The Pakistan Development Review
Vol. XXVII, No. 4 Part II (Winter 1988)

Determinants of Debt Problem in Pakistan and its Debt-servicing Capacity

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INTRODUCTION

In the last decade, Pakistan's external debt obligations have risen to an unprecedented level. This is despite the fact that the country had been able to borrow on concessional terms from international organizations and foreign governments unlike many other developing countries. The situation has raised concern about the viability of the strategy of excessive dependence on foreign sources and the problems it poses for sustainable growth.

Between 1970 and 1980 Pakistan's external debt grew at an average rate of 11.3 percent. Although, during the Eighties it has grown at a much slower rate, i.e. 2.37 percent, but by 1986-87 the level of total external debt had reached more than 12 billion U.S. dollars. A notable feature of this change has been that since the mid-Seventies the debt-service payments have increased at a much faster rate compared with the outstanding debt.

This paper makes an attempt to analyse changes in the levels of Pakistan's external indebtedness. Various debt-burden and debt-service indicators will be examined to highlight features of Pakistan's external debt obligations. In Section III variations in debt indicators will be related to various factors, e.g. terms of borrowings, external shocks and economic performance. Section IV will evaluate the long-run debt-servicing capacity. Finally Section V summarises the findings.

II. DEBT INDICATORS

In this section six different indicators, namely, (i) Debt: GNP ratio, (ii) Amortization: Disbursement ratio, (iii) Net Resource-transfer: GDP ratio, (iv) Debt-service: Export-receipt ratio, (v) Interest-payment: Export-receipt ratio and (vi) Foreign-exchange Reserve: Debt ratio, are examined to analyse the external indebtedness of Pakistan during 1959-60 to 1986-87. The various ratios estimated for Pakistan are given in Table 1.

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Table 1

Various Debt Indicator for Pakistan

Years	Debt as Percent of GNP	Amortization as Percent of Disbursement	Net Resource Transfer as Percent of GDP	Debt Service as Percent of			Interest Payment as Percent of		Foreign Exchange Reserves as Percent of	
				Export Receipts	Foreign Exchange Earning	GNP	Export Receipts	Foreign Exchange Earning	Debt	Imports
1959-60	3.95	–	–	6.90	–	0.3	3.13	–	133.79	51.19
1960-61	4.02	3.22	8.43	14.90	–	0.4	5.26	–	119.30	44.64
1961-62	5.08	6.58	6.79	27.20	–	0.7	9.65	–	81.78	39.15
1962-63	8.68	6.79	10.55	22.4	–	1.0	6.20	–	61.03	42.35
1963-64	12.79	8.13	9.94	27.4	–	1.2	7.95	–	31.16	32.91
1964-65	16.47	5.24	11.70	25.9	–	1.0	10.44	–	14.40	19.04
1965-66	19.70	7.69	7.54	29.2	–	1.1	13.02	–	16.00	35.04
1966-67	22.97	8.35	7.69	35.2	–	1.3	16.13	–	6.72	14.96
1967-68	25.27	8.50	8.32	31.2	–	1.3	13.28	–	6.10	18.31
1968-69	28.85	15.66	5.46	44.3	–	1.8	18.22	–	9.68	38.28
1969-70	30.26	18.62	4.26	52.1	–	1.8	21.02	–	7.87	33.77
1970-71	31.99	16.50	4.45	43.3	–	1.7	19.27	–	4.20	19.02
1971-72	40.13	17.36	3.35	20.6	–	1.3	8.61	–	5.97	35.27
1972-73	62.52	30.14	2.79	23.6	18.1	3.0	10.52	8.06	9.85	49.69
1973-74	49.44	23.69	3.65	19.2	14.2	2.2	7.70	5.69	7.59	24.67
1974-75	42.55	14.75	6.96	23.9	16.3	2.2	10.02	6.84	8.74	19.82
1975-76	43.74	13.25	6.73	22.0	13.8	1.9	9.59	6.02	9.49	26.42

Continued –

Table 1 – (*Continued*)

1976-77	40.65	18.23	4.72	27.3	15.4	2.0	11.99	6.76	5.72	15.61
1977-78	36.81	19.28	3.24	25.3	11.4	1.7	12.73	5.73	9.68	24.77
1978-79	37.53	24.58	2.85	25.5	11.9	2.1	11.87	5.54	5.31	11.26
1979-80	34.10	23.81	4.16	24.7	11.9	2.3	9.90	4.77	9.60	17.53
1980-81	29.12	37.04	1.48	20.4	10.4	2.0	8.20	4.18	12.32	19.97
1981-82	26.83	26.13	2.22	20.0	8.8	1.5	8.29	3.65	9.80	15.33
1982-83	29.38	29.98	2.60	23.5	9.6	2.0	9.00	3.69	21.21	36.87
1983-84	27.35	38.52	1.62	26.3	10.9	2.1	9.91	4.11	18.88	31.45
1984-85	30.88	40.81	1.65	31.6	12.8	2.5	11.03	4.47	6.01	9.91
1985-86	30.65	39.46	2.07	29.5	13.5	2.5	9.86	4.51	8.71	17.18
1986-87	31.67	51.75	0.95	29.9	15.7	3.0	10.26	5.38	7.64	17.08

The estimates given in the table show that the ratio of outstanding debt to GNP for Pakistan increased during the Sixties and early Seventies. In fact, it started increasing sharply from the mid-Sixties. The increase in the early Seventies was even sharper and the ratio more than doubled. In 1972-73 it was 62.5 percent, the highest during the period under study. Since then, however, it has declined though not necessarily continuously. During the Eighties it has been around 30 percent, thus suggesting that one-third of the productive capacity of the country will be required if the external debt is to be paid back today. The ratio of debt-service payments to export earnings, however, has remained between 20 and 30 percent for most of the period under study. This suggests that Pakistan's debt obligations have been a cause of the liquidity problem faced by the country. Twice since the early Seventies Pakistan had to resort to rescheduling its debt-service payments. The ratio of debt-service payments and GNP, an indicator considered more useful in the long run, increased almost continuously in the Sixties.[1] Since then, however, it has varied between 2 percent and 3 percent. For the South Asian countries as a group this ratio remained constant at about 1 percent during the Sixties. This reflects the seriousness of the liquidity problem for Pakistan. The estimates reported in Table 1 further indicate that the ratio of interest payments and export receipts, referred to as the interest-service ratio increased sharply in the Sixties and reached its highest value, i.e. 21 percent in 1969-70. During the Seventies and Eighties, however, it varied between 7.7 and 12.7 percent, and in 1986-87 was 10.3 percent. This suggests that during the Sixties, foreign borrowings were either consumed or invested in relatively less efficient projects, compared with the Seventies and Eighties.[2] The ratio of amortization (principal) payments and disbursement has increased almost continuously since 1959-60. In 1986-87, it was 52 percent, implying that more than half of the new disbursements are utilized to repay the principal amount due in the year. This reflects that over time, at least partially Pakistan's debt is being rolled over. The magnitude of net resource transfer, i.e. disbursement minus debt-service, relative to GDP was highest, i.e. 11.7 percent, in 1964-65. By 1986-87 it has reached its lowest value, i.e. 0.95 percent. This implies that the contribution of foreign savings in Pakistan has declined over time. The ratio of international reserves to debt and international reserves to imports show

[1]For a detailed discussion on the usefulness of various indicators see, for example, Aliber (1980); Avramovic *et al.* (1964); Lee (1983); MacDonald (1982) and Nowzad and William (1981).

[2] It may be pointed out that in order to determine definitely whether foreign resources were directed to consumption rather than investment additional information on stages of growth, characteristics of growth path, Incremental Capital Output Ratio (ICOR), cost of foreign borrowings, inflation etc. is required. However, since we are only making comparison between two periods, it does not pose a serious problem.

a downward trend for Pakistan during the period under study. This suggests that Pakistan's debt-servicing capacity has declined over time.

The various indicators discussed show that Pakistan's debt burden increased in the Sixties but has stabilized in the Eighties. The debt obligation, however, has been a cause of the liquidity problem. Similarly, debt-servicing capacity, although very low, has remained stable over the years. This is primarily because lending countries have confidence in Pakistan's capacity to repay. Therefore, the debt has been rolled over.

III. DETERMINANTS OF DEBT RATIOS

The observed debt ratios, i.e. debt-GNP and debt-service ratio, reflect the inter-play of several economic as well as non-economic factors. The economic explanations of the variation in these ratios are based on the assumption that both borrowing and the lending country are economically rational. This implies that borrowers do not incur debt for wasteful purposes and lenders take account of the viability of investment and the servicing of loans. The current level of the debt ratio is thus an outcome of accumulation of past decisions on how much to borrow and on what terms, of the uses to which borrowed funds were put, of the efficiency with which objectives were achieved, and of unanticipated factors which intervened. These various factors that influence variation in debt ratios can be grouped under three broad categories; (i) terms of borrowings, (ii) economic performance of the borrowing country, and (iii) external shocks.[3]

Using different dependent variables, namely debt-GNP ratio, debt-service payment-export receipt ratio, and debt-service payment-foreign exchange earning ratio, various regressions were estimated for Pakistan for the period 1973-74 to 1986-87 with above-mentioned set of explanatory variables. The average interest rate on external borrowing and the average maturity period were used for terms of borrowing. While the average interest rate is expected to be positively related to debt-service ratios, the average maturity period of loans is expected to be inversely related. Both the lagged as well as the current average interest rate were used alternatively in the regression. To capture the effect of external shocks on debtor nations, the terms of trade, remittances scaled by GNP/Export receipt/Foreign exchange-earnings and grants as a percentage of commitments have been included in the regression. The terms of trade are expected to be inversely related to changes in the debt-service ratios. The growth rate of real GDP/GNP and incremental capital-output ratio (ICOR), have been included to take account of the effect of economic performance of Pakistan. Both these variables are expected to be positively related to the debt-service ratios. The estimated regressions are reported in Table 2.

From the results given in the table it is evident that in almost all the regressions the explanatory variables included explain more than 90 percent of the variations

[3] See also Lall and Perasso (1988).

Table 2

Determinants of Debt Ratios (1973-74 – 1986-87)

Dependent Variable / Explanatory Variables	Debt-GNP Ratio		Debt-service Export Receipts			Debt-service Foreign Exchange Earnings Ratio		
	I	II	I	II	III	I	II	III
Average Interest Rate	0.369	0.070	–1.949	–	–	–0.872	–	–
	(0.62)	(0.08)	(–4.38)			(–4.74)		
Lagged Average Interest Rate	–	–	–	0.938	0.564	–	0.433	0.205
				(1.48)	(0.57)		(1.60)	(0.49)
Average Maturity Period	0.198	0.087	–0.473	–0.50	–0.361	–0.206	–0.223	–0.146
	(1.83)	(0.60)	(–6.97)	(–3.82)	(–1.80)	(–7.45)	(–3.97)	(–1.69)
Growth Rate of GDP	0.586	–	–	–	0.431	–	–	0.283
	(2.51)				(0.96)			(1.51)
Incremental Capital-output Ratio	–	0.485	2.055	1.313	–	1.017	0.653	–
		(0.71)	(6.39)	(2.71)		(7.63)	(3.28)	
Terms of Trade	0.022	0.108	–0.132	–0.188	–0.260	–0.055	–0.083	–0.129
	(0.41)	(1.77)	(–4.41)	(–3.84)	(–2.89)	(–4.47)	(–3.96)	(–3.34)
Grants/Commitments	–43.234	–48.244	–41.99	–79.385	–73.80	–15.01	–33.45	–31.86
	(–2.46)	(–1.99)	(–3.65)	(–5.25)	(–3.43)	(–3.15)	(–5.08)	(–3.30)
Remittances/Export Receipts	–	–	0.152	0.192	0.193	–	–	–
			(7.24)	(5.91)	(3.81)			
Remittances/Foreign Exchange Earning	–	–	–	–	–	–0.043	0.018	0.043
						(–1.86)	(0.48)	(0.73)

Continued –

Table 2 – (*Continued*)

Remittances/GNP	–0.735	–0.974	–	–	–	–	–	–
	(–1.61)	(–1.59)						
Constant	36.245	36.481	47.354	49.433	53.625	27.298	28.187	30.267
	(5.60)	(4.00)	(10.97)	(6.55)	(5.25)	(15.58)	(8.83)	(6.86)
R-square	0.979	0.960	0.966	0.797	0.985	0.985	0.949	0.896
$\bar{R}$-square	0.957	0.919	0.931	0.593	0.969	0.969	0.897	0.791
F-statistics	45.65	23.71	28.04	3.92	63.45	63.45	18.44	8.59
D. W. Statistics	2.26	2.86	1.32	2.24	1.54	1.54	2.80	2.48

in the debt-service ratio. Except for the current interest rate, all the variables have anticipated signs. Not all the explanatory variables, however, show statistical significance. Relatively better results are obtained when debt service as a percentage of export receipts is used as the dependent variable. It may be pointed out that the current interest rate is inversely related to the debt-service ratio, thus reflecting that high cost discourages borrowings. The lagged interest rate, however, bears a positive sign but is not very significant implying that loans contracted at higher interest rates is likely to increase the debt-service ratio. The average maturity period has a negative coefficient and is significant, implying that a longer maturity period has a favourable impact on debt-servicing. The coefficient of GDP growth rate, although positive, is not significant. The coefficient of ICOR however, is positive and significant. This suggests that improvement in efficiency, characterized by a low ICOR, improves the liquidity problem associated with debt servicing. The results further indicate that external shocks, measured by terms of trade and grant-commitment ratio have adversely affected the debt servicing of Pakistan. Remittances, being an additional source of foreign exchange earnings, have led to an increase in the debt-service ratio.

IV. DEBT-SERVICING CAPACITY

It is now widely recognized that the burden of external debt varies with the stages of development. In the early stages, because of low savings, reliance on external sources to finance investment is higher, thus debt increases. In the later stages when the saving-investment gap is reduced and enough surplus has been generated to cover interest payment on outstanding debt, debt starts declining. This section analyses the debt-servicing capacity of Pakistan. In other words, it investigates the solvency problem in a macro-economic framework.[4]

The long-run debt-servicing capacity of a country can be evaluated by comparing the benefits and costs of external loans in the growth process. One of the methods to compare costs and benefits of external loans is the critical interest rate (CIR) approach.[5] The CIR indicates the level of interest rate that makes the growth of external debt equal to the growth rate of GDP. It is also the maximum interest rate that can be paid on external loans while maintaining the debt-GNP ratio. If the average interest rate on external lonas exceeds the CIR, debt will increase faster than GNP thus leading to an ever increasing debt burden. Algebraically the CIR is calculated as:

[4] Liquidity problem arises if the borrowing country is unable to obtain foreign exchange to make the debt-service payments on schedule. The solvency problem, on the other hand, arises if the real interest rate on the new loans exceeds the increase in income made possible by the loan. The latter problem being long-term in nature can arise if loans were consumed rather than invested or the return on investment is less than the cost.

[5] The other approach is the identification of the limit value of debt-GNP ratio.

$$CIR = g(S_1 - S_0) / (k.g - S_0)$$

where

g = growth rate of GDP;
S_1 = marginal saving rate;
S_0 = average saving rate at the beginning of the period; and
k = incremental capital-output ratio.

The critical interest rate calculated for Pakistan is reported in Table 3. For the period 1959-60 to 1986-87 the CIR was 4.23 percent. This, however, increased to 5.3 percent for the period 1969-70 to 1986-87. The low value of CIR indicates that if Pakistan were to maintain its current Debt-GNP ratio over time it can only afford to pay interest on new loans at the rate of 4.2 percent. This certainly is not a very encouraging situation. In other words, Pakistan's long-run debt-servicing capacity is not very high. The only reason that its debt situation is not even worse compared to the existing one is because it has been able to borrow on concessional terms. For most of the years during the period under study, the average interest rate paid by Pakistan on external loans has been less than 4 percent. A comparison with the CIR for other developing countries, in Table 4, indicates that Pakistan's debt-servicing capacity is among the lowest in the developing countries.

In order to gain further insight into the trend in the CIR for Pakistan, the CIR was also calculated for different sub-periods and is reported in Table 3. It is clear from the table that the main reason for a low CIR during 1959-60 to 1986-87

Table 3

Critical Interest Rate (CIR) for Pakistan

Period	Growth Rate of GDP	Marginal Saving Rate	Incremental Capital Output Ratio	Average Saving Rate	Critical Interest Rate
1959-60 – 1985-86	6.2	13.04	2.50	7.70	4.23
1969-70 – 1985-86	5.6	13.98	2.55	8.97	5.27
1959-60 – 1964-65	7.1	28.66	2.87	7.70	11.75
1964-65 – 1969-70	7.2	–2.48	2.39	13.78	–34.11
1969-70 – 1974-75	3.6	–9.25	2.95	8.97	–40.00
1974-75 – 1979-80	6.0	29.57	2.89	5.92	12.43
1979-80 – 1985-86	6.9	10.46	2.09	12.70	–8.72

Table 4

Critical Interest Rates for Developing Countries

Country	Period	Critical Interest Rate
China, Republic of	1964–1973	24.1
	1974–1981	11.1
	1964–1981	15.8
Hong Kong	1964–1973	9.3
	1974–1981	12.4
	1964–1981	10.8
India	1971–1978	6.3
	1971–1980	4.5
Indonesia	1971–1978	5.0
	1971–1981	–Ve
Korea, Republic of	1964–1973	9.7
	1974–1981	7.7
	1964–1981	8.4
Malaysia	1973–1978	8.7
	1973–1982	8.4
Philippines	1964–1973	10.0
	1974–1982	9.4
	1964–1982	9.7
Singapore	1964–1973	13.2
	1974–1981	10.7
	1964–1981	11.7
Sri Lanka	1971–1978	–Ve
	1971–1981	–Ve
Thailand	1964–1973	6.8
	1974–1982	8.8
	1964–1982	7.7

Source: Lee, Jungsoo (1983a).

is the negative CIR for 1964-65 – 1974-75 and 1979-80 – 1985-86 sub-periods. This in turn was because of negative or low marginal saving rates compared with the average saving rate. During 1959-60 to 1964-65 and 1974-75 to 1979-80, the CIR was 11.8 and 12.4 percent, respectively, which is reasonably high.

As the algebraic formulation indicates, the CIR is determined by three parameters. The effect of changes in these parameters on CIR has been calculated and is reported in Table 5. The estimates show that more than 40 percent of the variation in CIR is because of changes in the marginal saving rate.[6] The incremental capital-output ratio, on the other hand, accounts for one-third of the variations. The rest is explained by changes in GDP growth. For other developing countries, the contribution of GDP growth has been found to be around 10 percent. These results indicate that a 1 percent increase in all the determinants will lead to a decline in the CIR. Also, the debt-servicing capacity can be substantially enhanced by increasing the marginal saving rate which has been very low in Pakistan.

Table 5

*Changes in the CIR and the Effect of its Determinants**

Period	Incremental Capital Output Ratio Effect	Marginal Saving Rate Effect	GDP Growth Rate Effect	Change in CIR
1969-70 – 1985-86	0.13	0.16	0.11	0.40
	(32.5)	(40.0)	(27.5)	(100.0)
1959-60 – 1985-86	0.80	0.12	0.06	0.26
	(30.8)	(46.2)	(23.0)	(100.0)

*Following Lee (1983a), the effect of each determinants has been calculated by comparing the historical level of CIR with its hypothetical value. This hypothetical value is calculated assuming that the determinant whose effect is being estimates change by 1 percent while the other two determinants remains unchanged.

Figures in the parentheses are changes in CIR due to each determinant expressed as percentage of change in CIR caused by simultaneous change in all the determinants.

V. CONCLUSION

In this paper an attempt has been made to analyse the external indebtedness of Pakistan. The analysis indicates that although the lending countries have confidences in Pakistan's economy and that the debt is being rolled over, but still the

[6]This is in conformity with estimates for other developing countries by Lee (1983a).

country faces liquidity problems associated with debt servicing. Terms of borrowings and growth rate of GDP do not appear to have any significant impact on the variations in the debt-service ratios. The efficiency of the economy, measured by incremental capital output ratio, and external stocks have been the main factors influencing debt servicing in Pakistan. Besides liquidity problems, Pakistan also faces the solvency problem associated with debt. In other words, the long-run debt-servicing capacity of Pakistan is extremely low. This is evident from low estimates of the critical interest rate. A major factor for this low critical interest rate has been the extremely low marginal saving rate. This shows that long-run debt-servicing capacity of Pakistan can be enhanced by increasing the marginal saving rate.

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Comments on "Determinants of Debt Problem in Pakistan and its Debt-servicing Capacity"

The paper presented by Nadeem A. Burney is a fruitful attempt to highlight the problem of the external indebtedness of Pakistan. The paper implicitly stresses the need to systematically analyse our present policy which relies on external borrowings rather than just being concerned with the short term costs and benefits aspect of specific loan agreements. The message is obvious and well known that on the plea of short-term reliefs we are perhaps transferring our poverty to our children.

The paper consists of three sections. The first section is informative. It provides data on various debt indicators for Pakistan for the past 28 years. I agree with the author's approach that before conducting an economic analysis of the debt problem of Pakistan, the reader should be guided to understand the seriousness of the problem from various angles. The debt indicators in terms of various ratios calculated by the author signify the fact that there are various aspects of the external debt problem faced by Pakistan, some referring to the short-run burden and some to the long-run burden.

In the next section the author attempts to identify various determinants of the external debt burden in Pakistan. For this purpose he estimates a few regression equations. As the author explains at the beginning of this section, these regression equations should be interpreted as the net outcome of the interplay of various economic relations. It would, however, have been helpful to the reader if the author had spelled out in more detail the structure of the simultaneous equations underlying the estimated single equations at least in words if not in algebraic form. Or, better, he should have estimated the structure itself rather than what seems to be a reduced form.

These regression equations do not include among the potential determinants of debt burden any measure of the propensity of saving one of the key factors that determine the need to borrow. The propensity to save is not even implicitly present in any of the regression equations because none of these equations simultaneously includes the growth rate of GDP and the capital-output ratio among the explanatory variables.

Now I come to the final section of the paper which in my opinion is quite insightful both in terms of theoretical discussion and its numerical consequence.

The author calculates the maximum rate of interest on external borrowings Pakistan could have afforded in the past to maintain a steady-state situation of the external debt burden, that is, a constant debt GDP ratio. The calculation of this interest rate is based on the assumption of a given set of values for the other key economic parameters, that is, the average and the marginal savings rates, the incremental capital output ratio and the growth rate of GDP. As the equation used in the calculation of the critical interest suggests, one can also fix the rate of interest on external borrowings and calculate the critical value of some other parameter, for example, the minimum savings rate or the maximum growth rate of GDP. More generally, the equation relating all these parameters can be used to fix all but two parameters and find out the trade-off relationship between the remaining two parameters. For instance, one can find out a trade-off relationship between the rate of interest on external borrowings and the domestic savings rate. This trade-off relationship can be explained in two ways. First, if the rate of interest increases by 1 percent, what will be the required increase in domestic savings rate to maintain a given debt GDP ratio. Second, following a 1 percent increase in domestic savings rate to what extent can Pakistan afford the additional cost of external borrowings in terms of the permissible increase in the rate of interest on external borrowings given the debt GDP ratio.

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