In relation to the establishment of confidence, to the extent that IFIs have an information advantage regarding the country vis a vis commercial banks and their judgement is credible, their seal of approval of the operation may also provide a credible signal. A more tangible channel through which IFIs may improve the resulting policy framework is by imposing policy conditionality. To the extent that the country benefits from the operation and that IFI support is important for its successful conclusion, leverage for conditionality would be improved and the policy framework consequently enhanced.

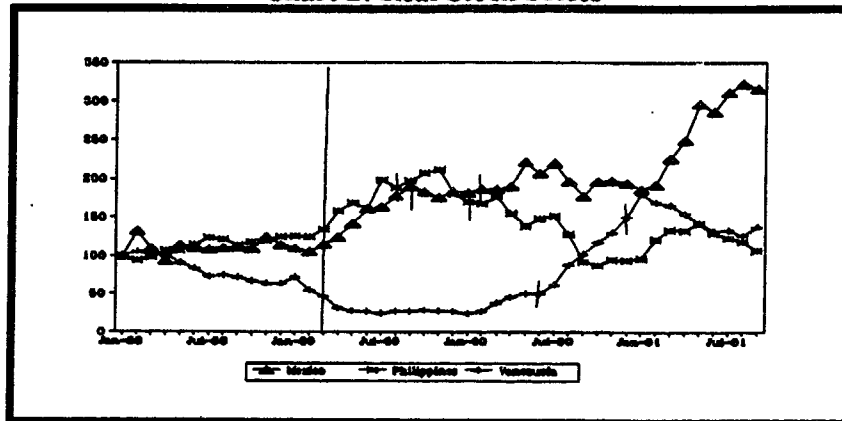
Some of the indirect effects linked to domestic sources can be gauged by looking at domestic interest rates and stock prices in past DDSR operations, which would immediately react to new information regarding the future. For these indicators the most revealing time period is around the date of the agreement in principle, where most of the new information regarding the operation was incorporated. The interpretation of their evolution after the agreement is concluded is less clear, particularly because the five countries experienced significant shocks in terms of trade and, in the case of the Philippines, natural disasters. Chart 1 depicts the evolution of nominal interest rates and inflation, and chart 2 depicts the evolution of real domestic stock prices (the time profile has been divided into four phases defined by the following three events: i) the date of the Brady announcement (March 10, 1989); ii) the date an agreement in principle on a DDSR operation was achieved in each country; and iii) the closing date of the agreement).

Chart 1: Domestic Interest Rate and Inflation Rates



— Short Term Domestic Interest Rate
 -x-x- Inflation Rate

Chart 2: Real Stock Prices



Real Stock Price Index.

Vertical lines correspond to the date of the following events defining four phases:
Brady Announcement, DDSR agreement in principle, and DDSR agreement.

Source: IFC.

Nominal interest rates fell abruptly by 20 percentage points in Mexico during the negotiation period, and ex-post real interest rates fell by almost 60 percentage points in a six-month period as negotiations evolved. To a large extent this improvement has been maintained over time. Because interest service on domestic debt was a very sizable proportion of Mexican public revenues and put severe pressure on public policy (about one-third in 1989), this development entailed a very significant relief to the Mexican public sector several times the liquidity relief on external debt (the real burden of domestic debt fell by more than 15 percent of public revenue between 1988 and 1990). The interest rate response and its implications were much less dramatic, if at all measurable, in the rest of the countries.

Stock market prices are available only for Mexico, Venezuela and the Philippines. In the three countries real stock prices rose during the negotiation period, which would suggest that the market expected positive effects from DDSR. After the operations were concluded, they stagnated in Mexico, continued to climb in Venezuela, which suggests that positive non-DDSR factors might have been also at play, and dropped sharply, reversing previous gains, in the Philippines.

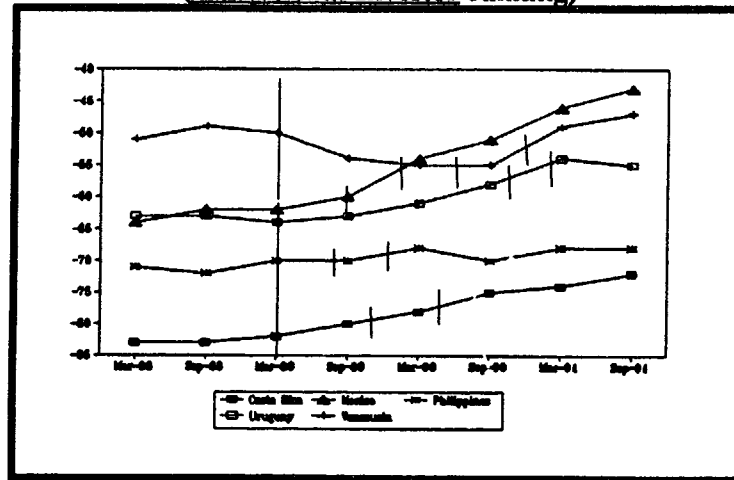
b) External Sources

To the extent that the DDSR operation improves country creditworthiness by improving the country's prospects and reducing the debt overhang, additional foreign savings can be expected to flow in. In the case of participating commercial banks, unless debt reduction is close to complete, the improvement in country risk is not likely to change the rationing of credit in the medium term, but it would at least make the future resumption of voluntary lending more likely. In the case of other foreign investors, it may reinforce current capital flows and may open the door for voluntary financing from sources not closely related to commercial banks (such as FDI, portfolio, etc.). Confirming this optimistic outlook, in both Mexico and Venezuela private and public sector entities have been able to access voluntarily private capital markets in significant amounts as documented below.

Nevertheless, to the extent that the reduction in debt is limited, both in face value and in market value, only limited additional inflows can be expected on this account. Automatic renewed foreign capital inflows should not be taken for granted. Improvements in the policy framework and a better investment climate, as described above, are likely the most significant factors attracting foreign capital. Furthermore, the positive effect on creditworthiness is not without its drawbacks. Unfortunately we do not have a good theory or evidence about how the values of foreign claims interact and relate to each other, but at least in the case of non-participating foreign claimants subject to similar risks (e.g. non-participating commercial banks, private bondholders) the operation may very well result in large-scale free riding and increased extraction of resources.

The evolution of country creditworthiness indicators and foreign resource inflows are depicted below in chart 3 and 4 respectively.

**Chart 3. Creditworthiness
(Institutional Investor ranking)**



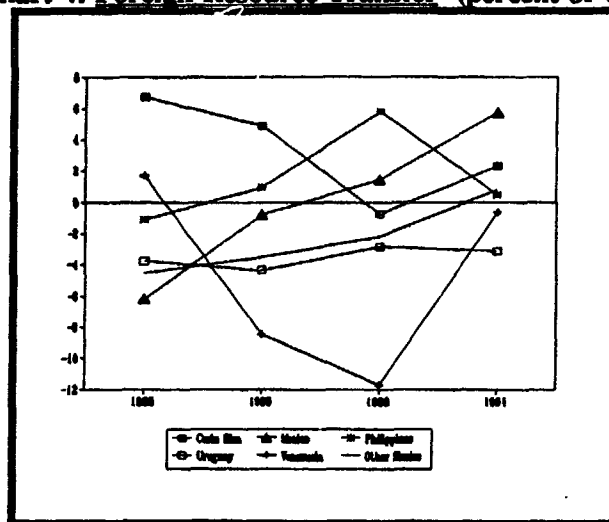
Country Credit Creditworthiness Ranking.

Vertical lines correspond to the date of the following events defining four phases:
Brady Announcement, DDSR agreement in principle, and DDSR agreement.

Source: Institutional Investor.

The credit ratings by private market participants²¹ for all five countries rose in parallel, which confirms the beneficial effects of DDSR on country creditworthiness. Since these ratings are in the form of numerical rankings over a large sample of countries, they are a relative measure that can be interpreted as reflecting specific circumstances in the countries involved (as opposed to international factors such as the fall in LIBOR rates).

²¹The credit rankings used in the analysis were taken from the Institutional Investor.

Chart 4. Foreign Resource Transfer (percent of GDP)

Adjusted Resource Transfer is the aggregate net resource transfer (imports minus exports of goods and non-factor services) as increase in reserves (as percent of GDP).

Source: World Bank (IEC).

The evolution of external capital inflows is also generally consistent with improved creditworthiness, with the exception of the Philippines. Since it takes time to attract capital inflows, this piece of evidence is necessarily tainted by other shocks experienced by the country. One useful measure of the ability of a country to attract foreign financing is the adjusted resource transfer from abroad, defined as net capital inflows and transfers (including errors and omissions) net of factor payments; or measured from the use viewpoint, the deficit on trade in goods and non-factor services (the negative of the resource balance) plus reserve accumulation. The 1991 transfer is significantly larger than the 1990 transfer in Mexico (by 4 percent of GDP), Venezuela (by 11 percent of GDP), and Costa Rica (by 3 percent of GDP). Information available for similar countries²² show a similarly increasing trend of 3 percent of GDP, which weakens the significance of these positive developments in countries with DDSR operations.

Another source of indirect benefits relates to the efficiency of the new arrangements between

²²Unweighted average of the rest of the SIMICs (WDT 1991-1992) except Bolivia, Nicaragua, and Syria for which 1991 estimates were not available.

the debtor country and foreign investors. In particular, better coordination and incentives of the selected group of non-exiting commercial banks, who chose to provide new money or at least not to exit completely by not taking buyback and debt-equity swaps options, is an additional reason for optimism. It is not clear, however, that most of the debt negotiation problems in the past were caused by a set of commercial banks too prone to exit or by the commercial banks inability to coordinate. The new environment, particularly in the face of downside contingencies, remains to be seen. The market valuations of converted debt indicate that the remaining commercial banks are not close to providing voluntary lending without special guarantees, and therefore do not necessarily support the hope that they are going to be flexible if payment difficulties arise.

Finally, official creditors may find it more attractive to invest not only because of improved country creditworthiness but also because the impact of development financing would be enhanced. One obvious reason why this may be so is that the policy framework is better. Another reason is that relatively low scheduled profiles on commercial debt service limit the potential leakage of official money to commercial banks, therefore improving its development impact. Official financial support for DDSR operations itself may be one example of this phenomenon, provided that support would not have been forthcoming in the absence of the operation because it would not have advanced economic development. In this case, from the point of view of the beneficiary countries, the official financial support in terms of additional lending and acceleration of set-asides would amount to an indirect benefit of the operation. Notice that official support financing amounts to an indirect benefit to the country only to the extent that it would have not been provided in the absence of the operation. From the point of view of these official creditors, who make the policy decisions on this financing, this is equivalent to saying that unless the DDSR operation is conducted no extra official financing would be worthwhile.

In summary, indirect effects depend primarily on the realization of a better policy framework and investment climate as a consequence of the operation, which would improve incentives to invest domestically and attract foreign savings in the form of additional sources of international capital. While

it is too early to pass definitive judgement on the significance of improved investment incentives as traditionally described by the debt overhang hypothesis, it appears that this case has been exaggerated in the past. The increased quality and credibility of macroeconomic policy due to stability and the reduction in uncertainty may have, in contrast, a large impact. Theory needs to be developed in order to assess the potentially significant effect of DDSR operations on additional international capital sources, both as a consequence of the more cooperative relationship between creditors and debtor countries as well as the reduction in foreign investment risk associated with the reduction in commercial debt overhang. It appears that the crucial factor underlying the realization of these transformations is a good and credible policy framework, which may be facilitated by the alignment of incentives and the reduction in uncertainty.

V. EVALUATION AND CONCLUSIONS

It appears safe to conclude that, contrary to widely held views, commercial banks have probably benefitted from the operations, as explained in section II and suggested by our negative estimates of S. In other words, due to the voluntary nature of commercial bank participation in DDSR operations, direct financial savings to the country are probably negative in present value terms. The benefit from DDSR is not that debt is bought at "bargain prices" at the expense of commercial banks. It appears difficult to justify a DDSR operation on purely financial grounds. A more realistic way of looking at a DDSR operation is to view it as a "project" which involves a certain financial cost. The return of such project is the beneficial macroeconomic impact of the DDSR operation, which we will call the development impact.

The main purpose of DDSR is the establishment of a more efficient arrangement between debtor countries and commercial banks, leading to improved conditions for economic development. A DDSR operation with no development impact would be a costly project with no return and should not be undertaken. The achievement of a beneficial development impact through DDSR, however, would lead to positive returns. These returns are the efficiency gains of DDSR,

which both parties can share to their mutual advantage: the debtor country may significantly benefit even as commercial banks improve their financial position through participating in the operation. DDSR operations would entail net benefits to countries only to the extent that the efficiency gains produced by DDSR operations more than compensate the financial cost that commercial bank participation imposes. Whereas DDSR operations are likely to entail financial costs to debtor countries, which should not be ignored in the analysis of DDSR operations, these costs may be offset by the development benefit of DDSR.

The development impact of DDSR is usually measured by the increase in the GDP growth rate.²³ It appears too early to give a full account of the growth effects in countries which have undertaken DDSR operations because of the short time elapsed since the operations were concluded. A suitable alternative is to look at the change in investment patterns. Even then, gestation lags, the impact of other exogenous shocks²⁴, and the complex nature of the linkages between DDSR and macroeconomic performance, make it very difficult to assess the evidence. The historical record could provide a benchmark for measuring DDSR effects, but may fail to take into account other factors besides DDSR. Alternatively, a comparison with severely indebted economies similar to those reviewed here provides another benchmark against which to measure the success of DDSR operations which would incorporate common international factors. However, recent positive trends in many severely indebted countries, particularly in foreign investment and secondary market prices, are partly due to the expectation of the impact of future DDSR operations in those countries, severely limiting the usefulness of this benchmark.

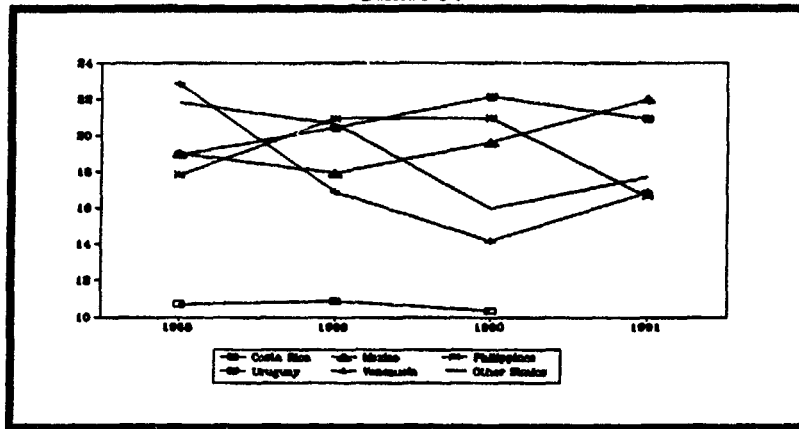
Subject to the above caveats, in chart 5 we present the evolution of the investment-GDP ratio,

²³From a welfare point of view this is a partial measure because it disregards the cost of the consumption foregone as a result of increased investment. Nevertheless, under the premise that the welfare optimal investment level is higher than the ones observed, changes in GDP growth are directly related to changes in welfare.

²⁴All five economies reviewed here have experienced significant shocks in terms of trade and, in the case of the Philippines, natural disasters. The Gulf war was the major exogenous shock. Its effect was positive in the oil-exporting countries, Mexico and, especially, Venezuela; it was negative in the oil-importing countries.

as measured by the gross fixed capital formation, for the five Brady countries reviewed and for the average of the rest the Severely Indebted Middle Income Countries (as defined in World Debt Tables 1991-1992).²⁵ Investment, however, may provide a misleading picture of success if domestic savings do not recover as expected. Chart 6 presents the corresponding evolution of the domestic savings ratio.

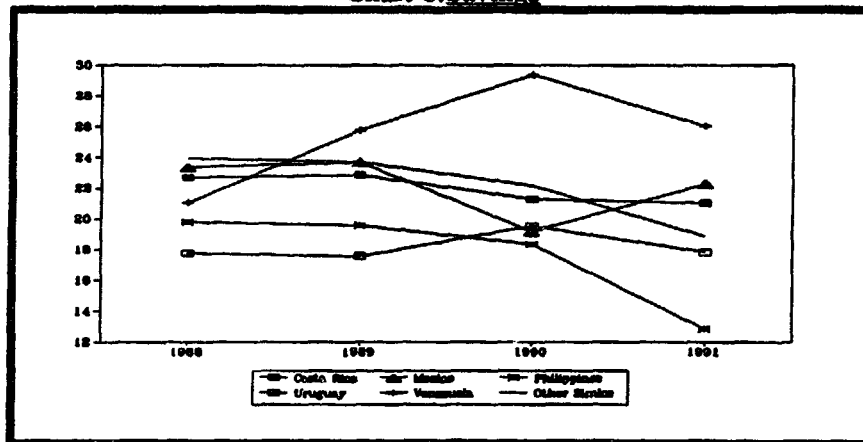
Chart 5:



Total Gross Capital Formation (as percent of GDP).(Uruguay based on constant price information.)

Source: World Bank (IEC).

Chart 6.Savings



Gross Domestic Saving (as percent of GDP).

Source: World Bank (IEC).

²⁵Unweighted average over the rest of the SIMICs except Bolivia and Syria for which 1991 information was not available.

Preliminary 1991 data indicate that the change in the ratio of total gross fixed capital formation to GDP between 1990 and 1991 increased in Mexico (1.4 percentage points) and Venezuela (2.7 percentage points), remained essentially constant in Uruguay, and decreased in the Philippines (4.3 percentage points) and Costa Rica (1.1 percentage points). Compared to 1988 and 1989 levels, 1991 levels are higher only in the cases of Mexico and Costa Rica. These qualitative time trends are essentially determined by the evolution of the private portion of gross fixed capital formation. Nevertheless, these trends do not compare well with the average trend in other SIMICs²⁶, which is positive and actually better except for Venezuela (the 1991 ratio increased by 2.0 percentage points from 1990).

In relation to domestic savings, preliminary 1991 data indicate that the change in the domestic savings to GDP ratio between 1990 and 1991 increased only in Mexico (3.1 percentage points) returning to the levels in 1988 and 1989. In Costa Rica it stayed essentially constant, in Uruguay and Venezuela it decreased returning to levels in recent years, and in Philippines it plummeted by 30 percent (5.5 percentage points). This fall in savings is also observed in the rest of the SIMICs, which on average had a significant drop of 3.3 percentage points in their savings ratio continuing the declining trends in past years. Perhaps with the partial exception of Mexico, the savings performance is not encouraging.

The fragmentary evidence shown in charts 1-6 points to a parallel between the success of the operations in terms of their macroeconomic impact and good policies. In the case of Mexico, and to a somewhat lesser degree Venezuela, improved and strong adjustment policies, sustained over the period, have generated the largest development benefits from debt reduction. The gains have been smaller in the other countries where the policy framework has not been as supportive. This observation reinforces the presumption that a strong policy framework is required to achieve a significant development impact from DDSR. This implies that, from the viewpoint of official

²⁶Unweighted average over the rest of the SIMICs (WDT 1991-1992) except Bolivia and Syria for which 1991 information was not available (information for Brazil based on constant price projections).

supporting creditors, the track record of economic adjustment reform is a key indicator of future DDSR development benefits. Whether these development benefits have been larger than the financial cost entailed by past operations is too early to tell with certainty; the evidence suggests that Mexico has benefitted from the DDSR operation and that the other countries may have also benefitted to a lesser extent.²⁷

One thing appears clear, however: significant indirect benefits are needed for the country to benefit from DDSR. This is so because direct benefits, as shown in section III, are likely to be negative as a consequence of commercial bank financial gains and because of the front-loaded nature of DDSR operations. Therefore significant indirect benefits are crucial for obtaining positive net benefits to the country, which are equal to the algebraic sum of direct and indirect benefits. This is in contrast to widely held views, based on unrealistic counterfactual, that justify DDSR operations in terms of cashflow savings and the resulting direct benefits. Counterfactual scenarios consistent with the recent historical record and market valuations imply little liquidity relief in the medium term, if any, and dismal IRRs.

The required indirect benefits may result from improvements in the creation and use of domestic savings as well as from the attraction of foreign savings. While the traditional arguments related to debt overhang tax-like disincentives to private investment are probably exaggerated, there are a host of other channels through which indirect benefits may come about. At the center of their realization appears the quality of the policy framework, which may be facilitated and made credible by the DDSR operation.

Finally, from the IFI and other official supporting creditor policy viewpoint, in order to determine whether DDSR support is the right policy, the benefit to the country resulting from supporting a DDSR operation needs to be compared with the benefit to the country resulting from a

²⁷This is consistent with the results that would be obtained from applying the evaluation procedure outlined in Bulow and Rogoff (1991). In effect, in our estimation, this evaluation procedure would show that all of the five countries may have benefitted from the operations and that, on average, the five countries combined may have benefitted almost as much as banks.

similar support not linked to DDSR. Once it is recognized that DDSR direct benefits are likely negative, and that, therefore, DDSR operations entail a direct cost, that comparison is not an obvious one. If DDSR indirect benefits only consisted of the liquidity-related benefits of supporting official lending that a credit constrained country would be also expected to enjoy in the absence of DDSR, then DDSR support would not be sound policy because it would entail unnecessary direct costs for the same development impact. For DDSR support to make sense, DDSR needs to have value in itself: it needs to engender additional indirect benefits significant enough as to compensate its direct costs.

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