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The real cost of the external debt for the creditor and for the debtor

Carlos Massad*

In this article the author analyses the real cost of external debt servicing and reaches the conclusion that the cost in question is different for the creditor and for the debtor. The former will normally take into account his own country's financial market as a basis for evaluating the alternative use of his resources. In contrast, the debtor will have to take into consideration the real resources that he needs to use in his own country in order to generate foreign exchange for paying the debt.

In the first case, the nominal rate of interest in foreign currency payable on the loan may legitimately be compared with the rate of inflation in the creditor's market (or in the United States). If the former rate is higher than the latter, there will be a transfer of real resources to the creditor, as he sees it; otherwise, the creditor will incur a loss on the real value of the loan. The data show that during the decade 1961-1970, the real interest paid abroad by Latin America reached 2.1% per annum if the United States Consumer Price Index is used as a measure of inflation; but this figure rises to 3.3% per annum if the United States Wholesale Price Index is employed. For the decade 1971-1980, the corresponding figures are 0.9% and -0.6%.

In the debtor's case, a comparison of the nominal rate of interest with the external rate of inflation becomes meaningless; for what matters is the social (and private) cost of generating foreign exchange. This cost depends, *inter alia*, upon the terms of trade and the changes therein. In view of these considerations, the author proposes a method of measuring the real cost of debt servicing, as seen by the debtor.

Lastly, he analyses various factors which play a part in determining the aforesaid cost, together with the relative importance of each. As was to be expected, the terms of trade carry the greatest weight in the determination of the cost of debt servicing. What is of least importance is the increment in amortization, while the effect of increases in the debt and in the interest paid varies greatly from one country to another.

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Introduction

The external debt of the non-petroleum-exporting developing countries, and, more recently, even that of the petroleum exporters, has been growing very fast.¹ A start has only just been made however, on systematic research into the real cost of the debt measured in terms of the transfer of real resources required to service it. One of the problems posed by evaluation of the real cost of debt servicing stems from the fact that the points of view of the creditor and of the debtor do not necessarily coincide. What matters to the debtor is to ascertain the amount of real resources that will have to be allocated to the generation of means with which to pay the debt. For example, if the international price of its export products falls, *ceteris paribus*, the burden of debt servicing will be heavier for the debtor country; it will have to earmark a larger proportion of its products for payment of the debt and a smaller share for imports.

The creditor, on the other hand, is concerned with the purchasing power of the sum loaned and of the interest on it in his own market. The aim of the present article is to explore these two points of view and propose methods of measuring the real cost or benefit of the external debt both for creditors and for debtors.

I

The creditor's point of view

The creditor will normally take into account the alternative use of his financial resources in his own country's market. Albeit this does not appear valid for creditors located in financial centres where the non-financial market is small (such as Panama or Hong

¹ For a first study in this field, see C. Massad and R. Zahler, "Inflación mundial y deuda externa: el caso del deflactor impropio", in *Dos estudios sobre endeudamiento externo*, Cuadernos de la CEPAL series, No. 9, Santiago, Chile 1977.

Kong), it often happens that the leading creditors are really institutions with their head offices in the United States and other industrial countries.

The range of options for the use of financial resources outside the creditor country's market is enlarged as the proportion of total loans represented by international loans increases. Nevertheless, despite this enlargement, loans abroad still constitute only a modest fraction of the total loans issued by financial institutions in industrial countries.

For example, of the total amount of credit granted by banking institutions located in the United States, less than 10% represented external assets at the end of 1981.² This figure includes assets placed all over the world outside the United States.

Thus, the option of lending abroad, although open, is probably not regarded as an alternative possibility for permanent use of their financial resources by individual loan institutions operating in the international market. It seems more reasonable to suppose that such institutions, individually considered, will invariably take into account the option of using their resources in their own market; and this notwithstanding that in the aggregate they may always keep a certain volume of funds placed abroad.

Now, if the annual rate of interest charged on a loan is equal to the corresponding rate of inflation, the purchasing power of the capital lent will remain constant. And in so far as the rate of interest diverges from the rate of inflation, a loss or gain will occur in the purchasing power of the capital lent by the creditor country.

The debtor countries, for their part, do not only obtain loans from the creditor countries but also leave in them large sums on deposit, on which they earn interest. The purchasing power of the capital deposited is of course also affected by inflation.

From the standpoint of the creditor, inflation in his own market reduces the purchasing power of the deposits in question.

Thus, while the creditor loses on loan capital through inflation (with a given rate of interest), he gains on the foreign capital deposited. Although the rates of interest charged on a loan are generally different from those payable on deposits, a first approximation whereby the two foregoing considerations can be taken into account consists in subtracting from the total amount of loans extant at a given date the deposits existing at that same time. This difference will be called here the Global Net Debt (ND, or, for the purposes of the following formulae, DN).

1. The method

If the growth of the Global Net Debt in the course of the year is linear, it may be assumed that the annual interest paid corresponds to a level of debt midway between those recorded at the end of one year and at the end of the next. The difference between the two end-of-year figures constitutes the annual increase in the debt or net flow of annual indebtedness (F).

The average between the two end-of-year figures will represent the Mean Net Debt on which interest is payable (DNF).

$$DNF_t = \frac{DN_{t-1} + DN_t}{2}$$

or again

$$DNF_t = DN_{t-1} + \frac{F_t}{2}$$

where the subindex 't' represents the year concerned.

If the interest paid in each year by the debtor country, minus the interest received on its deposits abroad, or effective net interest (IEF), is divided by the Mean Net Debt, the result obtained is the average net interest rate effectively paid (iEF).

$$iEF_t = \frac{IEF_t}{DNF_t}$$

² See International Monetary Fund, *International Financial Statistics*, Washington, D.C., September 1982.

This effective rate is compared with the pertinent rate of inflation to determine whether the capital loaned by the creditor maintains its real value or whether this value increases or decreases.

Obviously, the real value of the Mean Net Debt, like other factors, will rise, remain the same or decline according to whether the effective interest rate exceeds, exactly matches or falls below the rate of inflation.

A change in the real value of the Mean Net Debt signifies a variation in the debtor's commitment to transfer real resources to the creditor in payment of the debt. The method employed here measures this commitment in terms of the purchasing power which is of interest to the creditor, but which does not necessarily correspond to the cost in terms of real resources that is implied for the debtor by the generation of external resources for payment purposes.

In accordance with Fisher's equation ($1 + p = (1 + e)(1 + i)$), where 'p' is the expected rate of price variation, 'e' the real interest rate and 'i' the nominal rate,

$$e = \frac{1 + i}{1 + p} - 1$$

where 'e' would represent the real transfer of resources from or to the creditor country. Positive values for 'e' would indicate a transfer of resources to the creditor, while negative values would correspond to a transfer from the creditor to the debtor, as the creditor looks at it.

Application of the rate 'e' to the Mean Net Debt will give the amount of resources transferred annually (R_t).

The total amount of resources transferred in the past will represent the cumulative sum of the annual values of 'R', duly adjusted year by year in accordance with price variations. This procedure assumes that over the long term the real interest rate is zero; otherwise, real interest would have to be added to price adjustments in order to determine the value of the cumulative transfer of resources.

Should the said real rate be positive, the procedure used underestimates the cumulative amount of resources transferred.

2. The data

An attempt has been made to cover the twenty-year period ending at the close of 1980, with reference to the Latin American countries, excluding the four Caribbean countries (Guyana, Trinidad and Tobago, Barbados and Jamaica), Venezuela and Panama. The last-named country was left out because it is a financial centre where the economic significance of the 'external debt' is completely different from what it means for the other countries. A sub-group of countries has been set apart as comprising the region's major debtors, i.e., Argentina, Brazil, Chile, Colombia, Mexico and Peru.

To calculate the Global Net Debt, the short-, medium- and long-term debt was taken, irrespective of whether it was or was not officially guaranteed; and from this were subtracted the deposits, both public and private, maintained abroad by the debtor countries. The latter data were obtained from the 1974 to 1980 publications of the Bank for International Settlements, Basle (BIS), and for earlier years the foreign exchange reserves maintained by debtor countries, according to information supplied by IMF in *International Financial Statistics*, were taken as deposits abroad.

This procedure underestimates the amount of deposits abroad prior to 1974, although this underestimation approaches zero as one goes farther back in time; the reason is that private holdings of foreign exchange abroad acquire significance only from the end of the 1960s onwards.

The figures for the global debt from 1974 to 1980 are those estimated by ECLA, on the basis of information furnished by the World Bank and by BIS. For previous years World Bank figures were used for the medium- and long-term debt, and the short-term debt was calculated as the cumulative sum of the net flows of such loans annually recorded in each country's balance of payments. For the purposes of this accumulation it was assumed that there were no short-term loans before 1950.

For the rate of inflation use was made of the data on the consumer price index and wholesale price index of the United States,

since this country is the leading creditor in the case of the debtor countries analysed. The rates of inflation represent average annual rates (percentage variation between annual price indexes).

3. Results

Tables 1 and 2 reflect the results obtained with two alternative measurements of inflation: the United States consumer price index and the wholesale price index for the same country. The total period has been subdivided into quinquennia and decades so as to show trends rather than sporadic short-term variations.

The columns in the two tables show the difference between the two measurements of the rate of inflation and the interest rates effectively paid. If inflation is measured by the variations in the consumer price index, it will be noted that both Latin America as a whole and the six major debtor countries transferred real resources abroad in the course of the borrowing process, through payments of interest; the remaining countries, on the other hand, paid out net real resources during the first decade and received them in the second.

During the twenty-year period ending in 1980, the transfer of accumulated real resources to Latin America's creditors represented an amount equivalent to 7.6% of the debt at the close of 1980; this figure is even higher for the six major debtor countries, rising to 9.3% of their external debt at the same date.

It makes little difference to these results if variations in the United States wholesale price index are applied as the measure of inflation. In the case of Latin America as a whole, and also in that of the six major debtor countries, transfers of real

resources abroad for payment of interest on the debt continue to occur, and the cumulative figure at the end of December 1980 reaches 4.1% of Latin America's debt and 6.4% of that of the six major debtor countries. In this case, however, the situation in the quinquennium 1971-1975 appears unfavourable to the creditors, since the tempo of the upward movements in the United States wholesale price index is speeded up, whereas interest rates do not yet exhibit the marked increases subsequently observable.

All this is only another way of saying that in the period 1961-1980, both the rate of interest received by the external creditors of the Latin American countries as a whole (excluding the four Caribbean countries, Panama and Venezuela), and the rate obtained by the creditors of the six major debtor countries, were positive in real terms. These real rates averaged about 1.5% per annum, a figure very similar to the average recorded for the United States during the same period. In contrast, for the creditors of the Latin American countries other than the major debtors interest rates were negative, averaging about 0.8% per annum; and this notwithstanding the fact that in the decade 1961-1970 the rate was positive in real terms.

Estimates prepared for 1981 suggest that the trends indicated sharpened during that year. The real interest rates paid by Latin America as a whole were close to 5% per annum. This figure also holds good for the six major debtors, while that applicable to the rest of the region remains negative.

These trends may reflect the industrial countries' and the international organizations' policy of increasingly concentrating the available soft resources in the countries with the lowest per capita income.

II

The debtor's point of view

In order to cover debt servicing, including both amortization and interest payments,

the debtor country needs to use present or future real resources in order to generate the

Table 1

LATIN AMERICA^a AND SIX MAJOR DEBTOR COUNTRIES: RATES OF INFLATION AND RATES OF INTEREST PAID ABROAD, 1961-1980*(Averages for quinquennia and decades, as percentages)*

Period	Rates of inflation		Rates of interest paid		
	CPI	WPI	Latin America	Six major debtors ^b	Others
1961-65	1.3	0.3	4.1	4.4	2.7
1966-70	4.2	2.7	5.4	5.7	3.5
1971-75	6.8	9.6	7.4	7.7	5.0
1976-80	8.9	8.9	10.0	10.4	7.1
1961-70	2.7	1.5	4.8	5.1	3.1
1971-80	7.8	9.3	8.7	9.1	6.0

^a Excluding the four Caribbean countries (Guyana, Trinidad and Tobago, Barbados, Jamaica), Venezuela and Panama.

^b Argentina, Brazil, Chile, Colombia, Mexico and Peru.

Table 2

LATIN AMERICA^a AND SIX MAJOR DEBTOR COUNTRIES: REAL INTEREST RATES PAID ABROAD, 1961-1980*(Averages for quinquennia and decades, as percentages)*

Period	Latin America		Six major debtors ^b		Others	
	CPI	WPI	CPI	WPI	CPI	WPI
1961-65	2.8	3.8	3.1	4.1	1.4	2.4
1966-70	1.2	2.7	1.5	3.0	-0.7	0.8
1971-75	0.6	-2.2	0.9	-1.9	-1.8	-4.6
1976-80	1.1	1.1	1.5	1.5	-1.8	-1.8
1961-70	2.1	3.3	2.4	3.6	0.4	1.6
1971-80	0.9	-0.6	1.3	-0.2	-1.8	-3.3

^a Excluding the four Caribbean countries (Guyana, Trinidad and Tobago, Barbados, Jamaica), Venezuela and Panama.

^b Argentina, Brazil, Chile, Colombia, Mexico and Peru.

necessary means of payment in foreign exchange. It uses present real resources when it provides for the servicing of its debt out of a trade-balance surplus. In contrast, it uses future real resources when it serves its debt by means of a surplus on capital account, i.e., by increasing its external debt, which it will repay in future periods. In

conditions of equilibrium, the present value of the future real resources required to pay the debt, discounted at the social discount rate, will have to be equivalent to the value of the resources needed for payment of the debt at the present time. The same thing is true of present or future debt servicing.

The problem to be resolved is that of

determining how much it costs the economy, in terms of real resources, to generate one unit of foreign exchange. This cost will represent the real social price of foreign exchange, or social exchange rate,³ the magnitude of which will depend upon such factors as external export and import prices, the level of international reserves, the degree of resource mobility as between tradeable and non-tradeable goods, etc.

When external import and export prices show appreciable variations which are maintained throughout long periods, they tend to take a predominant place among the various factors that help to determine the social exchange rate, and, consequently, the cost of external debt servicing measured in terms of real resources.

Accordingly, a first approximation to the real cost of debt servicing, from the debtor's point of view, consists in looking for some way of taking export and import prices into account in the valuation of debt payments.

1. The method

Obviously, a rise in the external prices of a country's exports will reduce the cost of debt servicing. Such an increase would mean that for every unit of real resources allocated to production for export more foreign exchange will be obtained than before, so that to generate one unit of foreign exchange fewer real resources will be required.

On the other hand, a rise in the external prices of imports implies that to maintain the same level of imports in real terms, more foreign exchange must be expended than before, and therefore more real resources must be earmarked for generating it, at progressively higher costs in terms of sacrificing production of other goods and services.

Thus, *ceteris paribus*, an improvement in the terms of trade will bring down the cost of debt servicing measured in internal

real resources, in relation to the base period. A deterioration in the terms of trade will of course produce the opposite effect.

Debt servicing comprises amortization and interest, so that

$$(1) S = A + I$$

where debt servicing, S , is measured as the sum—in terms of United States dollars—of the nominal values of amortization A , and interest I , paid abroad. To measure the terms of trade, an index of the unit value of the country's exports is divided by an index of the unit value of its imports, both expressed in United States dollars

$$(2) T = \frac{V_x}{V_m}$$

where T represents the terms of trade index and V_x and V_m the indexes of unit values of exports and imports, respectively. If $T < 1$, this implies that the unit values of exports increased more than those of imports, so that the cost of debt servicing, measured in terms of real resources, will be less per unit than in the base year.

The difference between the cost of debt servicing assessed in terms of real resources in the debtor country and the nominal amount of the service will be a measure of the increase or decrease in this cost generated by the terms of trade, VC .

$$(3) \frac{S}{T} - S = VC$$

or again

$$(4) \frac{S(1-T)}{T} = VC$$

Lastly, to express this variation per unit of debt, it follows that

$$(5) \frac{S}{D} \cdot \frac{(1-T)}{T} = \frac{VC}{D}$$

where D is the average nominal global debt for the corresponding year.

The term $\frac{VC}{D}$ has a dimension compara-

³ See C. Massad and R. Zahler, *op. cit.*

ble to an interest rate, and may be interpreted as a surcharge or relief in respect of the nominal interest rate, caused by variations in the terms of trade in relation to a given base period.

This interpretation calls for certain reservations. In the first place, the variation in the terms of trade measures changes in average export and import prices; it is therefore very strongly influenced by the staple and often traditional products which each country trades on the international market. In all probability, the marginal variation of the terms of trade, which will generally correspond to that of the non-traditional products traded, will be different from the mean, and it is this variation that should more properly be considered in the present analysis. In other words, an index of the marginal terms of trade would need to be defined and calculated as a means of more accurately reflecting the changes in the cost of external debt servicing measured in terms of real resources.

In the second place, the calculation would show the cost of debt servicing if the debt were effectively serviced. As the stock of debt generally tends to be enlarged, the new sum borrowed obviously more than covers the amortization payments and on occasion even the interest on previous debts. This means that a future servicing cost is being incurred whose equivalent in terms of real resources can only be calculated at the time of its effective payment. At all events, the method proposed permits of an approximation to the calculation in question at any time; and also makes it possible to establish that it is not in a country's best interests to pay its debt when the terms of trade are unfavourable to it. In such circumstances, *ceteris paribus*, it is better to refinance or renegotiate than to pay, although the normal attitude of creditors is precisely to collect at times when the terms of trade are most disadvantageous.

2. The data

As in the preceding case, the twenty-year period up to 1980 is considered, and is

divided into quinquennia so that trends rather than occasional changes may be assessed. The calculation was made with reference to Latin America, excluding the countries mentioned above, and to the six major debtor countries. To determine the variation in each country's terms of trade, use was made of indexes of unit values of exports and imports, with 1970 as the base year. The terms-of-trade index figures for each year are those estimated by ECLA; debt servicing data are taken from each country's balance of payments, and the sum indicated for external interest payments is net of interest received on deposits abroad. Debt amortization figures are also net of amortization received, but the latter is quantitatively insignificant in the countries considered.

The rates of surcharge or relief in respect of the nominal interest rate were calculated year by year and the geometric average per quinquennium was then worked out for each country. To calculate the average for the six countries as a whole, unit values were obtained for the group by means of adding up their exports and imports in terms of current and constant values, the latter at 1970 prices. And the same method was applied to Latin America as a whole.

3. The results

Tables 3 and 4 present the results obtained by application of the method described above for estimating the surcharge or relief on the nominal interest rate for the global external debt implied by changes in the terms of trade. The overall results do not show a very heavy surcharge, although on certain occasions it has amounted to more than 35% of the nominal interest rate paid on the debt. For some countries, at all events, both the relief and, where relevant, the surcharge are on a substantial scale.

Chile is undoubtedly the country that was hardest hit, with a surcharge averaging 26.6% for the quinquennium 1976-1980. This means that in paying amortization and interest on its debt, Chile had to disburse 26.6% more in real resources than it would have had to expend if the terms of trade

had been the same as in 1970. If the incidence of copper prices on the terms of trade is eliminated, the surcharge is 15.5%; at all events nearly four times as much as the corresponding figure for Brazil, the country which comes next after Chile in respect of the negative effect under discussion.

At the other extreme is Mexico, with a 4% relief during the quinquennium 1976-1980.

On the basis of these results, an estimate can be made of the real rate of interest looked at from the debtor country's viewpoint, i.e., measured in terms of real resources required to pay debt amortization

and interest in relation to the nominal global external debt outstanding. As regards the six countries considered apart, the maximum rate -38.1%— is shown by Chile in the quinquennium 1976-1980, while the minimum -1%— falls to Argentina in the first quinquennium of the period under study. In the six countries as a whole, the rate follows an upward trend throughout the four quinquennia, reaching almost 12% in the last five-year period analysed. This reflects several factors, including the variation in the debt and in its amortization, the increase in nominal interest rates and the deterioration of the terms of trade.

Table 3

**LATIN AMERICA—SIX MAJOR DEBTOR COUNTRIES: RATE OF SURCHARGE
OR RELIEF IN RELATION TO THE NOMINAL INTEREST RATE**
(Averages for quinquennia and decades, as percentages)

Geometric averages	Argentina	Brazil	Chile ^a	Colombia	Mexico	Peru	Six countries
1961-65	-1.6	0.8	6.3	0.8	1.3	4.6	1.6
1966-70	0.9	1.8	1.1	1.2	1.0	2.4	1.0
1971-75	-3.2	1.2	5.8	0.8	-0.5	0.3	0.3
1976-80	3.2	4.1	26.6	-3.9	-4.0	-1.2	1.4

^a If copper is excluded from the calculations relating to Chile, the figures are: 4.8; 3.6; 4.0; 15.5.

Table 4

**LATIN AMERICA—SIX MAJOR DEBTOR COUNTRIES:
REAL RATE FOR DEBTOR**
(Averages for quinquennia and decades, as percentages)

Geometric averages	Argentina	Brazil	Chile ^a	Colombia	Mexico	Peru	Six countries
1960-65	1.0	5.4	11.4	5.3	7.2	7.7	6.0
1966-70	5.2	8.0	5.1	6.4	7.0	9.2	6.7
1971-75	6.5	10.3	11.2	6.7	6.4	8.3	8.0
1976-80	13.1	15.0	38.1	3.6	6.9	7.0	11.8

^a If copper is excluded from the calculations relating to Chile, the figures are: 9.9; 7.6; 9.4; 27.0.

III

Factors intervening in the real cost of debt servicing, from the debtor's viewpoint.

A provisional analysis

To measure the relative importance of each of the factors intervening in the determination of the real cost of debt servicing, from the debtor's viewpoint, the following procedure was adopted.

If it is recalled that

$$(6) \frac{S}{T} - S = VC$$

is the additional cost of debt servicing attributable to the terms of trade, the following expression may be formulated:

$$(7) \frac{\frac{S}{T} - S + I}{D} = \frac{VC + I}{D} = \ell$$

where ℓ represents the real cost of debt servicing, per unit of debt. This can also be expressed as follows, in accordance with (1):

$$(8) \ell = \frac{I}{D} + \frac{A + I}{TD} - \frac{A + I}{D}$$

and, if we differentiate (8) completely,

$$(9) d\ell = \frac{\partial \ell}{\partial D} \cdot dD + \frac{\partial \ell}{\partial A} \cdot dA + \frac{\partial \ell}{\partial T} \cdot dT + \frac{\partial \ell}{\partial I} \cdot dI$$

By virtue of equation (9), the increase in the real cost of debt servicing per unit of debt, $d\ell$, can be broken down by the various factors intervening in its determination.

It was assumed that debt D , in a given period, is a function of the amortization paid during the period in question, A , so that $\frac{\partial D}{\partial A} = -1$.

Amortization in future periods will of course be a function, *inter alia*, of the debt at the present time. This relation has not been considered, since what has to be

determined is the real cost of serving the debt now, not in the future. It must be taken into account, however, if the future behaviour of service payments is to be investigated; a substantial present increase in the debt implies, *ceteris paribus*, a steep rise in amortization in the future.

Totally differentiating equation (8), as indicated in (9), we have:

$$(10) d\ell = \left[\frac{I}{D^2} - \frac{A + I}{TD^2} + \frac{A + I}{D^2} \right] dD + \left[\frac{1}{TD} - \frac{1}{D} + \frac{I}{D^2} + \frac{A + I}{TD^2} - \frac{A + I}{D^2} \right] dA + \left[-\frac{A + I}{T^2 D} \right] dT + \left[\frac{1}{D} + \frac{1}{TD} - \frac{1}{D} \right] dI$$

$$(11) d\ell = \frac{1}{TD} \left[\frac{AT - (A + I)}{D} dD + \frac{(A + I) + D(1 - T) - AT}{D} dA + \frac{A + I}{T} \cdot dT + dI \right]$$

and, lastly, if it is recalled that $A + I = S$, we have

$$(12) d\ell = \frac{AT - S}{TD^2} dD + \frac{S + D(1 - T) - AT}{TD^2} dA + \frac{S}{T^2 D} \cdot dT + \frac{1}{TD} \cdot dI$$

This last equation (12) can also be written as follows:

$$(13) \, d\ell = \frac{AT - S}{TD} \cdot \frac{dD}{D} + \frac{S + D(1 - T) - AT}{TD} \cdot \frac{dA}{D} + \frac{S}{TD} \cdot \frac{dT}{T} + \frac{1}{T} \cdot \frac{dI}{D}$$

or again:

$$(14) \, d\ell = \frac{AT - S}{TD} \cdot \frac{dD}{D} + \frac{S + D(1 - T) - AT}{TD} \cdot \frac{A}{D} \cdot \frac{dA}{A} + \frac{S}{TD} \cdot \frac{dT}{T} + \frac{1}{T} \cdot \frac{1}{D} \cdot \frac{dI}{I}$$

where changes in the debt, in amortization, in the terms of trade and in the interest paid are expressed as percentages.

Thus equations (12), (13) and (14) make it possible to distinguish the incidence of these factors on the variations in the real cost of debt servicing, by combining the terms-of-trade effect with the impact of changes in the amount of the debt and in the flows of amortization and interest payments.

If the results obtained in (13) are applied to the figures for the group formed by the six major debtor countries of the region, for the whole of the period under consideration, the following equation is obtained by regression:

$$d\ell = 0.073 \frac{dD}{D} + 0.010 \frac{dA}{A} + 0.077 \frac{dI}{I} - 0.240 \frac{dT}{T}$$

All the coefficients are significant and the signs conform to expectations.

The increase in the debt bears a negative sign, i.e., it reduces the value $d\ell$ and, therefore, represents a relief in respect of the cost of debt servicing. But for the increment in amortization the sign is

positive, so that when the growth of the debt generates increases in amortization, the cost of servicing it will rise. The same thing will happen in the case of interest payments, with the result that the relief afforded by the augmentation of the debt is a very short-term business.

These results once again confirm the conclusion that the variation in the terms of trade plays an important part in the cost of debt servicing, from the debtor's point of view. In some individual countries, however, its influence varies substantially within each of the periods considered.

Table 5 shows the results obtained for each of the countries in the Latin American 'major debtors' group.

The cost relief effect produced by the increase in indebtedness was more important for Chile than for the other countries. At the other extreme stands Colombia, where the coefficient is practically 0. The rest of the countries range between these two extremes, their coefficients being very close to the average for the six major debtors.

The increase in debt amortization in all countries has a regression coefficient equivalent or very close to 0.

The impact of the rise in the interest paid was severest in the cases of Peru and Mexico, whereas in Colombia its effect was much less. The coefficient for the remaining countries was close to the average for the six major debtors.

The terms of trade carried most weight in the determination of the cost of debt servicing. Mexico and Brazil were the countries in which its cost was most affected by this concept, while the coefficient was lowest in Colombia.

It is important to bear in mind that inherent in the cost per unit of debt there is a relief, or negative cost, by virtue of the increase in the size of the debt. This is a genuine fact, but, as previously remarked, it must be handled with caution. A debt whose growth has been very marked will be bound to generate a considerable subsequent rise in amortization and interest; when the level of the debt is stabilized, this upswing will cause an increase, which may be substantial, in the cost of servicing it.

Table 5
REGRESSION RESULTS

$$\text{General formula } d\ell = \alpha_1 \frac{dD}{D} + \alpha_2 \frac{dA}{A} + \alpha_3 \frac{dI}{I} + \alpha_4 \frac{dT}{T}$$

	α_1	α_2	α_3	α_4	R	D.W.
Major debtors (six)	-.073 (-6.479)	.010 (1.444)	.077 (9.818)	-.240 (-17.479)	.9850	2.1365
Argentina	-.107 (-4.499)	.003 (.619)*	.071 (3.649)	-.209 (-5.196)	.9110	2.1765
Brazil	-.075 (-3.855)	.007 (.544)*	.079 (6.744)	-.305 (-11.031)	.9649	1.8897
Chile	-.263 (-4.393)	.023 (.864)*	.075 (4.513)	-.196 (-7.188)	.9208	.7601
Colombia	.022 (.167)*	.005 (2.258)	.055 (6.286)	-.130 (-13.055)	.9768	2.6164
Mexico	-.080 (-3.757)	-.010 (-2.298)	.093 (6.606)	-.351 (-17.294)	.9765	2.3966
Peru	-.127 (-7.773)	-.004 (-.352)*	.097 (7.008)	-.293 (-12.637)	.9802	2.4999

Note: The numbers in () correspond to the value of the t-statistic.
* Not significant at the 90% level of reliability.

IV Conclusions

Table 6 summarizes the results obtained. Obviously, real interest rates, from the standpoint of the debtor, have greatly exceeded those envisaged by the creditor, in consequence of the steep deterioration of the terms of trade during the period under consideration.

This discrepancy in the real cost of the debt from the two points of view may account for some of the facts observed. In the first place, the debtor countries have been more concerned about the level of

their debt than the creditors.⁴ The latter have not supported the proposals put forward by some debtor countries for the improvement of the institutional mechanisms that deal with the debt problem: proposals which include the possible establishment of a special refinancing service in the International Monetary Fund. Nevertheless, some

⁴ Mexico's recent problem has made a notable difference to this situation.

Table 6

LATIN AMERICA AND SIX MAJOR DEBTOR COUNTRIES:
 REAL INTEREST RATES FOR CREDITORS AND DEBTORS
(Averages for quinquennia and decades, as percentages)

Period	Rates for creditors		Rates for debtors
	CPI	WPI	
1961-65	3.1	4.1	6.0
1966-70	1.5	3.0	6.7
1971-75	0.9	-1.9	8.0
1976-80	1.5	1.5	11.8
1961-70	2.4	3.6	6.4
1971-80	1.3	-0.2	9.9

creditors are beginning to show signs of concern as to the 'debt servicing capacity' of the debtor countries. This capacity must not be measured by the traditional indicators—such as the relation between debt servicing and exports or between the level of the external debt and the national or domestic product—, since these have serious shortcomings.⁵ In contrast, there is a 'direct relation between 'debt servicing capacity' and the cost of servicing the debt in terms of real resources, as seen by the debtor. The greater this cost, the less will be the debt servicing 'capacity', and the stronger the incentive to put off net payments abroad to better days, through renegotiation or refinancing operations.

The approach adopted to the determination of the real cost of debt servicing from the debtor's point of view represents a social rather than a private valuation. This is because the currencies of the debtor countries are not reserve currencies; accordingly, for the payment of the external debt a process of currency conversion is required which in the end involves the monetary authority. It is the latter that in the last analysis has to face the problem of supplying or withholding the foreign ex-

change required to cover balance-of-payments disequilibria, even if these disequilibria stem from transactions conducted by the country's private sector.

The fact that an increasing proportion of the external debt is a private-sector debt with no State guarantee does not alter this circumstance.

Again, only two of the four variables taken into consideration in the determination of the real cost of debt servicing can be directly affected by the economic policy of the debtor countries: the growth rate of the external debt and the growth rate of debt amortization. The former is affected by the internal interest rate compared with the external, as well as by expectations of devaluation and by the element of risk, both private and national; it is also often influenced by direct regulations. The second is particularly affected by regulations such as those relating to compulsory cash reserves, differentiated according to the length of time for which the credit is granted, guarantees of access to the foreign exchange market, etc. The object of all these regulations is to change the debt maturity profile, and thereby they affect amortization payments.

On the other hand, apart from the effect on interest generated by the level of the debt, the debtor country has no direct means of influencing interest, since interest rates and surcharges are determined abroad.

⁵ See Alvaro Saieh, *Un análisis sobre la posibilidad de evaluar la solvencia crediticia de los países en desarrollo*, Cuadernos de la CEPAL series, No. 36, 1980.

It does, however, have certain indirect ones, such as the granting or withholding of a State guarantee, and the overall situation of the debtor country's economy.

While for their part the terms of trade and variations therein may be affected over the short term by exchange policy, they are to all intents and purposes determined externally in the case of small economies with no monopolistic power in the world market.

The behaviour of these two variables—interest rates and the terms of trade—

although uninfluenced by the economic policies of the debtor country, may on the other hand influence them, leading them to create incentives in the appropriate directions. An increase in rates of interest that is expected to take place shortly may act as an inducement to use reserves to make external debt payments in advance, whereas a deterioration in the terms of trade should be conducive to longer-term rescheduling or refinancing of payments.