A Note on Burden Sharing
Among Creditors

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This paper presents a framework for evaluating the relative contributions of different creditors in cases where only partial payments can be made by the debtor country. A methodology is developed to calculate partial payments—or, alternatively put, to determine residual financing. By focusing on the relative seniority of creditors and expectations of the debtor's ability to repay, alternative sharing rules are quantified. The measure is based on the expected present value of payments. Creditors earning a below-market rate of return suffer a burden; creditors earning the same rate of return are said to share the burden equally. [JEL F34]

This note examines burden sharing among creditors. The introduction of market-based debt reduction programs has made financial relationships between debtor countries and their official and private creditors much more complex. Because official and private creditors typically hold very different types of financial claims on debtor countries, it is difficult to evaluate their respective contributions to a financing package. The main objective of this note is to provide a simple framework that might serve as a useful first step in addressing this important issue.

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The need for such a framework is most apparent in cases where the debtor is expected to require additional financing. In this case, the values of the debts owed to creditors are interdependent, and it is natural for a creditor to consider the behavior of other creditors before committing to a financing plan. Suppose, for example, that feasible payments by the debtor are uncertain and that, without new credits, payments are likely to fall below contractual obligations at some point. It is necessary in such cases to be able to distribute partial payments—or, put another way, distribute the residual financing—according to some criterion. Among private creditors the “sharing” of partial payments is typically spelled out in each loan agreement. “Sharing” among official and private creditors, however, is not usually set out in existing contracts explicitly, or if such provisions exist, they may be conflicting.

The lack of a widely accepted analytical framework has led official observers to view the reluctance of commercial banks to provide “new money” as a failure to share the “burden” of financing. At the same time, others have argued that because banks have assumed the “burden” by participating in market-based debt reduction programs where they have often purchased debt at substantial discounts, they cannot be expected to provide additional financing. This note explores the analytical issues raised by such statements.

The framework developed below provides a quantitative measure of the financial consequences of alternative sharing rules for creditors. This measure necessarily fails to consider some important aspects of the problem. The main limitations of the exercise are the strong assumptions about the relative seniority of creditors, about financing arrangements, and about the expectations of the debtor’s ability to repay. Nevertheless, the methodology presented sheds light on how “burden sharing” might be usefully appraised.

The measure proposed is based on the idea that each creditor’s relationship with the debtor is summarized by the rate of return earned on the market value of the creditor’s initial claims on the debtor. In cases where there is no observable market value, the analogous measure would be the expected present value of payments to the creditor. This is necessarily a subjective measure and one that plays an important role in the analysis. The return on the market or expected value of a creditor’s initial stock of claims includes capital gains as well as all payments and receipts undertaken. The latter include debt service payments as well as “new money” lending and buy-backs or swaps. A creditor is said to suffer a burden if this rate of return is less than that available on an alternative safe asset. Creditors earning the same rate of return share the burden, if any, equally.
1. Methodology

Equation (1) defines how the rate of return is calculated. It shows which parameters are important in determining how a burden is shared among creditors and how a quantitative measure can be calculated for a particular country.

Several assumptions should be made clear at the outset. Any creditor faces two types of uncertainty. The first concerns a debtor’s willingness to repay. In this note, we reduce the problem to an absolute minimum by abstracting from this—not because it is unimportant but because it has already been dealt with in the literature. We assume that a country’s payments to its creditors are predictable in the sense that it is possible to construct a most-likely-outcome scenario. The actual outcomes for any given year will never exactly meet expectations, and our analysis takes this into account.

The second kind of uncertainty concerns the distribution of payments among creditors. In particular, it is useful to examine an alternative sharing rule or convention that determines all future payments. One possible rule treats one class of creditors as strictly senior. Thus, their claims will always be valued at par, assuming the debtor has sufficient resources. Another possible allocation rule would be equal status: creditors share in payments and in new financing in proportion to their initial exposure. The rate of return—hence, the “burden”—depends largely on the assumption about relative seniority.

In any given period, a given creditor’s payment may be more than or less than expected. This variability could result from unexpected behavior on the part of other creditors. For example, a creditor might accept new debt instead of cash payments, or a debt reduction program might alter the expected distribution of payments. For simplicity, it is assumed that the expected pattern of payments is not altered by the ex post distribution of payments.

Under this assumption equation (1) is the general expression for an individual creditor’s yield:

\[ y_i = \frac{\text{car}}{\hat{P}_i} + \frac{P_i D_i}{\hat{P}_i D_i} - 1, \tag{1} \]

- \( y_i \) = yield on \( i \)’s claims on the debtor,
- \( D_i \) = creditor \( i \)’s holdings,
- \( \text{car} \) = share of interest payments made to \( i \),
- \( \alpha \) = share of contractual interest payments made by debtor,
$P_1 =$ initial market price,

$P_2 =$ expected price at the end of the period,

$s =$ share of debt, and

$r =$ interest rate.

To solve equation (1), we need to express the end-of-period price, $P_2$, in terms of the other parameters. To do this, it is assumed that the expected value of debt service has a single unchanged value in each time period. In this special case,

$$P_1 D_1 = P_2 D_2,$$

(2)

It follows that

$$y_i = \frac{c ar}{P_i} s + \left[\frac{1}{1 + \frac{s(1 + r) - car}{\beta r}} - 1\right],$$

(3)

where $\beta = (1 - \alpha)$.

The first term on the right side of equation (1), $car/P_i s$, represents the yield for creditor $i$ from the cash payments he receives. This yield is shown in Figure 1 as $AB$. As $c$, the share of the debtor’s total cash payment, increases, creditor $i$’s cash payment rises and his or her rate of return increases.

As the creditor’s share of the total cash payment rises, his or her share of the new money bonds issued by the debtor falls. The increase in the contractual value of the creditor’s claims is captured by the term $[s(1 + r) - car]/\beta s$ in equation (3). Finally, the change in the market price of the creditor’s claims depends on the total new money bond issue, which is captured by the term $1/(1 + \beta r)$ in equation (3). These two effects are shown in line $CD$ of Figure 1.

It is possible that $car > s(1 + r)$. In this case, we assume that the creditor receives an amortization payment so that his or her stock of claims is reduced at a price of unity. In analyzing this case, it is natural to start from a situation in which the creditor’s share of the initial stock of debt is equal to his or her share in partial payments. This is where “equal sharing clauses” among private contracts would place the individual creditors. In the example shown, the official creditor has about 30 percent of the initial stock of debt. We assume that the debtor is able to pay 30 percent of its total contractual interest obligation. If $c = s$, then

1The figure roughly represents a country for which $r = 0.10, s = 0.38, c = 0.3$, and $P_i = 0.17$. 
the official sector gets its share of this payment. The first component of the yield is simply \( ar_1 / P_1 (= 18\% ) \).

The second component is also interesting. Because \( c = s \), the official creditor’s share of the new money financing is also equal to its share in the initial stock of debt. We know that the issue of new money securities will, assuming unchanged expected payments, leave the value of total debt unchanged. Thus, the increase in the total stock of debt must be exactly offset by a fall in the market price. Since the change in the market price is the same for all creditors, and since when \( c = s \) the official creditor receives a proportionate share of the new money securities, it follows that the second component of the rate of return is equal to zero.

In Figure 1, CD intersects the horizontal axis at \( c = s = 0.3 \).

To the right of \( c = s \), the official creditor receives a percentage increase in new money securities that is smaller than the change in the market price of all debt so that this component of \( i \)'s yield is negative. To the left of \( c = s \), the increase in the stock of debt dominates the fall in prices so that the component is positive. It is clear, however, that in this simple case
the individual creditor will always prefer a larger share of the cash payment. This will be true for any set of parameters as long as the initial price is less than unity.

As argued above, however, it may be possible to give up a share of the cash payment if the other creditors help finance a debt reduction program. This possibility can be explored by modifying the above analysis to allow for some diversion of interest payments to other creditors, who would use those payments in a buy-back or an equivalent debt reduction program.

The only component of equation (2) that is modified by a buy-back financed by other creditors is the capital gain or loss owing to the change in market prices. Suppose, for example, that half of all interest payments to other creditors is diverted to a buy-back. In this case, the total stock of debt at the end of the period would be reduced by an amount equal to \(1/2(1 - c)\alpha rD_t/P_t\). The new solution for the total yield is

\[
y_t = \frac{c\alpha r}{sP_t} + \left[ \frac{P_t + 1/2(1 - c)\alpha r}{P_t(1 + (1 - \alpha)r)} \right] \frac{s(1 + r) - c\alpha r}{s} - 1. \tag{4}
\]

If \(c = 1\), there is no payment to the other creditors, no buy-back, and equation (4) is the same as equation (3). Thus, the capital gain component of the yield shown as \(EF\) in Figure 1 intersects \(CD\) at \(c = 1\). To the left of \(c = 1\), \(P_t\), and therefore the capital gain for the official creditor, is greater. As shown in the chart, \(EF\) is slightly nonlinear in \(c\). The lower the initial price of debt, the more \(EF\) rotates up from \(CD\). Thus it is not possible to generalize about the trade-off between cash payments and financing debt reduction.

The total yield for the official creditor without buy-backs is the sum of \(AB\) and \(CD\), shown as \(GH\). If one-half of interest payments to other creditors is diverted to buy-backs, the total yield is the sum of \(AB\) and \(EF\), shown as \(D\). Suppose, for example, that other creditors agree to having one-half of their interest payments diverted to finance buy-backs. Starting from a cash payment of 30 percent of total payments, official creditors could reduce their cash receipts to about 16 percent and maintain the same yield, and thus the same burden.

Alternatively, the official sector could forgive debt, which would shift both curves down. Again, starting from a share of 30 percent, official creditors could forgive about one-half of their share of debt if other creditors agreed that all of their interest payments would be diverted to buy-backs.

Finally, a similar figure drawn for private creditors could help explain why private creditors are anxious to have officials finance buy-backs. In this case, the yield on private credits would rise if official receipts were diverted to debt reduction.
II. Conclusions

The analysis developed above provides a framework for evaluating the contributions of different types of creditors to a debtor country’s financing plan. It does not provide guidance as to how any burden should be allocated; no purely analytical framework could do so. Nevertheless, exercises like these do help clarify the sources of potential conflicts among creditors and among debtors and creditors. The framework itself suggests several conclusions.

A small senior creditor does not share in the burden of granting new loans as long as he or she remains small and senior. The creditor’s size and status assure that his or her credits will always be serviced, at the expense of other creditors if necessary. Thus this creditor’s credits are always fully valued.

Burden sharing among creditors expected to share in payments and financing in proportion to their credits is quite different. In this case, any burden is shared equally if creditors provide new credits proportional to their initial exposure. Creditors that provide more than proportional credits bear a disproportionate amount of the burden.

Equal creditors will be concerned about the source of funds used in any debt reduction operation but, once these funds have been identified, burden sharing is not affected by participation. The burden taken on by a creditor cannot be evaluated by asking whether they participated in a debt reduction scheme but by whether or not they helped finance the operation.

These last two conclusions imply that a creditor who receives a less than proportionate interest payment can offset some of the implied burden if the forgone interest payment is used in a buy-back or equivalent debt reduction operation.