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To: Members of the Executive Board

From: The Acting Secretary

Subject: Comparing Menu Items - Methodological Considerations  
and Policy Issues

The attached paper on methodological considerations and policy issues related to comparing menu items will be taken up at an Executive Board seminar scheduled for Friday, January 6, 1989.

Mr. Dooley (ext. 7671) is available to answer technical or factual questions relating to this paper prior to the seminar.

Att: (1)

INTERNATIONAL MONETARY FUND

Comparing Menu Items: Methodological  
Considerations and Policy Issues

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## I. Introduction

A significant development in the implementation of the debt strategy has been the growing emphasis on "broadening the menu" of financing instruments. When employed in conjunction with firm pursuit of growth-oriented adjustment policies, a broader array of financial instruments can be seen as easing the problem of channeling needed finance to heavily indebted countries. The approach of "broadening the menu" seeks to elicit additional financial flows by appealing to the varying portfolio preferences of creditors and potential creditors. Portfolio preferences can vary for a number of reasons: differing assessments of the economic prospects of debtor countries; different degrees of risk aversion among creditors; different regulatory and tax environments; different perceived comparative advantage and long-term strategies among creditor institutions; and different initial balance sheet structures.

More recently, there has been a growing recognition that techniques to reduce debt--provided they are market-based and voluntary--can play an important role in helping indebted countries return to eventual creditworthiness. Two recent schemes have been the Bolivian debt buy-back and the Mexican debt exchange. In the former case, additional financing from official sources was used to buyback commercial debt, while in the latter, an unexpected accumulation of reserves provided collateral for the Mexican authorities to exchange new debt for existing claims on favorable terms. These operations have sparked interest in market-based debt reduction techniques, but they have not as yet led to major additional initiatives. As the Managing Director noted at the conclusion of the recent Board discussion on Managing the Debt Situation (EBM 88/129, 8/26/88) "...the broadening of the menu, and in particular the inclusion of techniques to reduce debt, will make the quantification of financing assurances for Fund arrangements increasingly complex. In this connection, it has been suggested that the Fund should examine the methodology for properly quantifying the equivalency between debt reduction and new money."

The present paper represents an attempt to deal with this methodological issue. This issue is particularly significant in cases where countries both need new money to meet a prospective financing gap and where there is a recognition by all parties that the magnitude future debt service is such that effort to reduce debt would be desirable in order to support a country's adjustment effort and restore a country's external creditworthiness. In such cases, simply adding to existing debt to cover a financing gap compounds the longer-term problems of indebtedness. However, countries with a financing gap do not, by definition, have resources readily available to devote to some of the more obvious techniques of debt reduction (e.g., debt buybacks).

The plan of the rest of the paper is as follows. Section II deals with the issue of how debt reduction techniques can be compared with new money. Section III analyzes a stylized financing package containing new

money and debt reduction techniques. It focuses therefore on the issue of equivalency among financing options, once the resources to be used for debt reduction are identified, and proposes a simple methodology for evaluating such options. The final section of the paper poses a series of questions which Directors may wish to address in their discussion of the paper.

## II. New Money versus Debt Reduction

In this section, new money and debt relief techniques are evaluated from the points of view of debtors and creditors. It is assumed that the typical debtor faces a "financing gap" in that resources available for debt service payments are expected to fall short of interest and amortization payments due during a given time period. Thus, a financing package is needed to allow the debtor to satisfy its contractual obligations. <sup>1/</sup>

Consider, for example, the case of a debtor who has \$10 in interest payments due, but has only \$5 in cash flow to finance the payments. (For simplicity, amortization payments are ignored.) Assume further that initial stock of debt is \$100 (face value) and that the discount on the debt is 50 percent. With debt reduction techniques included in the menu, the debtor might reason as follows: if interest and amortization payments are limited to, say, \$3, \$2 will be available for a debt buyback. Given the discount at which the debt is being traded, \$4 of outstanding debt can be extinguished. Of course, if only \$3 is allocated to interest and amortization, a further \$7 of new money will have to be borrowed to meet contractual payments. The stock of debt at the end of the period will be \$103: the initial \$100, plus the \$7 in new money, less the \$4 of debt extinguished through a buyback.

The creditor may have less incentive to agree to the buyback, essentially because funds used to finance a buyback would otherwise have been available to meet contractual interest payments. The creditor might prefer to receive the full \$5 that is available in the form of interest payments. He could then lend \$5 in the form of new money and complete the period with a claim of \$105.

An alternative way of viewing the comparison is to regard both buybacks and contractual payments as debt-reduction techniques. In the above example, if the debtor had no resources available for debt service, indebtedness would grow from \$100 to \$110. The \$5 that is available can be applied either to interest and amortization payments or to buybacks. The difference is that interest and amortization payments follow contractual terms and therefore retire less debt than buybacks or asset exchanges that follow market prices. For this reason, an offer of a buyback in a menu represents may be viewed as a renegotiation of the terms at which debt will be serviced.

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<sup>1/</sup> The case where no financing gap exists is elaborated in Appendix II.

It follows that credit items and debt reduction items cannot be made "equivalent" but instead should be viewed as striking a new balance between the interests of debtors and creditors. It might be better to interpret a financing package that includes buybacks as follows: debtors and creditors, recognizing their common interest in restoring a "sustainable" debt servicing position, reach agreement on a flow of interest and amortization payments that can be considered appropriate to the circumstances faced by the debtor. Beyond this stream of payments, the debtor (perhaps with contributions from other interested parties) undertakes to make "extra" resources available, provided these "extra" resources reduce debt.

As shown in the technical appendix, the growth of debt relative to debt service capacity, and thus the market price of debt, can be quite sensitive to this negotiated division of payments by the debtor country between interest payments and buybacks. At one extreme, if a debtor devotes all its resources to contractual debt payments, but still has a large financing gap, then new borrowing can cause debt to grow more rapidly than debt servicing capacity.

On the other hand, if a country allocates a relatively small amount to debt service, then the current value of the future stream of debt service payments will be correspondingly reduced. While it would become easier in these circumstances to buyback the depreciated debt instruments, such a development might be seen as being inconsistent with the cooperative approach.

It should be noted that in the simple examples developed above there is only one kind of debt issued by the debtor government. As a practical matter, debtor governments issue a variety of debt instruments in international and domestic markets, and it is important to distinguish between net and gross debt reduction. As is developed in greater detail in the next section, menu items that reduce the gross value of external syndicated debt may do so at the cost of obliging the debtor to increase the value of other internal and external liabilities. A full evaluation of "debt reduction" made possible by a financing plan requires the identification of funds available to finance the debt reduction that are not obtained by issuing alternative types of debt.

The successful incorporation of debt reduction techniques in Bolivia, Mexico, and Chile indicates that debtors and creditors have found debt reduction techniques useful. However, the experience of these cases plus other countries' efforts to incorporate explicit debt buyback arrangements indicates that it is not easy to obtain creditor agreement, particularly when new money is also required from the creditors. In general, the attractiveness to creditors of debt reduction techniques can be enhanced in the context of a negotiated financing package. In such a package, debtors can provide assurances that improved economic performance will enhance the value of remaining debt. Commitment to a sound economic program, particularly if supported by the Fund and the World Bank, could provide strong incentives for debt reduction techniques. In addition,

official creditors can also make clear their own commitment to the debtor's adjustment effort. This might include both financial resources and regulatory initiatives designed to enhance the attractiveness of menu items to private creditors. Finally, as discussed in SM/88/270, a negotiated financing package can provide menu items designed to encourage voluntary participation of creditors with different portfolio preferences and different long-run interests in international lending.

The conclusion from the foregoing is that the negotiated blend of new money and debt reduction techniques will require a negotiated cooperative agreement among interested parties. This raises a number of issues to which this paper returns in the final section. The analysis that follows is predicated on the assumption that some such blend has been agreed.

### III. Comparisons of Financing Options

In this section, a framework is developed that allows for comparisons among financing options. This framework it should be emphasized, is illustrative only and does not go into detail concerning a number of aspects that may well be quite important in practice. In particular, no attempt is made to take into account the wide variety of regulatory and tax structures faced by banks in different countries or the different attitudes of individual banks toward their long-run involvement with debtor countries. As an example, banks with a relatively small exposure in a given country might find an exit bond more desirable than would be suggested by the calculations presented below since it would reduce the administrative costs of being involved in future financing packages. Such banks would presumably pay a premium for an exit instrument. Moreover, an instrument that allowed creditors greater flexibility--in accounting for losses, or greater discretion in establishing reserves against possible losses, might be more valuable to some creditors as compared to the basic "new money" instrument. In this respect, the "terms factor" relevant to a menu item might be enhanced by regulatory authorities in creditor countries. Finally, as with any financial instrument, the tax treatment of earnings and capital gains or losses is a key determinant of how various potential holders would evaluate the contractual terms of alternative menu items. As with the regulatory environment, the tax treatment of a menu item could be seen as an opportunity for creditor governments to enhance the value of menu items.

#### 1. Characteristics of menu items

To keep the exercise simple, it is assumed that investors only consider the expected market value of various options. In practice, menu items with uncertain yields would be less valuable and this could be considered an additional factor in more realistic exercises. It will be useful to identify at the outset three key characteristics of a menu item.

a. Contractual terms. Menu items can incorporate a wide variety of contractual terms. As in conventional credit markets, a variety of debt

and equity contracts will appeal to different creditors. Assume that the basic "new money" option is a security with contractual terms identical to existing debt. Consider now a similar credit that carries a contractual interest formula equal to one half that on the basic "new money" instrument. If a prime borrower was to issue such an instrument, we would predict that the additional discount at which it traded would precisely reflect the fact that the stream of interest receipts was half as valuable. The discount would be greater for a relatively long-lived instrument than for a shorter-dated instrument (since in the former case the share of interest payments relative to amortization payments in the present discounted value of the instrument is greater).

b. Country risk. Another important attribute of menu item is the extent to which interest and principal payments are subject to the risk of default. It is useful to decompose the yield into a part that carries "pure" debtor country risk, defined as having risk equivalent to that associated with existing syndicated credits, and a part that is "risk-free," or is expected to be fully serviced. Since the basic new money instrument is defined as being identical to existing syndicated credits it carries the same country risk.

A menu item can be differentiated from new money in terms of country risk through subordination, guarantees, or collateral. If investors believe that an exit bond will be serviced in circumstances where new money instruments will not be serviced, then the exit bond will carry less country risk. Subordination of this sort can be associated with any menu item including debt-equity conversions, domestic currency bonds and so forth. The difficulty in evaluating country risk is that it depends on investors' perceptions that the subordination is credible.

Guarantees by a third party, or collateral held outside the control of the debtor, also reduce the country risk associated with a menu item.

c. Exchange ratio. The final important characteristic of a menu item is the exchange ratio offered between the menu item and existing credits. These exchange ratios are sometimes difficult to identify but are implicit in any menu offering. In every case, the menu instrument is offered to discharge a given interest obligation, or what is the same thing, to retire an existing credit. The basic new money instrument is offered at par to discharge an obligation that has accrued or will accrue. On the other hand, if the debtor offers \$1 face value of an exit bond to retire \$2 of interest due or in exchange for \$2 of existing debt, this can be considered an exchange ratio of 0.5.

## 2. Illustrative comparison of menu items

By classifying menu items in terms of the three characteristics identified above, a very flexible way of evaluating different financing options is introduced. Table 1 presents an illustrative comparison of typical menu items. For purposes of illustration, it is assumed that the country's existing debt consists of syndicated credits with a contractual

Table 1. Comparison of Menu Items

Market discount on existing debt - 50 percent  
 Contractual interest rate on existing debt - 8 percent

	Contractual Terms	Factor	Country Risk	Factor	Exchange Ratio	Factor	Expected Cash Value per \$100
New money security	8%	1.0	100%	0.5	1:1	1.0	\$ 50
4 percent Exit Bond 1 no subordination	4%	0.5	100%	0.5	1:1	1.0	\$ 25
4 percent Exit Bond 2 effective subordination	4%	0.5	0%	1.0	1:1	1.0	\$ 50
4 percent Exit Bond 3 half collateral	4%	0.5	50%	0.75	1:1	1.0	\$ 37.50
Debt equity swap 1	8%	1.0	100%	0.5	1:1	1.0	\$ 50
Debt equity swap 2	8%	1.0	0%	1.0	1:1	1.0	\$100
Debt equity swap 3	8%	1.0	0%	1.0	1:2	0.5	\$ 50
Domestic currency bond	8%	1.0	0%	1.0	1:2	0.5	\$ 50
Cash buy back	8%	1.0	0%	1.0	1:2	0.5	\$ 50

yield of 8 percent and that these credits sell at a 50 percent discount in the secondary market. 1/ It is further assumed that the "new money" option involves the creditor accepting a new syndicated credit that is identical to existing credits. This is convenient because it means that if we compare a menu item to the "new money" option, the same comparison will generally apply to an exchange of existing debt for that menu item.

a. New money security. A typical new money option pays a market-related interest rate. For simplicity, it is assumed that the yield is fixed at 8 percent on both existing debt and new money securities. 2/ Thus, the new money security carries the same contractual yield as existing debt and its contractual terms factor is defined as 1.0. Since payment of interest and principal is fully the obligation of the debtor country and because new money is indistinguishable from existing debt, the country risk factor is equal to the full 50 percent market discount on existing debt, giving a country risk factor of 0.5. Finally, since the face value of the new money security is usually offered to settle an equivalent interest payment, the exchange ratio is 1:1 implying an exchange ratio factor of 1.0. In this case, the product of the three factors is 0.5 so that the standard new money instrument is worth 50 percent of a cash interest payment to the creditor.

b. Exit Bonds. Exit bonds typically carry a lower contractual interest rate and in this example 4 percent is assumed. If any debtor issues a long-term security with an interest yield half that of another similar obligation, the market price of the low interest rate security will be about one half of the high rate instrument. 3/ Thus, the contractual factor is 0.5. The country risk factor is more difficult to determine. Three cases are examined. In Case 1, it is assumed that exit bonds are believed by investors to carry exactly the same default risk as existing debt. Thus, the country risk factor for Exit Bond 1 is 0.5. In Case 2, it is assumed that investors expect exit bonds to be repaid with certainty; thus, the country risk factor is 1.0. A third case is one in which one half of the payments on the exit bond are guaranteed by a collateral, the remaining risk being pure country risk. In this case, the country risk factor is 0.75. In every case, the exit bond is exchanged for an equivalent face value of existing debt so the exchange factor is 1.0.

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1/ In reality the typical syndicated credit is a floating rate security that carries a spread over LIBOR of  $\frac{1}{2}$  to  $2\frac{1}{2}$  percent and has a maturity of about seven years. In actual financing packages, these additional details would be important, but the analytical framework is easier to work with if we assume that the benchmark security is a fixed interest perpetual obligation of the debtor country government.

2/ A more realistic example would consider a floating rate syndicated credit with a fixed spread over LIBOR. While this complicates the arithmetic, it does not alter the results in any important way.

3/ This is strictly true only for consols, but it is approximately true for long maturity securities.

Exit Bond 1 carries a combined factor of 0.25 and from the creditor's standpoint is clearly inferior to "new money" since it is simply a low interest variant of the new money security. Exit Bond 2, with a combined factor of 0.5, is equivalent to a new money security or existing debt because the assumed reduction in country risk offsets the low interest rate. Exit Bond 3 is also inferior to new money securities but less so because of the collateral.

c. Debt equity swaps. Although an equity security does not have a contractual rate of return, there will be an expected rate of return, adjusted for project risk. While there may be projects with relatively high risk-adjusted rates of return, it is assumed for simplicity that the expected rate is again 8 percent in terms of U.S. dollars. For Debt Equity Swap 1, it is also assumed that 100 percent of the payments to creditors are subject to country risk. Finally, it is assumed that the debtor government exchanges an equity with a market value of \$1 for an equivalent interest payment. Under these conditions, the combined factor is 0.5 and this swap offer is therefore identical to the new money security.

It is possible however, as in Debt Equity Swap 2, that investors believe that dividend payments on equity are not subject to country risk or that at some point in the near future the equity can be sold for cash without penalty. This implies a country risk exposure of zero and a combined factor of 1.0--clearly superior to the new money security as far as the creditor is concerned. Debt-Equity Swap 3 reflects the fact that potential investors would be willing to swap \$2 in existing debt for \$1 in equity if the debtor authorized the conversion rights. In this case, the lower country risk is offset by an exchange factor, so that the cash value is equivalent to the new money security.

d. Domestic currency bonds. The contractual yield on domestic currency bonds must be translated into a dollar equivalent taking into account expected movements in the local currency's exchange value. Again, we assume that the expected value is 8 percent so that the contractual terms factor is 1.0. Domestic currency obligations of private sector debtors may carry a lower country risk. In particular, if the creditor can induce the private debtor to prepay its obligation it might be possible to convert the domestic currency into dollars at a parallel market exchange rate. In this example, it is assumed that the domestic currency obligation is prepared or sold at par for domestic currency. Thus, the country risk factor is 1.0. However, a 50 percent discount in the parallel exchange market reduces the exchange ratio to 0.5. It follows that the cash equivalent is the same as the new money security.

e. Cash buyback. A cash buyback at market prices provides the creditor with the ability to purchase a safe financial asset. As with any cash transaction, the creditor can invest in an instrument with a market-related yield so that the contractual factor is 1.0. Moreover, since the asset carries no country risk, the country risk factor is 1.0. Finally, the exchange ratio in the case of the cash buyback is 1:2 since the debtor is buying its own debt at a 50 percent discount. Thus, the buyback option priced at the market discount is equivalent to the new money security.

### 3. Overview

With this overall framework, there is no difficulty, in principle, in evaluating even very complicated menu options. With more carefully specified and more realistic menu items, the calculation will not produce round numbers--but the methodology will carry through. Still, the problems in making such equivalency calculations should not be underestimated.

Perhaps the most difficult problem is in determining a country risk factor for individual items. Suppose it is true that small issues of exit bonds will be serviced before other debt. Implicit seniority of one type of asset means, for a given total availability of resources, a reduced flow of resources to service other assets. This suggests that the discount on other debt will tend to increase and the equivalencies in the table will change. Moreover, since country risk has a large element of subjective judgment, it will be hard to estimate, ex ante, the risk factor attaching to individual assets. This will be reflected, ex post, in the differential discounts at which different assets trade.

Another difficulty in such exercises is that one cannot determine the overall amount of debt reduction made possible, by examining a financing package. As discussed in Section II above, the net debt reduction depends on the initial blend of new money and debt reduction techniques in the financing package. Any external debt reduction over and above this amount that the debtor is obliged by a financing package to undertake would require offsetting increases in domestic government debt.

## IV. Issues for Discussion

There is now considerable support for exploring how debt reduction techniques can be included, on an agreed basis, in financing packages. There is also a measure of agreement that debt buybacks and debt-equity exchanges are promising avenues for reducing external debt.

Do Directors have comments on the illustrative methodology for comparing menu items presented in Section III? Do they have suggestions on how it could be extended, or made more realistic? Would it be useful to attempt to apply the methodology to actual cases? Directors may also wish to comment on how regulatory, accounting, and tax considerations may influence the attractiveness of different menu items to creditors in their

respective countries. Based on experience to date, Directors may also wish to give their views on how new money and debt reduction components might be blended in financing packages.

In this appendix, we set up the following simple scenario:

1. A debtor country begins with a debt of \$100 billion.
2. The debt carries an 8 percent interest rate and infinite maturity.
3. Exports of goods and services start at \$20 billion and grow at 4 percent per year.
4. The country is expected to utilize 10 percent of exports for interest payments or debt buybacks. The share of payments for interest,  $\alpha$ , and buybacks,  $(1-\alpha)$  is a matter for negotiation. This share is established by negotiating new money equal to  $.08 D_t - \alpha X_t/10$ .
5. The market price of the country's debt is the ratio of the present value of interest payments divided by the contractual value of outstanding debt that remains following that time period's buyback. In this simple case, it is assumed that future buybacks are at the discretion of the debtor.

These assumptions suggest the following simple model

$$IP_t = \alpha X_t/10$$

$$BB_t = (1-\alpha)X_t/10$$

$$X_t = 1.04 X_{t-1}$$

$$D_t = 1.08 D_{t-1} - IP_t - BB/P_t$$

$$P_t = PVIP_t/D_t$$

where  $IP_t$  = interest payment

$X_t$  = exports

$BB$  = cash used for buyback

$D_t$  = debt

$P_t$  = market price of debt

$PVIP$  = present value of future interest payments (discounted at 8 percent)

The first simulation, Case 1, sets  $\alpha=1$  so that all payments take the form of interest payments. In this case, debt grows more rapidly than the present value of expected payments, so the price of debt falls from \$0.51 initially to \$0.43 after 10 years and \$0.26 after 20 years. (Given these assumptions, the price of debt will approach zero in the long run.)

Case 2 shows the same country, but now it uses 25 percent of its total payments for buybacks and 75 percent for interest payments. Notice that the initial price of the debt \$0.39 is lower as compared to Case 1 and that the price again declines over time but less rapidly.

In Case 3 half of all payments are interest and half are buybacks. Again, the initial price of debt is even lower at \$0.25, but in this case, sufficient debt is retired so that the present value of interest payments grows more rapidly than debt, so that the price of debt rises to \$0.29 after 20 years and continues to rise toward par in the long run.

Finally, in Case 4, 75 percent of available funds are used for buy backs and only 25 percent for interest payments. In this case the initial price is quite low, about \$0.14, but the buy back rapidly retires debt so that after 20 years the price of debt has reached \$0.74. After 22 years the contractual interest payments on remaining debt would be less than 10 percent of exports, the market price of debt would be \$1.00 and the debt overhang would be eliminated.

Case 1. 100 Percent Interest Payments

Year	Price	Debt	Present Value	Interest Payments	Buy Back	Exports
1	0.518096	106.	54.9182	2.08	0.	20.8
2	0.508139	112.4	57.1148	2.1632	0.	21.632
3	0.498197	119.229	59.3994	2.24972	0.	22.4972
4	0.488276	126.517	61.7755	2.33971	0.	23.3971
5	0.478384	134.299	64.2465	2.4333	0.	24.333
6	0.468526	142.61	66.8163	2.53063	0.	25.3063
7	0.45871	151.488	69.489	2.63186	0.	26.3186
8	0.448943	160.975	72.2686	2.73713	0.	27.3713
9	0.439231	171.116	75.1593	2.84661	0.	28.4661
10	0.429579	181.958	78.1656	2.96048	0.	29.6048
11	0.419997	193.555	81.2924	3.0789	0.	30.789
12	0.410488	205.96	84.5441	3.20205	0.	32.0205
13	0.401058	219.235	87.9259	3.33013	0.	33.3013
14	0.391713	233.443	91.4429	3.46334	0.	34.6334
15	0.382459	248.656	95.1006	3.60187	0.	36.0187
16	0.373301	264.946	98.9047	3.74594	0.	37.4594
17	0.364244	282.396	102.861	3.89578	0.	38.9578
18	0.355291	301.092	106.975	4.05161	0.	40.5161
19	0.346449	321.127	111.254	4.21368	0.	42.1367
20	0.337721	342.604	115.705	4.38222	0.	43.8222
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30	0.257434	665.3	171.271	6.48675	0.	64.4865

Case 2. 75 Percent Interest Payments

Year	Price	Debt	Present Value	Interest Payments	Buy Back	Exports
1	0.393476	104.678	41.1884	1.56	0.52	20.8
2	0.389055	110.103	42.836	1.6224	0.540799	21.632
3	0.384623	115.826	44.5494	1.68729	0.562431	22.4972
4	0.380181	121.866	46.3313	1.75478	0.584928	23.3971
5	0.375732	128.242	48.1846	1.82498	0.608325	24.333
6	0.371277	134.972	50.1121	1.89797	0.632658	25.3063
7	0.366816	142.078	52.1166	1.97389	0.657964	26.3186
8	0.362351	149.582	54.2012	2.05285	0.684282	27.3713
9	0.357883	157.507	56.3693	2.13496	0.711653	28.4661
10	0.353416	165.879	58.6242	2.22036	0.74012	29.6048
11	0.348948	174.723	60.9692	2.30917	0.769724	30.789
12	0.344482	184.068	63.408	2.40154	0.800513	32.0205
13	0.340019	193.943	65.9443	2.4976	0.832533	33.3013
14	0.33556	204.381	68.582	2.5975	0.865834	34.6334
15	0.331108	215.414	71.3254	2.7014	0.900468	36.0187
16	0.326663	227.079	74.1783	2.80946	0.936486	37.4594
17	0.322227	239.413	77.1454	2.92184	0.973945	38.9578
18	0.317801	252.457	80.2312	3.03871	1.0129	40.5161
19	0.313388	266.253	83.4405	3.16026	1.05342	42.1367
20	0.308987	280.848	86.7782	3.28667	1.09556	43.8222
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30	0.265972	482.957	128.453	4.86506	1.62169	64.8675

Case 3. 50 Percent Interest Payments

Year	Price	Debt	Present Value	Interest Payments	Buy Back	Exports
1	0.245997	101.772	25.0357	1.04	1.04	20.8
2	0.247977	104.512	25.9167	1.0816	1.0816	21.632
3	0.250001	107.292	26.8232	1.12486	1.12486	22.472
4	0.25207	110.11	27.7554	1.16986	1.16986	23.3971
5	0.254188	112.962	28.7136	1.21665	1.21665	24.333
6	0.256356	115.847	29.698	1.26532	1.26532	25.3063
7	0.258577	118.76	30.7086	1.31593	1.31593	26.3186
8	0.260852	121.699	31.7453	1.36856	1.36856	27.3713
9	0.263186	124.658	32.8082	1.42331	1.42331	28.4661
10	0.26558	127.634	33.8969	1.48024	1.48024	29.6048
11	0.268038	130.621	35.0113	1.53945	1.53945	30.789
12	0.270562	133.613	36.1507	1.60103	1.60103	32.0205
13	0.273157	136.606	37.3149	1.66507	1.66507	33.3013
14	0.275827	139.591	38.5029	1.73167	1.73167	34.6334
15	0.278575	142.562	39.7141	1.80094	1.80094	36.0187
16	0.281407	145.51	40.9476	1.87297	1.87297	37.4594
17	0.284326	148.427	42.2017	1.94789	1.94789	38.9578
18	0.287339	151.303	43.4752	2.02581	2.02581	40.5161
19	0.290452	154.128	44.7666	2.10684	2.10684	42.1367
20	0.293669	156.89	46.0737	2.19111	2.19111	43.8222
30	0.33361	177.858	59.3351	3.24337	3.24337	64.8675

Case 4. 25 Percent Interest Payments

Year	Price	Debt	Present Value	Interest Payments	Buy Back	Exports
1	0.136639	94.583	12.9237	0.52	1.56	20.8
2	0.147788	90.6518	13.3972	0.540799	1.6224	21.632
3	0.159953	86.8144	13.8862	0.562431	1.68729	22.4972
4	0.173243	83.0681	14.3909	0.584928	1.75478	23.3971
5	0.187782	79.4099	14.9117	0.608325	1.82498	24.333
6	0.203711	75.8374	15.4489	0.632658	1.89797	25.3063
7	0.221192	72.3478	16.0027	0.657964	1.97389	26.3186
8	0.240407	68.9386	16.5733	0.684282	2.05285	27.3713
9	0.261575	65.6075	17.1613	0.711653	2.13496	28.4661
10	0.284943	62.3521	17.7668	0.74012	2.22036	29.6048
11	0.310798	59.1703	18.39	0.769724	2.30917	30.789
12	0.339477	56.06	19.0311	0.800513	2.40154	32.0205
13	0.37138	53.0191	19.6902	0.832533	2.4976	33.3013
14	0.406978	50.0456	20.3675	0.865834	2.5975	34.6334
15	0.446837	47.1378	21.0629	0.900468	2.7014	36.0187
16	0.491642	44.2939	21.7767	0.936486	2.80946	37.4594
17	0.542217	41.5122	22.5086	0.973945	2.92184	38.9578
18	0.599583	38.7912	23.2585	1.0129	3.03871	40.5161
19	0.665013	36.1294	24.0265	1.05342	3.16026	42.1367
20	0.740096	33.5254	24.812	1.09556	3.28667	43.8222
30	1.000000	33.632	33.5084	1.62169	0.12361	64.8675

The choices facing creditors described in the text are based on the assumption that creditors are called upon to fill a financing gap.

In this appendix we consider a case in which existing debt is assumed to have been serviced on contractual terms so that no financing gap exists. In this case, new money and debt reduction involve a straightforward choice between providing an additional credit of \$1, or reducing outstanding claims by \$1. In this situation, the market price at which the debtor's liabilities can be traded provides a measure of the equivalence of the two transactions. 1/ Assume, for the sake of example, that the liabilities of the debtor trade at a price of 50 percent of their face value. A loan of \$1 million "costs" the creditor \$500,000, for that is the gap between the market value and the contractual value of the loan. Similarly, writing off \$1 million of old debt also "costs" the creditor \$500,000, since \$500,000 is the market value of the claim that is extinguished. 2/

Why should creditors provide either new money or debt reduction when they incur an immediate loss on the transaction? The basic reason, which has been at the heart of the debt strategy as it has been pursued until now, is that incremental financing has an important "externality" in enhancing the value of already existing claims. The cash value represented by the discount on a new loan does not simply "disappear." It is, in effect, added to the resources available to the debtor country. If the new money is more than is needed to service existing debts, and if

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1/ Where markets are "thin," market prices may have to be interpreted cautiously.

2/ More generally, we may define the "cost" of a new loan to the creditor as

$$L_n = d \cdot N. \quad (1)$$

where  $L_n$  is the loss from making the loan,  $N$  is the face value of the loan, and  $d$  is the market discount from face value. The cost of debt write-off is

$$L_w = (1-d)W \quad (2)$$

where  $L_w$  is the loss from making a write-off and  $W$  is the size of the write-off. Thus, in order to secure equivalence between write-offs and new money, ( $L_w = L_n$ ), the following equality must hold

$$d \cdot N = (1-d)W \quad (3)$$

In other words a dollar of new money costs the equivalent, to the creditor of  $d/(1-d)$  of debt write-off.

it is wisely invested, the increase in the value of old claims can, in principle, exceed the discount on the marginal loan. Thus, if existing creditors all increase their claims on a debtor by proportionate amounts, each will find that the loss incurred on account of the marginal claim (the "new money") might be balanced by the increase in value of intramarginal claims. (For such an approach to succeed, it is necessary both that creditors allow their collective interests to override their individual interests and that the additional resources made available to the debtor be invested wisely.)

Even in the best circumstances, however, the foregoing consideration is of little comfort to a potential new creditor. He is in the position of taking a loss on the credit he extends, but seeing the offsetting gain accrue to existing creditors. This raises the question of whether, in order to compensate institutions that begin to provide financing only after debt problems emerge, their claims should be serviced on more favorable terms. It is possible, in principle, for new creditors to be offered preferential repayment terms, and for the new credit to still enhance the value of existing claims.

