

REDUCING DEVELOPING COUNTRY DEBT*

PAUL KRUGMAN

Dept. of Economics, MIT
50 Memorial Drive
Cambridge, MA 02139
(617-253-2655)

Abstract :

This paper offers a brief primer on the economics of debt reduction for developing countries. It begins by considering the case of unilateral debt forgiveness; such forgiveness is only in the mutual interest of creditors and debtors if the country is on the wrong side of the "debt Laffer curve". Current empirical estimates suggest that problem debtors are in a very flat region of the debt Laffer curve where large changes in face value of debt have only small effects in expected payments. The paper then considers a variety of market-based debt reduction schemes. It shows that the widespread belief that the market offers a cheap way to reduce debt is incorrect, unless new market instruments can be made credibly senior to existing debt, debt reductions that impose only small costs to creditors would be very expensive if achieved through buybacks.

In the spring of 1989 Nicholas Brady, the U.S. Treasury Secretary, announced what at first appeared to be a major about-face in the creditor nation strategy toward the debt of developing countries. In place of the earlier U.S. insistence that problem debtors should grow out of their debt rather than receive debt forgiveness, Brady announced support for a program of debt reduction backed by the resources of the creditor nations and of multilateral agencies. Many of the players in the debt game took Brady's speech as the signal that a process of widespread writedowns and forgiveness of debt was about to begin.

At least so far, however, that has not happened. While arrearages are widespread, and many banks have provisioned extensively against their developing country debt, only Mexico has negotiated a large-scale debt reduction package. There is widespread dispute about whether the Mexican example can be generalized, about what the Brady Plan

* This is the *Revista de Análisis Económico Special Invited Lecture*, delivered at the 9th Latin American Meeting of the Econometric Society, Santiago, Chile, August 1-4 1989.

really means, and about what to do next. In general, the results of the seemingly dramatic turnabout in policy have come to look increasingly disappointing.

There are many reasons for the failure of the Brady Plan to take off, but at least one of them is lack of clear thinking. There is still widespread confusion about the costs and benefits of reductions in developing country debt and about the usefulness of alternative mechanisms for achieving this debt reduction. Debtor countries want banks to pass secondary market discounts on in the form of debt forgiveness; banks want debt reduced through buybacks; and the U.S. government does not seem to understand that these are not the same thing. The result is an impasse.

The purpose of this paper is to offer a sort of primer on the economics of debt reduction for developing countries. For the most part it is a discussion of the analytics rather than the facts, although some facts and empirical results will be alluded to in passing. The main point of the paper is, however, to clarify thinking and offer a framework for assessing alternative debt reduction schemes.

The paper begins with the simplest case, that of unilateral debt forgiveness. Following this the paper analyzes a variety of schemes for "voluntary" debt reduction, including buybacks, debt swaps, and debt-equity swaps. A concluding section compares the prospects for market-based debt reduction with that for a concerted, negotiated debt reduction.

1. Unilateral debt reduction

By definition, a problem debtor is a nation that is perceived as likely to pay its creditors considerably less than it owes. Many economists have argued that when such a situation arises, it is in the interest of all concerned to "recognize reality" and reduce the country's obligation to what it can pay. Unfortunately, matters are not that simple. While debt reduction may sometimes be in everyone's interest, often it is not. The reason is *uncertainty*: the amount that a country can (or at any rate will) pay is not a known quantity; it is a variable that depends on uncertain future events. Thus Mexico's eventual ability to pay its debts depends on oil prices, on its drive to develop a manufacturing export base, on the success of its internal economic reforms, and so on. It is perfectly conceivable, though not likely, that by the end of the century a booming Mexican economy will be able to pay its entire debt with little difficulty; it is equally conceivable that the weak government of a shaky Mexico will be unable to pay any debt service at all.

To illustrate the effects of debt reduction in the face of uncertainty, it is useful to work with a simply numerical example. While obviously highly stylized, this example can be used to expost the main principles; and we will be able to use variants of this example throughout the paper.

Consider, then, Table 1. It illustrates the situation of a country that owes \$ 100 billion. There is some possibility that the country can actually pay the full amount. Specifically, we assume that there is a "good state" in which the country pays in full. This good state, however, has a probability of only 1/3. More likely is the "bad state" in which the country pays only \$ 25 billion.

The country's expected payments are therefore $(1/3) \times 100 + (2/3) \times 25 = \$ 50$ billion. If there is a secondary market in the country's debt, we would expect the debt to sell at 50 percent of par.

A naive view would be that in this situation the creditors should "recognize reality" and pass the secondary discount on to the country. In this example, that would mean reduc-

ing the debt to \$ 50 billion. The results of doing this, and the reason why it is not necessarily in the creditors' interest, are illustrated in Table 2. The debt forgiveness reduces payments in the good state, to 50, while leaving payments in the bad state unaffected. If the probability of the good state is unaffected by the debt reduction, the expected payments fall to $(1/3) \times 50 + (2/3) \times 25 = 33 \frac{1}{3}$. In other words, by reducing their claims to what the debt was originally worth on the market, the creditors further lower its value (albeit by much less than the debt reduction).

TABLE 1
HYPOTHETICAL DEBT REPAYMENTS

	Good state	Bad state
Probability	1/3	2/3
Receipts of creditors	100	25
Expected receipts =	50	
Secondary price =	0.5	

TABLE 2
HYPOTHETICAL DEBT REPAYMENTS AFTER DEBT REDUCTION TO 50

	Good state	Bad state
Probability	1/3	2/3
Receipts of creditors	50	25
Expected receipts =	33 1/3	
Secondary price =	0.67	

The reason is that what the debtor is *expected* to pay is not the same as what it *might* pay. The debt reduction deprives creditors of an option value—the possibility of sharing in the country's good fortune if it gets lucky. So even if debt sells at a large discount, debt reduction may not be in the creditors' interests.

Taken at face value, this example seems to suggest that debt reduction should never be offered as long as there is any possibility that a country will pay its debt in full. Since even the most hopeless debtors could suddenly discover huge reserves of valuable minerals, this would seem to rule out debt reduction as a mutually beneficial action. However, Table 2 was based on a key assumption that may not be realistic: that the ability of a debtor to pay is unaffected by the size of its obligations.

In reality, there are several reasons why a large nominal debt burden may impair a country's ultimate ability to repay debt. First, a debt that is so large that the country is unlikely to be able to repay in full acts like a high marginal tax rate on efforts to expand the country's foreign exchange earnings: the bulk of any improvement will go to benefit creditors rather than the country. Second, the debt burden may ultimately appear as a tax on domestic capital, and thus acts as a disincentive for domestic invest-

ment. Third, to the extent that an inability to pay debt leads to a confrontational and/or disorderly default, the end result may be to reduce eventual payment to less than the country might have paid had a reduced debt been agreed on in advance.

For all these reasons, a reduction in creditors' nominal claims on a country will normally be offset at least in part by an increase in the probability that the country will pay the remaining claims. (In terms of the numerical example we have been using, a lower debt level will be offset in part by a higher probability of the good state occurring). At very high levels of debt, the "incentive effect" may be so strong that a reduction in debt will actually increase the debtor's expected payment.

It is helpful to think about this in terms of a diagram (Figure 1). On the horizontal axis we show the present value of a country's debt obligations; on the vertical axis the expected present value of its future debt service. If the country had a low initial level of debt, it would be expected to repay that debt in full; thus the expected value would lie along the 45-degree line. At higher levels of debt, however, there would be an increasing probability of default, and thus expected payments would lie along a curve like CD, falling increasingly below the 45-degree line. At sufficiently high levels of debt a higher level of indebtedness would actually be associated with lower levels of expected repayment. This curve presents an obvious analogy to the "Laffer curve" in tax analysis, and can be described as the "debt Laffer curve".

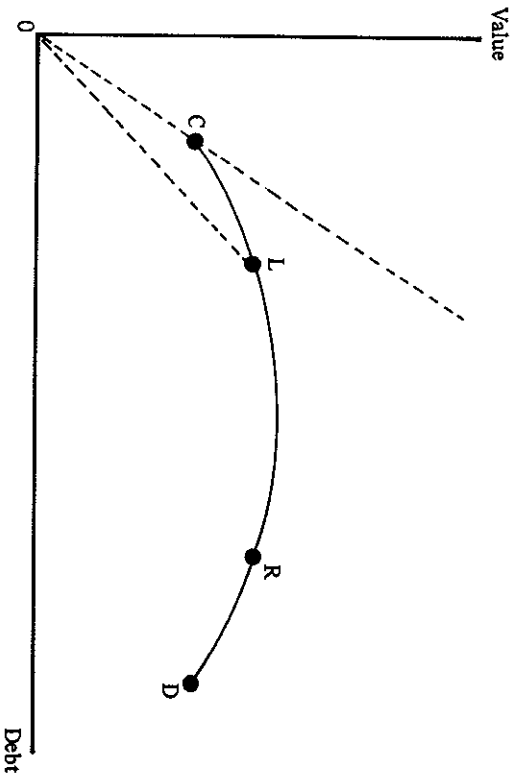


FIGURE 1

The point is now the following: if a country is so hopelessly in debt that a reduction in that debt will actually increase its expected payments—that is, if it is on the wrong side of the debt Laffer curve—it is in the collective interest of creditors to offer unilateral debt forgiveness. The reason is that in this case the improvement in the country's prospects outweighs the cost to existing creditors of having their claims subordinated to the new debt.

Table 3 illustrates a *bordeline* case in which debt forgiveness can be offered at no cost to existing creditors. In the table it is assumed that a reduction in our hypothetical country's debt from 100 to 75 is enough to raise the probability of a good state from 1/3 to 1/2. Thus such a debt reduction would leave expected payments unchanged at $(1/2) \times 25 + (1/2) \times 75 = 50$. Obviously if the incentive effects of a debt reduction were even larger, a debt reduction would make everyone better off.

TABLE 3
A DEBT REDUCTION TO 75 WITH INCENTIVE EFFECTS

	Good state	Bad state
Probability	1/2	1/2
Receipts of creditors	75	25
Expected receipts	= 50	
Secondary price	= 0.67	

Two important points need to be made about the debt Laffer curve analysis. First is that the analysis has nothing to do with the question of whether a debt reduction is advantageous to the *debtor*. Debt forgiveness is always beneficial to the debtor, if it can be arranged. The question is instead whether it is possible to devise a scheme that benefits both the debtor and the creditor, other than through contributions from a third party.

Second, the mere existence of a secondary discount does not guarantee that debt can be reduced without harming the creditors. At point L in Figure 1, there is a secondary market discount (with the price of the debt measured by the slope of OL), but debt reduction will hurt the creditors. Only if the debt is so large that it puts the country on the wrong side of the curve, as at point R, is there potential for mutual gain.

This means that the question of where countries really are on the curve is a controversial one. There are now a number of studies that attempt to estimate the debt Laffer curve using cross-sectional data. While initial estimates seemed to suggest that only a few countries were on the wrong side, more recent estimates put a number of countries on the wrong side, and suggest that the "typical" problem debtor is at or near the top of the curve.

A sample recent estimate is that of Claessens, Diwan, Froot and Krugman (1989). We fit the following function to cross-section data:

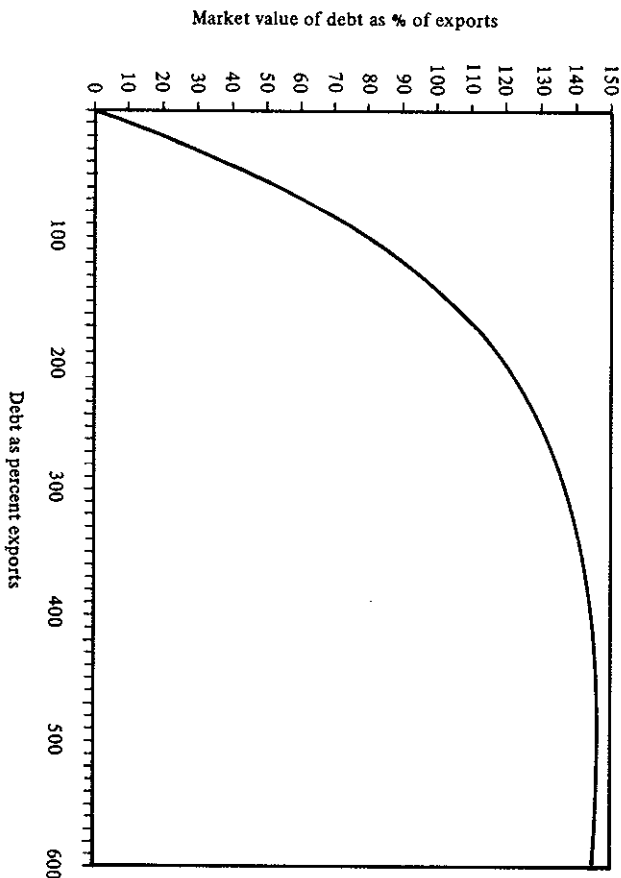
$$\ln[P/(1-P)] = 7.88 - 1.41 \ln(D/X)$$

where P is the secondary market price of a country's debt, D the face value of that debt, and X its exports of goods and services. The implied debt Laffer curve is shown in Figure 2. The curve reaches a maximum at a debt-export ratio of 5.0, compared with an average debt-export ratio for the IMF's group of 15 highly indebted countries of 3.2.

It is not possible to say with any great confidence which, if any, countries are on the wrong side of the debt Laffer curve. What is fairly clear, however, is that in the relevant range for many problem debtors the curve is, if not actually downward-sloping, quite

flat. As I will argue below, this observation has a crucial bearing on the comparison between negotiated and market-based approaches to debt reduction.

FIGURE 2



2. Externally financed debt buybacks

Unilateral debt forgiveness by a country's creditors is difficult to arrange. There is no consensus about whether countries are really on the wrong side of the debt Laffer curve. Even if it were agreed that a country is on the downward-sloping segment, there is a severe free rider problem. Each creditor would like some other creditor to offer the debt forgiveness; the result may therefore be an insistence by all creditors on maintaining the face value of their claims even if there is no realistic chance of collecting.

The upshot of this is that unilateral debt forgiveness must be concerted debt forgiveness. At this point, however, both banks and governments are tired of trying to achieve concerted action; they would like an easier way. The visceral response given the current ideological climate is to search for a market solution—essentially to buy back debt on the secondary market.

The key question for buybacks is where the money comes from. The simplest case is where the funds are supplied by some third party. As we will see, this is not likely to be a route through which large-scale debt reduction will take place. It is, however, a useful case to consider in order to establish some basic principles.

Consider, then, the effects of a debt buyback financed by cash donated from some third party. We return to the numerical example introduced in Table 1; and we temporarily leave on one side the incentive effects that might give rise to a downward-sloping debt Laffer curve. To bring out the points most clearly, we first imagine that this third party—call it the World Bank—commits itself to reducing the debt to a level that the country will be able to pay with certainty, *i.e.*, \$ 25 billion, which means that it must buy off \$ 75 billion of debt. The effects of a more realistic, smaller buyback will be considered below.

The effects of the buyback are shown in Table 4. We ask, in sequence, the following questions: What is the effect of the buyback on the secondary market price of debt? What is the cost of the buyback to the World Bank? What is the effect on the welfare of the country? What is the effect on the private creditors?

TABLE 4
PAYMENTS AFTER BUYBACK OF 75

	Good state	Bad state
Receipts of remaining creditors	25	25
Receipts by seller of debt	75	75
Expected total receipts	100	100
Secondary price = 1.0		
Cost of buyback = 75		
Gain to initial creditors = 50		
Reduction in expected payments by debtor = 25		

1. The effect on the secondary price: An externally financed buyback leaves the country with a smaller debt, but with an unchanged ability to pay; thus the secondary market price of the remaining debt will rise. In the extreme example considered here, the buyback is so large that the remaining debt is certain to be fully repaid; thus the secondary price rises to 100 percent of par.

2. The cost of the buyback: Marginal sellers of debt must be indifferent between holding on to the debt and selling it. Since everyone knows that the secondary price will rise to 100 percent, the repurchase must take place at par—the buyback costs \$ 75 billion.

3. The benefit to the country: In the absence of a buyback, the country would expect to pay \$ 50 billion. With our large buyback, these payments are reduced to \$ 25 billion in both states; thus the country's expected payments are reduced by \$ 25 billion. (This ignores the possibility that there may be an additional gain to the country resulting from the elimination of the necessity of default. I will return to this issue below).

4. The benefit to the creditors: Absent our large buyback, the creditors would expect to receive only \$ 50 billion. With a large buyback, they will instead receive the full value of the debt—some because they sell out to the World Bank, others because the reduced debt can now be repaid in full. Thus the expected payment rises from 50 to 100—a \$ 50 billion gain.

Simple as this example is, it illustrates two important points about attempts to provide debt relief by buying back and cancelling Third World debt. First, such relief is typically very expensive, because the more debt relief is expected, the higher the price that the creditors will demand for their claims. Second, much of the benefit of the buy-back goes to the creditors rather than the debtor—a point that has been forcefully argued by Bulow and Rogoff (1988), among others. In this particular example, two-thirds of the World Bank's outlay effectively goes to the creditors rather than to the debtor.

The result that much, perhaps most of any externally financed buyback goes to benefit creditors rather than debtors seems to be a strong argument against this use of the resources of the international community. Is there any counter-argument that can be made? The main one seems to be the following: suppose that there are additional costs to debtor countries if they must default that are not captured by their external payments. These might include disruption of their trade, closure of future access to international capital markets, and so on. Then to the extent that debt buybacks reduce the probability of outright default (which they will almost always do, if we recognize that realistically there are more than two possible states of nature), the benefits to the debtor may be larger than are suggested here.

Nonetheless, it remains apparent from our discussion that buybacks that use externally supplied cash look uncomfortably like relief for the private creditors rather than the debtor, making this a dubious use of public resources. In practice, schemes for debt relief—including what can thus far be discerned of the Brady Plan—generally attempt to supply the externally provided funds as part of a package intended to shift the benefits more fully to the debtor. The key to these packages is that the external funds are used to provide guarantees to the issue of new debt in exchange for old. We will consider such mixed schemes later. First, however, we turn to the pure case of a repurchase of debt financed entirely by the issue of new debt.

3. Debt swaps

In a debt swap, a country issues new debt and either exchanges this new debt directly for the existing debt or sells it and uses the proceeds to repurchase debt on the secondary market. In either case, the effect is to substitute new debt for old.

While debt swap schemes, usually taking the form of offering creditors "exit bonds", have attracted considerable attention, there remains a widespread failure to appreciate the key precondition for such swaps to work. This is that the new debt must somehow be made *senior* to existing debt, in the sense that it has a prior claim on the country's payments. To see why this is necessary, consider what would happen if the new debt were expected to be treated in the same way as existing debt, so that in effect it would be thrown into the same risk pool. Then the new debt would immediately sell at the same discount as old debt, preventing any net reduction in debt. Suppose, for example, that debt sells at a discount of 50 percent. An issue of \$ 10 billion (in present value) in new debt would sell for \$ 5 billion; this money could be used to repurchase \$ 10 billion of old debt, but the overall debt burden would not be reduced.

In order for new debt to sell at closer to par than old debt, purchasers must somehow be assured that they will receive priority in the disbursement of available funds. In the attempted Mexican debt swap of early 1988, the selling point was that the new debt would take the form of bonds, which in Mexico have thus far been exempt from the rescheduling and new money calls that have been placed on bank debt. In other exit

bond schemes there is a promise that the new bonds will be exempt from new money calls. In some proposals for debt relief, such as that of Williamson (1988), partial World Bank guarantees are expected to confer seniority on the guaranteed debt, on the grounds that countries will be less willing to default on international agencies than on private creditors.

In practice, the attempt to confer seniority on new debt is problematic, and difficulties in doing so may constitute a central obstacle to attempts to provide market-based debt relief. For now, however, let us suppose that it is possible to assure purchasers of new debt that they will receive first call on repayment, and examine the implications of a debt buyback financed by issue of new, senior debt.

Consider again the numerical example introduced in Table 1. A debtor country can pay its full debt of 100 with probability 1/3, but will pay only 25 with probability 2/3. As in the buyback example, the country sets out to repurchase \$ 75 billion of its original debt; however, it now does so by issuing new debt that receives first claim on available resources.

The results are shown in Table 5. In order to buy back the 75 in old debt, the country needs to issue \$ 25 billion in new debt; its net debt falls to \$ 50 billion. To show why this is the size of the required swap, we need to show what happens to the secondary price. Since the new debt will be paid first, it will be fully repaid in either state, so that there will be no discount on the new debt. In the bad state, however, the new debt will receive all of the repayment, leaving nothing for the old debt; since holders of the old debt will be repaid only with a one-third probability, the secondary price of old debt falls from 1/2 to 1/3. It follows that \$ 25 billion of new debt can be swapped for \$ 75 billion of old.

TABLE 5

EFFECTS OF PURE DEBT SWAP, NEW DEBT SENIOR TO OLD

1. Before debt swap		2. After debt swap of 25 new debt for 75 old debt	
Receipts of creditors	100	Good state	25
Expected receipts	= 50	Bad state	
Secondary price	= 0.5		
Receipts of holders of new debt	25	Good state	25
Receipts of holders of old debt	25	Bad state	0
		Expected receipts of new creditors = 25	
		Expected receipts of old creditors = 8.33	
		Secondary price of new debt = 1.0	
		Secondary price of old debt = 0.33	
		Change in expected payments by debtor = -16.67	

The welfare effects of this transaction are quite different from those of an externally financed buyback. The expected payment by the country falls from \$ 50 billion to \$ 33 1/3 billion. This gain comes at the expense of the original creditors, who see the expected value of their claims fall by the same amount.

A buyback financed by the issue of new senior debt appears, then, to benefit the debtor at the expense of its creditors. Thus one might think that creditors should always be opposed to allowing the establishment of the seniority of new debt that makes such swaps possible. However, the conclusion that the creditors lose depends on a key assumption that now needs to be relaxed: that the country's ability and/or willingness to repay is independent of the size of the outstanding debt. As in the case of unilateral debt forgiveness, the creditors as well as the debtor will gain if the country is on the wrong side of its debt Laffer curve, so that reducing the face value of debt actually raises expected payments.

4. Domestically financed buybacks

Externally financed buybacks are possible only when a third party is prepared to contribute resources; debt swaps work only if seniority can be established. Thus far only Bolivia has managed to assemble external donors to repurchase its debt, and nobody has managed to credibly establish the seniority of new debt over old. There remains, however, the option of self-financed debt reduction, in which a country simply buys back its own debt on the secondary market.

Even this debt reduction method is not automatically available. The sharing provisions under loan agreements, by requiring that payment be made on all bank debt equally, prevent direct purchase on the secondary market. However, creditors have been willing to acquiesce in a variety of indirect buybacks, notably those that (as we will see) often result from debt-equity swaps and from the use of reserves to collateralize new debt.

Cutting through these disguises, consider the effects of a direct use of cash generated by a country itself to repurchase some of its debt at a discount. This cash may come from existing foreign exchange reserves, or it may be generated through trade surpluses. In a certain sense, even cash supplied by third parties to finance a buyback can be considered domestically generated, since the cash *could* have been given directly to the country; thus the use of that cash to buy back debt represents a choice not to spend it on something else.

At this point a new issue arises. This is the issue of "appropriability": how much of a dollar that is used to buy back debt would have gone to the creditors if not spent in this way (*i.e.*, how much of a marginal change in a country's resources can be appropriated by the creditors)? At one extreme, there is the view that debt service payments by debtors are pretty much independent of their resources, that there is near-zero appropriability. On this view, a dollar spent on reducing debt will reduce payments to creditors only in those favorable states of nature when the country would have been able to service its debt in full in any case. This view has been starkly stated by Blilow and Rogoff (1988). At the other extreme, there is the view that creditors essentially take as much from a country as it can manage to pay, and that this includes foreign exchange reserves. On this view, with near-complete appropriability, a dollar spent on debt reduction is a dollar that creditors cannot seize in adverse states of nature, and the debt repurchase therefore reduces payments in bad as well as good outcomes.

The effects of a self-financed debt repurchase depend crucially on the degree of appropriability. With near-zero appropriability, the repurchase acts just like an externally financed repurchase, which as we have seen typically conveys most of the benefit to the creditors rather than the debtor. In this case, however, the cost of the buyback falls on the debtor itself. The result is therefore to reduce the debtor's welfare.

Suppose that we were to run once again the thought experiment shown in Table 3, with a buyback reducing the debt from \$ 100 billion to \$ 25 billion. As we saw, the cost of this buyback is \$ 75 billion, even though the expected payments from the debtor fall by only \$ 25 billion. Now suppose, however, that the debt repurchase is financed by the country itself. Then the country will have expended \$ 75 billion in order to reduce its expected payments by \$ 25 billion, experiencing a net expected loss of \$ 50 billion. Clearly, if appropriability is really very close to zero, self-financed debt repurchases are a very questionable policy.

On the other hand, suppose that the resources that are used to repurchase debt are in effect taken away from what might have been paid to creditors in unfavorable states of nature. For example, suppose that by using up its foreign exchange reserves through repurchases a country puts itself in a position where its creditors have to forgive debt in the event of an unfavorable movement in export prices, whereas the country would have been forced to cover the shortfall out of its reserves otherwise. In a case of near-complete appropriability, a self-financed debt repurchase is similar in its effects to debt repurchase financed with issue of senior debt. (In corporate finance, where creditors can seize the assets of bankrupt firms, near-complete appropriability is the rule. This is why repurchase of debt at a discount is normally prohibited).

The case of debt buyback financed from domestic resources has created a great deal of dispute—understandably so, since it is simultaneously the easiest kind of debt reduction scheme to implement in practice and the most ambiguous in its results, being potentially either beneficial to the creditors at the expense of the debtors, of the debtor at the expense of the creditors, or beneficial to both. However, the case of domestically financed buybacks should not be overemphasized. By its nature it cannot be a major contributor to the solution of the debt problem. Almost by definition, problem debtors are short of cash. Thus they cannot be expected to finance large-scale debt relief out of their own resources. Nor are large donations from third parties, which could have been given as direct aid, likely to be forthcoming. If there is going to be a large-scale attempt at voluntary debt reduction, it will for the most part have to take the form of an asset exchange rather than an outright cash purchase.

5. Debt-equity swaps

The most significant mechanism for market-based debt reduction actually in use is the debt-equity swap. Debt-equity swaps remain very popular among bankers, and indeed an extension of such programs is often a key demand of bankers in return for acquiescence to other debt-reduction schemes. Yet debt-equity swaps are complex transactions, whose virtues are much more elusive than their backers would like to claim.

The first point to make is that under no circumstances does a debt-equity swap constitute a net capital inflow. The country simply exchanges one kind of external liability for another. The exchange may be desirable, as we will discuss in a moment, but it does not add to the supply of domestic savings or, what is equivalent, contribute

resources towards debt service and thus diminish the trade surplus that the country needs to run to service a given debt.

The second point is that reducing debt is not the same as reducing external obligations. When equity is substituted for debt, foreigners relinquish their claim on a future stream of debt service in return for a claim on a future stream of repatriated earnings. The present value of this latter stream may or may not be smaller than that of the former; again, we will discuss in a moment the factors that determine this.

Before getting to the question of the effects of a reduction in debt offset by an increase in foreign equity holdings, however, it is necessary to address a prior issue. It is unfortunately not always the case that allowing equity purchases to be paid for with debt actually leads to a net increase on foreign equity holdings. This is the issue of "additionality": how much of the equity investment that takes place through debt-equity swaps is actually an increase over the investment that would otherwise have taken place?

The most obvious case in which debt-equity swaps fail to produce additional equity investment is when the foreign investor resells the equity to a domestic investor and takes his cash out of the country again. Such "round tripping" is not unknown, but it is well understood, and actual debt-equity schemes at least attempt to police such abuse.

The more important problem case is where a debt-equity swap is used to finance an investment that would have taken place anyway. Perhaps the most notorious example is that of the Nissan plant in Mexico, which by all accounts would have been built even if no swap program had been available. Given the opportunity to finance the project via a swap, however, the firm naturally took advantage of the lower price, paying for its investment with debt acquired at a discount rather than cash.

What happens when a debt-equity swap fails to generate additional equity investment? The answer is that the swap degenerates into a repurchase of debt using domestically generated resources. Nissan's use of a debt swap meant that the money that it would otherwise have supplied to the central bank did not arrive, requiring the central bank to spend more of its foreign exchange reserves to pay for imports that it otherwise would have.

We should also note that at best, if additionality is 100 percent, a debt-equity swap represents zero net capital inflow. To the extent that the swap has less than 100 percent additionality, then, the result is de facto a capital *outflow*.

Thus a high degree of additionality is necessary if debt-equity swaps are going to constitute a real exchange of assets. Otherwise they degenerate into a disguised cash buyback of debt, typically at less favorable terms for the debtor than could have been realized through an explicit buyback.

Suppose, however, that a debt swap program can be devised so as to insure a high degree of additionality. The next question is whether the program actually reduces a country's external liabilities, in the sense that it reduces the present value of payments to foreigners. The answer is, not necessarily: it depends on the size of the premium that foreigners are willing to pay in order to convert their debt to equity. This in turn, while it depends on a number of factors, must depend crucially on the same consideration that determines the feasibility of debt reduction through issue of new debt. That is, investors must form a judgement on the seniority of equity as opposed to debt.

This sounds like a strange issue, since in ordinary corporate finance debt is always senior to equity. If this were the case for countries, then a debt-equity swap would typically *increase* the present value of a country's liabilities to foreigners. The current argument, however, is that debt is a source of controversy and bitterness that equity is not; that Latin American nations might default on their debt while still honoring the

property rights of direct investors. This is possible, although it is only a decade since multinational firms rather than banks were the chief targets of radical rhetoric in the Third World.

If equity can be made credibly senior to debt, then debt-equity swaps will have the same qualitative effects as debt-for-debt swaps in which the new debt is senior.

Even if a debt-equity swap fails to reduce a country's obligations, it may still have some other advantages. The repatriation of profits will ordinarily come later than the debt service it replaces, so a successful swap will improve a country's liquidity position. Also, debt-equity swaps can serve other purposes, such as encouraging foreign direct investment that is expected to yield side economic benefits. Against this must be put the risk that the net effect of such swaps will be a net capital outflow, as well as the typically adverse budgetary implications.

My own guess is that in practice a sufficiently high fraction of debt-equity swaps will degenerate into cash buybacks on unfavorable terms that they will do the debtors more harm than good. Even if one disagrees with this assessment, the potential for debt-equity swaps is clearly limited.

6. Concerted vs. market-based debt reduction

Up to this point we have discussed a variety of mechanisms for reducing developing country debt. The time has now come to provide an assessment of the alternatives.

Suppose that creditor country governments have decided that it is in fact necessary to engineer a reduction in developing country debt, and that they are prepared to throw in some resources in order to facilitate the process. What kind of debt reduction scheme should they encourage? Should it be a concerted, negotiated scheme along the lines of the recent Mexican deal, or should it be a market-based scheme?

The instinctive reaction of both the private creditors and the US government is to prefer a voluntary, market-based scheme. This preference results primarily from a general presumption that market mechanisms, which maximize freedom of choice, are more efficient than less flexible methods; the preference for voluntarism also arises from the impatience of the banks with concerted action, and the fear of the creditor governments that a concerted solution may not be enforceable.

Yet the presumption in favor of the market is somewhat out of place in the debt situation. By definition, a problem debtor is unlikely to meet its legal obligations — *i.e.*, the normal market mechanism has broken down. The situation that results is rife with externalities among the creditors — capital flight, free-riding on other banks' lending, and so on are widely understood to be in the interest of individual banks but destructive if everyone engages in them. So there is no presumption that greater freedom of choice is a good thing. And the emphasis on the virtues of voluntarism obscures a point that would otherwise be very clear: that a given commitment of resources from creditor governments can reduce debt much more through concerted action than through the market.

The point is straightforward. What is the cost to the creditors as a group of reducing their claims on problem debtors by some small amount, say \$ 10 billion? The answer is very little. Even if the debt Laffer curve is not actually downward-sloping at current debt levels, it is certainly very flat; so reducing the nominal value of debt by \$ 10 billion would reduce the expected payments to creditors by a very small amount, probably less than \$ 500 million. It should therefore be possible to negotiate a concerted debt reduc-

tion in which the nominal value of debt is reduced substantially in return for small "enhancements" from the creditor governments or multilateral agencies.

On the other hand, suppose that the same debt reduction were to be attempted through a market buyback. The market price of debt reflects, not the *marginal* contribution of debt to expected payments, but the expected *average* payment per unit of debt, which is much higher. The market price of \$ 10 billion of debt is therefore something over \$ 3 billion. Unless it is possible to create new, senior debt instruments that subordinate existing debt—which we have seen is very difficult—it will cost more than \$ 3 billion to finance the same debt reduction that a few hundred million dollars in enhancements would have made possible in a concerted reduction.

We may make the point graphically. In Figure 3, we imagine that the debt Laffer curve is upward-sloping in the relevant range, but that a third party is prepared to finance a reduction of debt from D_2 to D_1 . A concerted debt reduction program would need to be supplemented by enough enhancements to compensate the creditors for the reduction in expected value from V_2 to V_1 ; but given the flatness of the debt Laffer curve in the relevant range, this cost should be modest. A debt buyback, however, would have to pay the market price of the debt, indicated by the broken line; the cost to the creditor governments would be V_3 minus V_1 , a much larger sum.

Suppose we use the estimated debt Laffer curve from Claessens *et al.* (1989), described earlier in this paper. How much would a reduction of the debt of the 15 highly indebted countries by \$ 100 billion cost? The answer is that a concerted debt reduction should require enhancements of \$ 13.0 billion, while a buyback of the same size would cost \$ 53.2 billion.

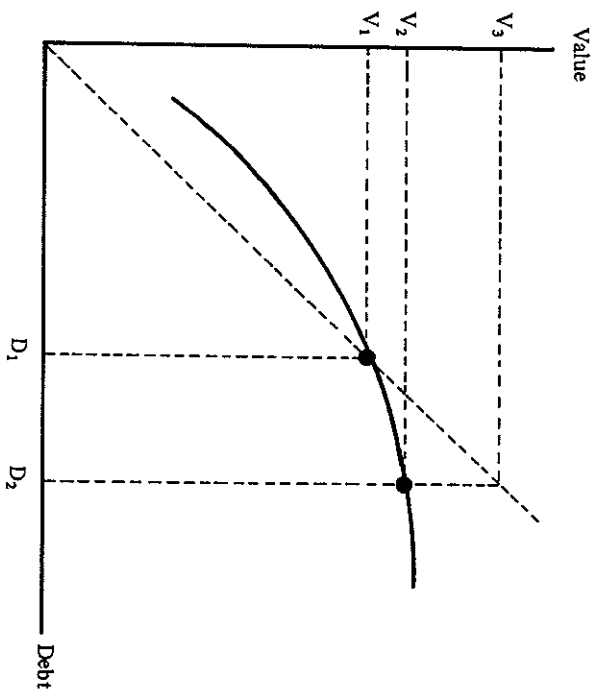


FIGURE 3

Clearly this estimate is contingent on the particular estimate of the debt Laffer curve, in which no great confidence can be placed. It also ignores a number of realistic complications. Creditors are not all alike; a market-based approach might have some advantages in allowing those most eager to get out to sell. Concerted debt reduction is not so easy to negotiate, and more enhancements than the minimum might be necessary to grease the wheels.

Nonetheless, it is difficult to escape the conclusion that substantial debt reduction could be achieved at a modest cost to creditor country governments if it is done through concerted action; while an equal size reduction would be prohibitively expensive through market-based buybacks.

References

- BIJLOW, J. and K. ROGOFF (1988). "The debt buyback boondoggle", *Brookings Papers on Economic Activity*.
- CLAESSENS, S., I. DIMAN, K. FROOT and P. KRUGMAN (1989). *The Art of the Deal: An Analytical Overview of Market-Based Debt Reduction Schemes*, draft report prepared for the World Bank.
- WILLIAMSON, J. (1988). *Voluntary approaches to debt relief*, Institute for International Economics.