An Analysis of Changes in the Debt Service Ratio for 96 Countries: 1986-1990[1]

Heather D. Gibson and A.P. Thirlwall

Introduction

In this *Review* in 1989, we presented a framework for analyzing the change in a country's debt service ratio, showing how the change may be decomposed into the effect of (i) changes in the rate of interest, (ii) changes in the rate of amortisation *i.e.* the flow of principal repayments, (iii) new debt accumulation, (iv) export performance, and (v) movements in export prices. We applied the analysis to 96 countries over the period 1980 to 1985 during which time the average debt service ratio for all countries rose from 12.6% to 20.2%. For some countries during this period, the debt burden became unsustainable, and there was the very real possibility of a financial crisis for the international banking system and the whole world economy, not to mention the severe economic strains within the indebted countries themselves. As it turns out, the banking system and the world economy seems to have weathered the storm. The debt service ratio peaked for all countries in 1986 at 20.5% and since then has steadily declined in most countries, falling to an average of 16.6% in 1990. What has been the major cause of this decline, and reversal of fortunes? Is it the debt initiatives taken by the international community (such as the Brady and Baker plans) which have relieved countries of interest and principal repayments on debt? Has it been a reduction in the volume of debt caused by a cutback in new lending by the private banking system? Or has it been the upturn in the world economy, and particularly the growth of export earnings, that has provided increased foreign

□ The University of Kent, Keynes College, Canterbury, Kent (Great Britain).

[1] We are very grateful to Janet Searle for computing assistance, and to Gurvinder Dhillon for research assistance.

exchange to service debt repayments? Our framework can help to answer these questions, in general and for individual countries.

The analysis for 1980-85 showed that the major cause of the *increase* in the debt service ratio over that period was the accumulation of debt itself – a form of debt trap with countries borrowing to pay interest on past debt, which simply increased the debt burden further because, in depressed economic conditions in the world economy, borrowing could not be translated into increases in foreign exchange. Indeed, the second most important contributory factor to the overall increase in the debt service ratio was the decline in export earnings over the period, which hit the primary producing countries particularly hard. Now that the debt service ratio has declined in most countries, we can see whether it is debt *decumulation* or an improvement in export earnings that is mainly responsible for the fall, or whether it is improvement in the terms of debt service. We take the same 96 countries over the period 1986-1990, with all data on interest payments, principal repayments, debt and export earnings taken from the *World Debt Tables 1991-92*. Before examining the results, however, let us briefly outline again the framework of analysis.

The Decomposition of Changes in the Debt Service Ratio

The debt service ratio may be written as:

$$S = \frac{(i+a)\ D}{P_x X} \qquad (1)$$

where D is the volume of public and private long term debt; i is the rate of interest; a is the rate of amortisation; X is the volume of exports, and P_x is the price of exports. Taking discrete rates of change of equation (1) gives:

$$\frac{dS}{S} = \frac{di}{i}\frac{I}{P} + \frac{da}{a}\frac{A}{P} + \frac{dD}{D} - \frac{dP_x}{P_x} - \frac{dX}{X} \pm \text{Interaction Term} \qquad (2)$$

where I/P is the share of interest payments in total debt payments and A/P is the share of amortisation payments in total payments.

From equation (2) we can decompose dS (the change in the debt service ratio) into the five component parts:

(i) the effect of interest rate changes, $(di/i)(I/P)S$;
(ii) the effect of changes in the rate of amortisation, $(da/a)(A/P)S$;
(iii) the effect of changes in the volume of debt, $(dD/D)S$;
(iv) the effect of export performance, $(dX/X)S$;
(v) the effect of movements in export prices, $(dP_x/P_x)S$,

plus an interaction term arising when discrete changes are taken.

Results 1986-1990

In Table 1, the 96 countries are ranked in descending order according to their debt service ratios in 1986. The first column shows the change in the debt service ratio between 1986 and 1990. 64 countries out of the 96 experienced a reduction in their debt service ratio. Some of the largest reductions occurred in the highly indebted countries of Latin America and Africa. In Latin America there were big reductions in Argentina (–38.9 percentage points), Mexico (–29.1 p.p.), Brazil (–19.9 p.p.), and Venezuela (–18.0 p.p.), while in Africa there were significant improvements in the position of Mozambique (–42.2 p.p.), the Congo (–27.9 p.p.), Malawi (–17.1 p.p.), and Niger (–16.5 p.p.). Several countries still had debt service ratios of over 20%, but in general the debt service burden appears to have eased considerably. To what is this attributable? The next four columns in Table 1 give the *individual* effects on the debt service ratio of changes in the interest rate, amortisation rate,[2] debt volume and export earnings (*i.e.* the combined effect of price and volume changes).[3] First of all, we can focus on the column averages. The unweighted average reduction in the debt service ratio is 3.9 p.p. The effect of interest rate changes alone would have reduced the debt service ratio by 1.3 p.p. overall. The effect of amortisation rate changes is negligible. New borrowing by itself, however, would have *increased* the debt

[2] The (implicit) interest rate and amortisation rates are measured by the flow of interest payments and principal repayments, respectively, as a ratio of the volume of outstanding debt.

[3] We take export earnings rather than export volume and prices separately because of the difficulty of obtaining reliable price series for many countries.

TABLE 1

COMPONENTS OF THE CHANGE IN DEBT SERVICE RATIO
DEVELOPING COUNTRIES 1986-90

Country	Change in debt service ratio	Debt service ratio 1986	Effect of changes (in percentage points) in: interest rate	amortisation rate	debt volume	export earnings	interaction term
Argentina	-38.9	65.0	-16.9	-5.7	3.8	-45.9	25.8
Algeria	1.8	56.3	-0.2	16.1	13.4	-29.2	1.7
Mozambique	-42.2	51.6	-12.4	-28.3	17.6	-29.0	9.9
Mexico	-29.1	50.7	-4.8	-1.3	-5.7	-41.9	24.7
Congo	-27.9	42.7	-4.2	-18.0	25.1	-46.9	16.1
Cote d'Ivoire	-8.5	41.3	-11.5	-7.0	20.6	0.5	-11.0
Ecuador	-11.9	39.8	-10.9	1.8	8.0	-9.0	-1.6
Brazil	-19.9	38.8	-11.8	4.1	-3.7	-13.6	5.0
Venezuela	-18.0	37.7	13.2	-5.2	-5.1	-31.8	11.0
Malawi	-17.1	37.0	-5.2	-12.2	16.4	-15.0	-1.1
Indonesia	-8.1	35.6	-2.1	0.7	17.5	-30.0	5.8
Hungary	8.2	35.0	1.7	-11.2	16.0	7.1	-5.4
Niger	-16.5	33.7	-8.6	-9.7	10.2	-5.1	-3.3
Jamaica	-9.2	33.3	-2.1	0.0	5.8	-17.2	4.3
Chile	-13.1	33.0	-6.3	5.5	10.2	-32.0	9.5
Portugal	-14.0	30.5	-1.4	5.4	1.4	-35.2	15.8
Guinea-Bissau	-3.7	30.0	10.7	-6.4	22.5	-27.0	-3.5
Colombia	7.4	30.0	2.4	12.1	4.4	-10.2	-1.3
Bolivia	2.7	29.6	7.6	20.2	-4.9	-13.5	-6.6
Costa Rica	-7.5	29.0	-1.1	8.8	-4.1	-12.2	1.0
Nigeria	-7.8	27.9	13.3	-6.2	20.0	-37.7	2.9
Turkey	-1.9	27.8	2.5	3.0	15.6	-28.0	5.0
Bulgaria	-11.8	27.8	-0.6	-18.6	23.5	5.4	-21.4
Tunisia	-4.6	27.5	0.8	7.5	6.2	-24.7	5.6
Burkina Faso	-10.1	26.8	-1.1	-8.2	8.0	-9.7	0.9
Kenya	-2.3	26.7	-1.4	-4.4	10.0	-4.6	-1.9
Guatemala	-14.8	25.9	-5.7	-5.1	-0.9	-8.2	5.1
Philippines	-8.6	25.7	2.4	-4.4	3.8	-13.1	2.7
Morocco	-6.1	25.6	0.3	-2.2	10.0	-17.3	3.1
Madagascar	8.0	25.5	2.1	1.4	9.7	-4.9	-0.2
Paraguay	-13.2	25.4	-0.9	0.0	-2.1	-21.2	11.1
Papua New Guinea	10.3	25.2	0.3	11.2	7.5	-7.4	-1.3
Thailand	-10.9	25.1	-0.1	6.1	5.1	-40.2	18.2
India	-2.7	24.8	3.0	-3.5	13.5	-15.4	-0.3
Togo	-14.8	24.7	-3.8	-10.8	5.7	-4.5	-1.4
Egypt	-1.3	24.2	1.2	8.5	-2.2	-7.9	-0.9
Korea	-14.2	23.7	-0.3	4.0	-8.4	-20.0	10.6
Ethiopia	7.9	22.7	-2.2	-2.1	11.8	2.2	-1.8
Uruguay	10.7	22.7	1.9	35.9	1.7	-11.2	-17.6
Zimbabwe	-1.6	22.1	-0.7	-0.8	5.5	-5.5	0.0
Honduras	12.8	21.4	2.6	4.1	6.2	-1.2	1.1
Cameroon	-2.1	21.2	-3.2	-8.8	15.4	4.1	-9.5
Cape Verde	-12.1	20.6	-0.7	-7.2	5.9	-18.8	8.7
Malaysia	-9.2	20.4	0.1	7.7	-2.5	-23.6	9.1
Burundi	21.7	19.6	-2.7	1.0	12.2	6.3	4.8
Jordan	2.2	19.3	-2.1	-4.1	10.6	1.3	-3.3
Peru	-12.8	19.2	-5.2	-7.1	3.4	-5.1	1.2
Zambia	-8.3	19.0	-2.4	-0.6	5.0	-16.8	6.4
Sudan	-15.9	18.5	-4.0	-12.9	5.7	3.7	-8.4
El Salvador	4.0	18.2	-1.4	-2.3	2.9	4.4	0.4

continued TABLE 1

Country	Change in debt service ratio	Debt service ratio 1986	Effect of changes (in percentage points) in: interest rate	amortisation rate	debt volume	export earnings	interaction term
Trinidad	-5.0	17.8	-0.1	-2.6	2.5	-5.9	1.1
Yemen	-12.5	17.5	-4.1	-4.2	8.3	-28.2	15.7
Yugoslavia	-5.6	17.4	-0.3	3.0	-0.7	-10.6	3.0
Dominican Republic	-10.7	17.3	-6.9	-1.5	2.6	-7.1	2.2
Senegal	-1.3	17.2	-1.9	2.5	2.3	-4.0	-0.3
Mauritania	-8.7	16.8	-4.4	-4.7	3.1	-1.8	-1.0
Bangladesh	-0.5	16.4	-0.3	1.8	9.1	-12.0	1.0
Pakistan	1.6	16.1	0.1	-0.8	6.6	-3.6	-0.7
Ghana	3.2	16.0	-0.9	0.0	8.6	-3.3	-1.2
Romania	-15.4	15.4	-5.1	-10.3	-15.3	5.6	9.7
Syria	10.0	15.2	0.3	47.4	4.5	-27.6	-14.6
Tanzania	2.9	15.2	0.1	-1.5	7.0	-1.7	-1.1
Gabon	-9.5	14.3	-1.7	-6.6	15.2	-16.7	0.3
Sao Tome	7.9	14.3	-3.4	-3.4	12.8	5.1	-3.2
Sri Lanka	-3.9	14.1	-1.9	-1.7	6.0	-6.5	0.2
Uganda	21.5	13.9	-2.8	-3.0	13.5	7.9	5.9
Maldives	-9.2	13.3	-1.2	-4.3	1.1	-14.1	9.2
Nicaragua	-10.2	12.5	-5.7	-4.6	5.1	-4.2	-0.8
Cyprus	-5.5	12.3	0.2	-1.6	3.5	-12.7	5.0
Poland	-7.8	12.2	-4.8	-1.8	2.8	-4.7	0.6
Zaire	-5.5	11.8	-3.8	-3.2	5.8	-1.6	-2.8
Guyana	43.5	11.7	8.5	8.4	11.0	0.0	15.6
Oman	1.4	11.2	0.6	14.2	-1.2	-7.6	-4.6
Angola	-1.8	10.7	-2.7	-1.2	19.4	-12.0	-5.3
Laos	1.3	10.1	-0.4	-1.9	8.0	-2.2	-2.1
Fiji	1.0	10.1	1.1	9.7	-0.6	-6.9	-2.4
Gambia	12.4	9.6	2.2	24.3	4.2	-9.0	-9.3
Mali	-1.9	9.0	-0.4	-0.7	4.1	-5.6	0.7
Guinea	-2.7	8.8	-0.3	-2.1	3.4	-3.9	0.2
Czechoslovakia	2.4	8.0	-0.7	-2.2	6.9	0.7	-2.3
Central African Rep.	-1.8	8.0	-2.5	-1.8	8.4	-1.6	-4.2
Mauritius	-2.0	7.7	-0.9	-0.9	6.8	-7.4	0.4
Seychelles	-0.5	7.7	0.8	1.5	3.1	-7.0	1.3
Swaziland	-1.9	7.6	0.0	7.4	0.0	-10.8	1.5
Nepal	6.7	7.5	0.2	0.0	9.0	-1.5	-1.0
Somalia	2.9	7.4	-0.8	-0.6	1.7	2.1	0.5
Panama	-4.6	7.2	-3.8	-1.4	0.9	0.8	-1.2
China	1.7	7.0	1.2	-1.5	12.1	-6.2	-3.9
Rwanda	4.4	6.3	-0.6	-1.6	4.1	2.3	0.2
Comoros	-2.0	6.1	-0.3	-0.3	0.7	-2.9	0.9
Lesotho	-1.8	4.1	0.0	-0.6	4.1	-8.2	2.9
Djibouti	0.8	3.9	-0.5	1.8	0.8	-0.7	-0.6
Solomon Islands	6.3	3.6	0.0	8.2	1.7	-0.7	-2.9
Haiti	0.1	3.5	-0.6	-0.6	1.0	0.6	-0.3
Chad	-1.4	3.4	-0.5	-1.0	4.1	-3.5	-0.4
Dominica	0.8	2.9	-0.4	1.5	2.0	-1.6	-0.7
Average	-3.9	20.7	-1.3	0.1	6.2	-10.4	1.4

service ratio by 6.2 p.p. – not much different to the period 1980-85 when the debt service ratio was increasing. The big difference between the two periods comes with the contribution of export earnings. Whereas in the period 1980-85 there was, on average, a fall in export earnings which raised the ratio by over 1 percentage point; in the period 1986-90, the growth of export earnings was such as to reduce the overall debt service ratio by over 10 percentage points. This is a good illustration, if another was needed, of the overwhelming importance of conditions in the world economy for the health and creditworthiness of the developing countries.

Within the average effect for each of the components, however, there is a wide variety of country experience. First, let us look at interest payments as a proportion of debt (*i.e.* the implicit interest rate). For the vast majority of countries, there was very little change. In only five countries did the reduction in interest payments reduce the debt service ratio by more than 10 percentage points (viz. Argentina, Brazil, Ecuador, Mozambique and Cote d'Ivoire). Interestingly, for Mexico, interest rate concessions had the effect of reducing the debt service ratio by only 4.8 percentage points. The various plans and schemes to reduce the transfer burden seem to have had very little impact on the debt service ratio in the vast majority of countries – perhaps not surprisingly since the sums of money involved have been trivial (see later). We can say the same with respect to repayments of principal or amortisation. In most countries over the period, the ratio of amortisation payments to the volume of debt fell, but not significantly enough to reduce the debt service ratio by more than a few percentage points. Only in some of the African countries and in Eastern Europe was there any noticeable impact arising from the rescheduling of repayments or their suspension (*e.g.* Mozambique, the Congo, Malawi, Sudan, Togo, Hungary, Bulgaria and Romania).

If we turn to the volume of debt, we see that most countries continued to borrow more in the period 1986-90, notwithstanding the crisis in the previous years and the precariousness of the banking system. The proportion of borrowing from private sources fell, however, from 58.9% to 49.9%. Some of the most heavily indebted countries continued to borrow the most – but mainly in Africa *not* in Latin America. In Mexico, Brazil, Venezuela and Bolivia, the volume of debt actually fell, and in Argentina the extra borrowing was negligible. But in Mozambique, the Congo, Malawi, Niger, Guinea-Bissau, Nigeria and Kenya, the effect of new borrowing was to raise the debt service ratio by 10 percentage points or more.

The major cause of the improvement in the debt service capacity of most countries was the rise in export earnings over the period. In only 17 of the 96 countries did export earnings fall. In 38 of the 96 countries, the growth of export earnings was sufficient to reduce the debt service ratio by 10 percentage points or more (other things remaining the same). Export performance, in general, seems to have been better, the greater the degree of indebtedness. The top half of countries in column 6 of Table 1 shows that the growth of export earnings made a big contribution to the fall in the debt service ratio of many of the most highly indebted countries (*e.g.* the Congo –46.9 p.p., Argentina –45.9 p.p., Mexico –41.9 p.p., Nigeria –37.7 p.p., Chile –32.2 p.p., Venezuela –31.8 p.p.). Most of the improvement will have come from the upturn of commodity prices, which rose by nearly 20% between 1986 and 1989 (although falling back in 1990).

If we look at the intercorrelation between variables in Table 1, we find that the change in the debt service ratio (*dS*) across countries was most highly correlated with changes in export earnings (*dX*), and the least correlated with changes in the volume of debt (*dD*). The correlation matrix is shown in Table 2 (with an additional column and row standing for per capita income, *PCY*). The correlation between *dS* and *dX* is 0.580, while the correlation between *dS* and *dD* is 0.210.

TABLE 2

CORRELATION MATRIX OF VARIABLES

	dS	di	da	dD	dX	PCY
dS	1.000	–	–	–	–	–
di	0.466	1.000	–	–	–	–
da	0.366	0.281	1.000	–	–	–
dD	0.210	–0.085	–0.441	1.000	–	–
dX	0.580	–0.009	–0.176	0.069	1.000	–
PCY	–0.175	0.034	0.148	–0.331	–0.145	1.000

There is a significant positive correlation between the effect of interest rate reductions (*di*) and amortisation relief (*da*), but a strong negative relation between the effect of amortisation relief (*da*) and debt reduction (*dD*), indicating that countries with the greatest volume of debt reduction had the least amortisation relief.

When we look at how the various effects contributing to the fall in the debt service ratio correlate with the level of per capita income of countries, some interesting results emerge. It is clear that countries with the lowest per capita income had the largest falls in the debt service ratio ($r = -0.175$) which is a welcome sign. On the other hand, the poorest countries had the smallest effect coming from the relief of interest and amortisation repayments. The reason that the poorest countries experienced the greatest fall in the debt service ratio was that they had the biggest reduction in the volume of debt ($r = -0.331$), and the largest rise in export earnings ($r = -0.145$).

Experience by Continent

Table 3 summarises the experience by continent. We see that Latin America and the Caribbean experienced the largest reduction in the debt service ratio (–6.26 p.p.), followed by East Asia and the Pacific. Latin America also stands out as the continent where there was the smallest increase in the total volume of debt, and where interest payment concessions reduced the debt service ratio (by 2.18 p.p.). But as we saw before for individual countries, the major

TABLE 3

COMPONENTS OF THE CHANGE IN THE DEBT SERVICE RATIO BY CONTINENT
1986-90

	Δds	1986	i	a	D	XE	Int
Latin America & Caribbean	–6.26	26.8	–2.18	2.89	1.95	–12.98	4.08
North Africa & Middle East	–1.14	24.6	–0.39	10.34	6.20	–17.65	0.34
South Asia	–1.33	15.37	–0.017	–1.42	7.55	–8.85	1.40
East Asia and Pacific	–3.04	18.65	0.22	3.98	4.42	–15.03	3.38
Europe and Mediterranean	–6.00	21.51	–1.03	–1.93	3.33	–11.21	4.81
Sub-Saharan Africa	–3.15	18.15	–1.55	–3.48	8.75	–7.21	–0.08

where: Δds = the change in the debt service ratio
1986 = the debt service ratio in 1986
i = the contribution of changes in interest payments (to changes in the debt-service ratio)
a = the contribution of changes in amortisation payments (to changes in the debt service ratio)
D = the contribution of changes in debt volume (to changes in the debt service ratio)
XE = the contribution of changes in export earnings (to changes in the debt service ratio)

contributing factor to the decrease in the debt service ratio was the improvement in export earnings which, *ceteris paribus*, had the effect of reducing the debt service ratio by over 10 percentage points in East Asia and the Pacific and in Latin America.

Policies Towards Debtor Countries

To delve deeper into the experience of individual countries (and indeed regions), it is useful to examine the extent to which the various debt programmes that were common throughout our period impacted on countries' debt service. One of the interesting points to come out of Table 1 is the rather diverse experience of individual countries with regard to the impact of interest and principal repayments on their debt service ratios. This is in contrast to the more consistently positive impact of export earnings on debt service ratios. Two questions arise from these points. Firstly, did those countries who gained from lower interest and amortisation payments do so as a result of debt relief programmes or did the lower interest and amortisation payments simply reflect nonrepayment?[4] Secondly, can it be argued that countries undertaking rescheduling under some debt programme gained as a result of those programmes rather than as a consequence of a fortuitous upturn in world trade? To shed some light on these questions we need to examine the various debt programmes in some detail.

It is important to distinguish between programmes aimed at the rescheduling of official debt (the bulk of which is owed to industrial country governments) and those aimed at the rescheduling of debt owed to commercial banks. The former programmes have their main impact on Sub-Saharan African countries, whereas the latter affect Latin American countries in the main.

[4] It is important to note that the interest and amortisation payments represent the amounts actually paid rather than the amounts due to be paid. This makes it difficult to come to any firm conclusion on the impact of debt programmes on these payments.

(a) *Official Debt Programmes*

Looking first at the official debt programmes, we can identify two major agreements during the period which we consider here (1986-1990) – the Venice Terms and the Toronto Terms. Under the Venice Terms, which were in operation from September 1987 to September 1988, countries with very low per capita incomes and heavy debt service obligations could apply for a rescheduling of official debt with repayment terms of a 20 year period with 10 years grace.[5] The Toronto Terms superseded the Venice Terms in October 1988 and continued in operation until the end of our period.[6] The terms of the Toronto agreement were more concessionary – the average grant element under these terms was 20% on nonconcessional debt (Clark and Kalter, 1992, p. 7). For Official Development Assistance (ODA), debt repayment terms were 25 years maturity with 14 years grace. For non-ODA debt, there was a menu of choices from which creditor countries could choose. There were three options. Option A cancelled a third of consolidated debt and rescheduled the rest over 14 years with 8 years grace. Interest rates under this option would be market-related. Under option B, debt would be rescheduled on ODA debt terms with interest rates again market-related. Finally, option C specified that the rescheduled debt be repaid over a period of 14 years with 8 years grace and with interest rates at below market rates (either 3.5% below market rates or a half of market rates, whichever interest rate was larger). Clearly, the Toronto terms were more concessional than the Venice Terms since they involved the potential for some debt reduction.

Table 4 provides a summary of the amounts consolidated under the Paris Club reschedulings for low-income countries. The amounts are generally small particularly when compared to the total volume of long-term debt in low income countries generally.

Table 5 lists those Sub-Saharan African countries which benefited from rescheduling under the Toronto and Venice terms.[7] A

[5] Countries which benefited from these terms included Mozambique, Somalia, Guinea-Bissau, Niger and Malawi.

[6] The Toronto Terms have now been superseded by the Trinidad Agreement of July 1991. We discuss this agreement, which lies outside our period, below.

[7] There are only two countries outside Sub-Saharan Africa which have benefited from the Toronto Terms, namely Bolivia and Guyana. Three of the five countries which benefited under the Venice Terms, namely Mozambique, Guinea-Bissau and Malawi also benefited under the Toronto terms. Table 5 excludes only two countries which rescheduled under the Toronto Terms – Benin and Equatorial Guinea – because of incomplete data.

TABLE 4

OFFICIAL RESCHEDULING TO LOW INCOME COUNTRIES
(US$ billion)

	1986	1987	1988	1989	1990	1991	1992 (Jan-June)
Amount consolidated (low income countries)	9.2	1.5	1.2	3.0	2.8	0.9	0.9
of which:							
(a) Toronto	–	–	0.5	2.0	2.8	0.2	–
(b) Trinidad	–	–	–	–	–	0.8	0.9
Total long-term debt (low income countries)	234	290	305	320	348	363	–

Source: World Bank, *World Debt Tables 1989-90* and Clark and Kalter (1992).

number of points can be made. Firstly, it appears that these countries did better than Sub-Saharan African countries which did not benefit from these concessionary Paris Club reschedulings. Whereas the debt service ratio fell by an average of 5.4 p.p. in those countries which rescheduled under the Venice or Toronto terms, it fell by only 2 p.p. in those countries which did not. This is largely due to the fact that the Venice and Toronto countries benefited from a larger fall in interest and amortisation payments. Secondly, some of the larger debtors (as measured by the debt service ratio in 1986) have benefited more from interest and amortisation reductions than some of the smaller debtors. But this experience is by no means consistent across all large debtors – other large debtors have benefited much more from increased export earnings.

Overall, therefore, what can we conclude about the experience of low-income countries under programmes which rescheduled official debt? The results suggest that these programmes have had some impact on the position of these low-income countries. However, it must be stressed that this impact has only been limited, a point which is confirmed by the fact that most countries are still currently engaged in negotiating rescheduling agreements. The agreements under the Venice and Toronto terms have not been enough to enable these countries to return to servicing their debt without help. Such a conclusion is echoed by the World Bank expressed in the 1991-92 *World Debt Tables* (p. 30). It argues that there is a need for "a

TABLE 5

COUNTRIES RESCHEDULING UNDER THE TORONTO AND VENICE AGREEMENTS

	Δds	1986	i	a	D	XE
Toronto Countries						
Burkina Faso	–10.1	26.8	–1.1	–8.2	8.0	–9.7
Central African Republic	–1.8	8.0	–2.5	–1.8	8.4	–1.6
Chad	–1.4	3.4	–0.5	–1.0	4.1	–3.5
Guinea	–2.7	8.8	–0.3	–2.1	3.4	–3.9
Guinea-Bissau	–3.7	30.0	10.7	–6.4	22.5	–27.0
Madagascar	8.0	25.5	2.1	1.4	9.7	–4.9
Mali	–1.9	9.0	–0.4	–0.7	4.1	–5.6
Mauritania	–8.7	16.6	–4.4	–4.7	3.1	–1.8
Mozambique	–42.2	51.6	–12.4	–28.3	17.6	–29.0
Niger	–16.5	33.7	–8.6	–9.7	10.2	–5.1
Senegal	–1.3	17.2	–1.9	2.5	2.3	–4.0
Tanzania	2.9	15.2	0.1	–1.5	7.0	–1.7
Togo	–14.8	24.7	–3.8	–10.8	5.7	–4.5
Uganda	21.5	13.9	–2.8	–3.0	13.5	7.9
Zaire	–5.5	11.8	–3.8	–3.2	5.8	–1.6
Zambia	–8.3	6.4	–2.4	–0.6	5.0	–16.8
Average (Toronto countries)	–5.4	18.9	–2.0	–4.9	8.2	–7.0
Venice Countries						
Malawi	–1.7	37.0	–5.2	–12.2	16.4	–15.0
Somalia	2.9	7.4	–0.8	–0.6	1.7	2.1
Average (Toronto and Venice countries)	–4.7	19.3	–2.1	–5.1	8.3	–7.0
Countries not under Venice or Toronto						
Average	–2.0	17.2	–1.1	–2.1	9.2	–7.4

Notes: Δds = change in the debt service ratio (1986-90)
1986 = debt service ratio in 1986
i = the contribution of changes in interest payments (to changes in the debt-service ratio)
a = the contribution of changes in amortisation payments (to changes in the debt service ratio)
D = the contribution of changes in debt volume (to changes in the debt service ratio)
XE = the contribution of changes in export earnings (to changes in the debt service ratio).

fundamental restructuring of existing debt stocks" if normal debt servicing is to be resumed.[8]

The continuing problems of low-income countries led in July 1991 to the so-called Trinidad agreement which called for additional debt relief. The World Bank has calculated the impact on the net present value of scheduled debt service of the suggested terms of the Trinidad agreement,[9] and compared the impact of that agreement with the impact of the Toronto terms and also with a third scenario in which the Trinidad terms are applied to all bilateral debt and all concessional (ODA) debt is forgiven.[10] The results indicate that some countries could gain substantially from the Trinidad terms, but a significant number will gain only a small amount of relief. The main reason for this difference is that the countries which gain little are those which have already rescheduled a significant proportion of their debt under the Toronto terms – such debt cannot be rescheduled again under the Trinidad terms. By contrast, the third scenario discussed above, where a much larger proportion of low-income country debt is written off, has a much greater impact on these countries' debt servicing commitments. This confirms our conclusion that there is a need for much greater debt relief if these countries are to resume normal debt servicing.

(b) *Rescheduling of Commercial Debt*

Let us turn now to the rescheduling of commercial debt. The two main programmes which came into effect during our period were the Baker Plan (1986-88) and the Brady Plan (1989 onwards). Unfortunately most agreements under the Brady Plan fall outside our period and hence a thorough examination of their impact is not

[8] The view is also echoed by Ahmed and Summers (1992). They argue that probably low income Sub-Saharan African countries will require reductions in their debt volume of up to one-half to restore them to a viable debt service path.

[9] Non-concessional bilateral debt was assumed to be reduced by two-thirds, with the remaining bilateral debt rescheduled with 25 years maturity (14 years grace) at a fixed interest rate of 9%. In the case of concessional debt, the World Bank assumed that two-thirds of the scheduled debt service was written off, whilst the remainder was again rescheduled at 9%. An important point to note is that debt rescheduled under the Toronto terms was excluded.

[10] See World Bank, *World Debt Tables 1991-92*, pp. 32-33 for the exact details of the calculations.

possible here. The Baker Plan aimed at helping the 15 most highly indebted countries, whose experience in the period immediately following the debt crisis was one of low growth, poor investment performance, rising unemployment and falling standards of living. The aim of the Plan was to return these countries to growth. The 15 countries rescheduling under the Baker Plan were supposed to gain from softer rescheduling terms (lower interest rate spreads,[11] longer maturities and grace periods). In addition, a key ingredient to the Plan was that commercial banks were to be persuaded to put in new money. Essentially, Baker saw the debt crisis as a problem of illiquidity associated with the downturn in the world economy. The new money was aimed at helping these countries through a difficult period and thus to prevent their default. Once world economic conditions improved, it was assumed that normal debt servicing would resume.[12]

Table 6 lists the performance of the Baker countries, both individually and on average. We can note firstly that although the Baker Plan placed great emphasis on access to funds, on the whole this did not materialise. Indeed, if we look at the contribution of the change in debt volume, it shows that Baker countries did much worse than the average of all 96 countries. The main reason for this was that commercial banks were reluctant to increase further their exposures to these countries. The main factor in their reluctance was the perception that these loans would not be repaid in full and hence extra reserves would have to be found to cover likely nonrepayment.[13] Indeed, if anything, commercial banks were seeking to reduce their exposure to developing countries in general, and the highly-indebted Baker countries in particular.

The second point that emerges from an examination of Table 6 is that there does not appear to be a consistent across the board impact on interest and amortisation payments, suggesting that an

[11] Interest rate spreads are the percentage over and above a market interest rate, such as LIBOR, which countries were supposed to pay on their debt.

[12] At the time that the Baker Plan was announced, international banks were still highly fragile. It was not until 1986-87 that they were able to put aside large reserves to cover for potential nonrepayment of LDC debt.

[13] It has also been argued (see World Bank, *World Debt Tables 1989-90*) that the potential introduction of the Basle Capital Adequacy Agreement made banks reluctant to increase their exposure to developing countries. However, since under the Basle Agreement, banks have to find the same amount of capital to back a loan to a developing country as they do to back a loan to a multinational company, it is difficult to see why this had such an adverse effect on bank lending.

TABLE 6

THE BAKER COUNTRIES*

	Δds	1986	i	a	D	XE
Argentina	−38.9	65.0	−16.9	−5.7	3.8	−45.9
Bolivia	2.7	29.6	7.6	20.2	−4.9	−13.5
Brazil	−19.9	38.8	−11.8	4.1	−3.7	−13.6
Chile	−13.1	33.0	−6.3	5.5	10.2	−32.0
Colombia	7.4	30.0	2.4	12.1	4.4	−10.2
Costa Rica	−7.5	29.0	−1.1	8.8	−4.1	−12.2
Cote d'Ivoire	−8.5	41.3	−11.5	−7.0	20.6	0.5
Ecuador	−11.9	39.8	−10.9	1.8	8.0	−9.0
Jamaica	−9.2	33.3	−2.1	0.0	5.8	−17.2
Mexico	−29.1	50.7	−4.8	−1.3	−5.7	−41.9
Morocco	−6.1	25.6	0.3	−2.2	10.0	−17.3
Nigeria	−7.8	27.9	13.3	−6.2	20.0	−37.7
Peru	−12.8	19.2	−5.2	−7.1	3.4	−5.1
Philippines	−8.6	25.7	2.4	−4.4	3.8	−13.1
Uruguay	10.7	22.7	1.9	35.9	1.7	−11.2
Venezuela	−18.0	37.7	−11.8	4.1	−3.7	−13.6
Yugoslavia	−5.6	17.4	−0.3	3.0	−0.7	−10.6
Average	−10.36	33.4	−3.32	3.62	4.05	−17.86
Average – all countries	−3.9	20.7	−1.3	0.1	6.2	−10.4

Notes: Δds = change in the debt service ratio (1986-90)
1986 = debt service ratio in 1986
i = the contribution of changes in interest payments (to changes in the debt-service ratio)
a = the contribution of changes in amortisation payments (to changes in the debt service ratio)
D = the contribution of changes in debt volume (to changes in the debt service ratio)
XE = the contribution of changes in export earnings (to changes in the debt service ratio)

* There were only 15 original Baker countries – the World Bank includes two other countries, namely Costa Rica and Jamaica, which it considered also to merit treatment under the Baker plan.

improvement to the terms on rescheduled debts was either not forthcoming, or had little effect. The rather diverse experience of these 17 countries with respect to the contribution made by interest and amortisation payments is probably explained by differences in the extent to which individual countries got behind in their debt repayments.

The final point that we can make about the experience of the Baker countries is that the largest and most consistent influence comes from the behaviour of export earnings. These countries did better than the average and this accounts for most of the improvement in their debt service ratio over the period.

Following the perceived failure of the Baker initiative, in 1989 the incoming US Treasury Secretary, Nicholas Brady, proposed a new debt programme. This programme was essentially an extension of the rather *ad hoc* attempts at a so-called menu approach to debt that some highly-indebted countries were entering into with their creditors. Such schemes involved the swapping of debt for equity, the conversion of debt into bonds of lower value than the original debt, the buying back of debt in the secondary market at a discount and so on.[14] The Brady initiative developed this menu approach and carried with it official US backing for programmes of debt reduction for the first time. As with other approaches to dealing with the debt crisis, the Brady initiative is available only to countries who are willing to undertake an IMF adjustment programme. Moreover, the approach draws on the menu approach from which it developed. Essentially, banks have three options: (i) they can inject new money into the country which in effect is used to reschedule the interest due on a certain proportion of the loans; (ii) they can convert loans into bonds with the same interest rate but with a lower face value; (iii) they can convert loans into bonds with a lower interest rate but the same face value. In addition to these three options, there is also the possibility of debt-equity swaps, cash buy-backs and so on. There are two main differences between the Brady programme and those which went before.[15] Firstly, international financial institutions, such as the IMF and World Bank, would help in funding the debt reduction schemes by making finance available to those countries negotiating under the Brady plan. Secondly, the US government would persuade other governments to allow favourable tax treatment of banks thus encouraging them to participate in these programmes.

It is too early to say whether or not agreements under the Brady plan will make a significant difference to the interest and principal repayments which LDCs are expected to make. A number of agreements were concluded in 1989 and 1990, at least in principle – with Mexico, Philippines, Costa Rica, Venezuela, Morocco and Uruguay. However, these occur too late in our period to determine whether they have made a significant impact. The first four Brady deals (with Mexico, Philippines, Costa Rica and Venezuela) led to a reduction of

[14] See Devlin (1990) for a discussion of these *ad hoc* attempts at debt reduction. Countries who engaged in these deals with their creditors include Mexico, Bolivia, Brazil, Chile and Argentina.

[15] See Faber (1990) for a discussion of some of the details of the Brady plan.

$11.5 billion in the face value of these countries' debt. In terms of the net present value of the reduction in debt, these four countries have gained $22.6 billion (*World Bank Debt Tables 1990-91*, p. 33). The extent to which these deals will return these countries to positive growth of per capita income and to normal debt servicing remains to be seen.

Conclusions

The evidence presented in this paper points overwhelmingly to the importance of conditions in the world economy in determining the ability of countries to service their debt. The impact of various plans of debt rescheduling or debt reduction appear not to have been great. Thus in the absence of any more widespread proposals for debt relief, LDCs will continue to be dependent on conditions in the world economy. During the period covered here, conditions in the world economy were good, as reflected in the large increase in export earnings experienced by most of the countries considered. Since 1990, however, conditions in the world economy have deteriorated considerably. Our results suggest that this does not bode well for LDCs' ability to service their debt into the 1990s.

BIBLIOGRAPHY

Ahmed, Masood and Summers, Lawrence (1992), "A tenth anniversary report on the debt crisis", *Finance and Development*, vol. 29, no. 3, pp. 2-5, September.

Clark, John and Kalter, Eliot (1992), "Recent innovations in debt rescheduling", *Finance and Development*, vol. 29, no. 3, pp. 6-8, September.

Devlin, Robert (1990), "The Menu approach", *IDS Bulletin*, vol. 21, no. 2, April.

Faber, Mike (1990), "The Shaping of the Brady Proposals", *IDS Bulletin*, vol. 21, no. 2, April.

Gibson, Heather D. and Thirlwall, A.P. (1989) "An international comparison of the causes of changes in the debt service ratio, 1980-85", in this *Review*, no. 168, March, pp. 73-95.

World Bank, *World Debt Tables*, Washington, D.C.