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Debt and Economic Growth in South Asia

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INTRODUCTION

After 1980s, in most developing countries, the rate of debt accumulation and increase in debt servicing are highlighted as major factors affecting the growth rate of output. Most of these countries lost their competitiveness in the international market mainly as a result of insufficient exchange rate adjustments. In addition, the weakening of terms of trade, economic mismanagement and crisis of governance also lowered growth rates in the developing countries. The downward pressure was larger in the countries facing higher debt burden as these countries faced higher interest rates, decline in the external resource inflow, lower export earnings, lower domestic output and lower imports.

In case of South Asian countries, the external debt scenario has changed over time. According to World Bank (2001) Pakistan's ranking worsened to 'severely-indebted low income country' from 'moderately-indebted low income country' in 1997, where as India's ranking improved to 'less indebted low income' country from 'moderately indebted' in 1997. The rapid accumulation of debt, rising repayment burden and the economically and politically resource inflow or rescheduling motivated rescheduling of debt (as in case of Pakistan) has raised concerns regarding the impact of debt on the growth process of the South Asian countries.

Khanobis and Bari (2001) claim that foreign resource inflow increased the resource availability and as a result it contributed to economic growth in South Asia. However, the study does not examine the effect of debt accumulation on economic growth. In this paper, given the diversity of growth experience, we examine the impact of rising debt burden on economic growth of South Asian countries.

In 1960s, the role of foreign resource inflow was to reduce the gap between the domestic availability and the needs of the developing countries. A higher fraction of this resource inflow was in the form of bilateral and multilateral Aids and Grants.

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Over time the declining resource availability and changing composition of resource inflow, i.e., a rising share of commercial loan of short term maturity at a higher interest rate and declining share of concessional debt in total has increased the debt burden and deteriorated the debt servicing capacity of most of the developing countries, including Pakistan. (see Table 1). The situation is worse for those countries where the net resource inflow became negative.[1]

The empirical literature indicates that the critical ratios that can be helpful in determining the debt burden of the countries include debt-to-export ratio, debt-to-output (i.e., output can be measured either in terms of gross domestic product or gross national product), and the ratio of debt servicing to export or output. If for a country these ratios are larger than the critical values, the impact of debt on the country's growth may become negative. For example, Pattillo, Poirson and Ricci (2001), report that average impact of debt on economic growth becomes negative when debt-to-export ratio is around 160–170 percent and debt-to-output ratio is around 35–40 percent.[2] Comparing these ratios for South Asian countries, we can see large variations. For example, in Sri Lanka, in 1990s, the debt-to-GNP ratio was above these critical levels (> 50 percent) but due to a large external sector, the debt-to-export ratio was, on average, below 170 percent. For Pakistan, in 1990s, both ratios are above the critical level and show a rising trend. For India, the debt-to-output ratio is below the critical level but the debt-to-export ratio was above the critical values but it shows a declining trend in 1990s. (see Table 1.) Thus, the debt situation in South Asia has changed and it is becoming critical for some countries. As a result, it may generate negative impact on economic growth.

Keeping this in view, we examine the impact of external debt on economic growth in South Asian countries. The presence of these critical ratios implies that if the ratios are below the critical level the impact on growth may not be negative. This raises the second of nonlinearity in debt-growth relationship. In this paper, we examine the debt-growth relationship for South Asian countries and test if there are nonlinearities in this relationship. If so, then, at what level the impact of external debt on economic growth becomes negative?

The study is organised as follows: Section 2 discusses the growth experience of selected South Asian countries briefly.[3] An over view of recent theoretical and empirical developments is in Section 3. The model developed for the study and data issues are discussed in Section 4. The results are discussed in Section 5. Conclusions and policy implications are discussed in Section 6.

[1]In Pakistan, the net inflow of resources was negative in 1997 and 1999-2000.

[2]According to World Bank the critical value of debt-to-GDP is 80 percent and critical value of debt-to-export earnings is 220 percent. According to both sets of estimates of critical values, Pakistan is categorised as heavily indebted low income country.

[3]We include, Sri Lanka, Pakistan and India in the analysis. Other South Asian countries are excluded due to incomplete information.

Table 1

Major Debt Indicators in South Asia (1970–1999) in Percentage

	1970	1980	1990	1995	1997	1998	1999
1. Debt-to-Export of Goods and Services (DEXGS)							
Sri Lanka	–	123.4	210.4	145.9	115.3	123.2	139.5
Pakistan	382.4	208.7	250.0	256.7	265.0	277.9	342.9
India	379.1	136.7	334.0	195.7	161.6	166.0	139.9
S. Asia	–	162.0	327.4	216.3	182.6	188.3	174.5
LDCs		88.4	160.7	141.1	128.1	148.5	141.0
2. Debt-to-Gross National Product (DEGDNP)							
Sri Lanka	19.2	46.1	74.3	64.8	52.1	56.0	60.3
Pakistan	33.9	38.8	49.4	48.6	47.4	51.0	58.3
India	13.9	11.3	26.8	27.1	23.3	23.5	21.3
S. Asia	–	16.1	32.3	33.2	28.8	29.5	28.4
LDCs	–	18.2	30.9	38.4	36.1	42.8	40.5
3. Total Debt Servicing-to-Export of Goods and Services (DSXGS)							
Sri Lanka	–	12.0	13.7	7.5	6.4	6.4	7.9
Pakistan	29.2	18.3	23.0	27.3	36.0	19.8	28.3
India	33.6	9.4	32.7	28.1	21.3	20.6	15.0
S. Asia	–	11.8	28.9	25.0	21.0	18.4	15.3
LDCs	–	6.4	9.5	5.8	5.3	4.4	4.3
4. Interest Payments-to-Export of Goods and Services (INTXGS)							
Sri Lanka	–	5.7	6.1	2.9	2.2	2.2	2.6
Pakistan	9.1	7.9	10.1	10.2	10.9	7.4	9.6
India	8.9	4.3	19.2	10.2	8.3	8.7	5.6
S. Asia	–	5.2	15.6	9.1	7.7	7.7	5.7
LDCs	–	6.8	7.8	6.6	6.2	6.9	6.7
5. Reserves-to-Debt Ratio (RESDE)							
Sri Lanka	9.9	15.4	7.6	25.7	26.6	23.4	17.3
Pakistan	5.7	15.8	5.1	8.4	6.0	5.0	4.4
India	12.1	58.0	6.7	24.2	30.1	31.4	34.6
S. Asia	–	40.4	6.9	19.5	22.4	22.9	23.5
LDCs	–	36.4	15.4	25.1	28.2	27.6	28.7
6. Short-term-to-Total Debt (EDT-1)							
Sri Lanka	8.8	11.9	6.9	6.5	6.2	5.1	10.0
Pakistan	3.1	7.4	15.4	10.7	8.3	6.7	5.3
India	3.4	6.1	10.2	5.3	5.4	4.4	4.3
S. Asia	–	12.8	18.1	15.7	17.1	18.2	21.4
LDCs	–	23.7	16.8	19.8	20.1	16.0	15.9
7. Concessional Debt-to-Total Debt (EDT-2)							
Sri Lanka	43.2	56.0	71.9	77.5	78.6	80.1	78.6
Pakistan	68.9	71.6	58.5	53.9	50.0	52.3	54.3
India	79.7	74.2	46.2	45.7	41.2	41.1	47.3
S. Asia	–	74.3	56.3	36.6	49.6	50.4	55.1
LDCs	–	18.7	21.5	19.1	15.9	14.7	15.4
8. Multilateral Debt-to-Total Debt (EDT-3)							
Sri Lanka	6.7	11.7	27.7	34.8	37.4	37.8	38.1
Pakistan	18.0	15.4	33.4	40.3	39.4	40.6	41.3
India	18.5	29.3	26.0	31.8	31.2	31.3	33.2
S. Asia	–	24.5	29.5	36.2	36.0	36.7	38.6
LDCs	–	8.3	14.2	13.5	12.4	12.8	13.5

Source: World Bank (2001) "Global Development Finance-2001".

Note: DEXGS=debt-to-export ratio; DEGNP=debt-to-GNP ratio; TDSXGS=total debt servicing-to-exports; INTXGS=interest payment-to-Exports; RESDE=reserves-to-debt ratio; EDT-1= short-term debt-to-total debt; EDT-2=Concessional debt-to-total debt; and EDT-3=multilateral debt-to-total debt. (all the ratios are reported as percentages). S. Asia=South Asia; LDCs=All Developing Countries.

2. GROWTH EXPERIENCE OF SOUTH ASIAN COUNTRIES

Growth experience of South Asian countries varied significantly over time. Table 2 shows that growth rate of GDP-per capita varied between 2.4 percent and 3.5 percent per annum during 1976–1997. Table 2 shows that, for the period 1976–1997, highest growth rate of GDP per capita was experienced by Sri Lanka (equaling 3.46 percent) and lowest was in Pakistan (equaling 2.36 percent). This shows that despite the rapid growth experience in 1960s and 1980s, Pakistan was not able to keep the growth momentum. This is also reflected in higher coefficient of variation indicating higher instability in the growth experience of Pakistan. Capital stock and labour force growth rate are the primary sources of growth. Population growth, a proxy for labour force growth rate, was highest in Pakistan whereas the investment-gdp (invgdp) ratio (a proxy for capital accumulation) was lowest for Pakistan. The indicators of creditworthiness, i.e., debt-service-to-GDP ratio and debt-service-to-exports ratio also show a lower ranking of Pakistan. Thus, in case of Pakistan, higher population growth, lower rate of capital formation, and higher rate of debt accumulation may be the main reasons for slow down in economic growth during 1990s. (see Table 1 and Table 2.)

The studies analysing sources of growth identify that schooling, openness, strength of institutions and government spending, the major contributors to economic growth in East Asia, are also important for South Asia, but the South Asian countries are lagging in growth and improvement of these factors.

Table 2

Major Economic Indicators for South Asia (1976–1997)

	Sri Lanka	Pakistan	India	All
Growth Rate of GDP-Per Capita	3.49 (0.60)	2.36 (0.77)	2.79 (0.08)	2.87 (0.83)
Inv.-GDP Ratio	24.35 (0.15)	21.39 (0.07)	22.53 (0.04)	22.76 (0.12)
Population Growth	1.33 (0.46)	2.90 (0.21)	2.11 (0.09)	2.11 (0.4)
Terms of Trade	80.87 (0.17)	102.36 (0.12)	83.39 (0.17)	88.87 (0.18)
Openness	84.87 (0.10)	45.31 (0.05)	14.21 (0.19)	48.13 (0.55)

Note: Numbers in parentheses represent coefficients of variation.

In South Asian countries, total factor productivity growth, a measure of improvements in competitiveness, was high in 1960s, declined in 1970s and improves afterwards. In case of Bangladesh, as expected, growth was slow in 1970s but improved afterwards. In India, the contribution of capital in economic growth is quite high and growth performance improved steadily over time. However, in the growth experience of Pakistan shows significant fluctuations over time. In Sri Lanka, growth was low but stable and capital was the major contributor. According to Khanobus and Bari (2000), capital accumulation and total factor productivity (TFP) growth are the major sources of economic growth. The rise in TFP seems to coincide with the period of liberalisation in most of the South Asian countries. India and Bangladesh show higher TFP growth. In Pakistan TFP growth was significant until 1980s but has deteriorated in 1990s. In 1980s, India benefited from domestic policy changes as well as a large expanding domestic market and good harvests offsetting the negative impact of fluctuations in the global economy.

An interesting finding of the study, by Khanobus and Bari (2000), is positive contribution of black economy to growth. The argument given is that presence of black market partly bypass regulations and controls and work more like a free market, thus affecting growth positively. Thus, this effect should decline as the economies are liberalised and deregulated. Other factors, affecting economic growth in South Asia are open foreign investment regimes, natural resource endowment, less controls on wages and prices and institutional strength.

Tendulkar and Sen (2000), find that exchange rate mismanagement and market rigidities can also be blamed for slower growth in South Asia, relative to East Asia. They argue that, "…product market distortions emerging from restrictive trade and exchange rate policies under centrally initiated and public sector oriented industrialisation constituted the major causal factors behind the slow pace of growth in South Asian countries. Recent wave of liberalisation, even though crisis driven, can be growth promoting if adopted with commitment".

3. THEORETICAL AND EMPIRICAL BACKGROUND

There is no consensus in theoretical and empirical literature about the debt-growth relationship. In neoclassical growth models perfect capital mobility improves economic growth. Whereas, the recent endogenous growth models argue that rising cost of foreign capital inflow reduces external borrowing causing a decline in long run economic growth.

Recent studies dealing with the issue of external resource inflow and economic growth also argue that a more realistic assumption is that countries may not be able to borrow freely because of the risk of repudiation or moral hazard. Cohen (1993) included repudiation risk in the analysis and found low level of debt associated with higher growth (not under financial autarky) where as large levels of accumulated debt stocks leads to lower economic growth. If the borrowing country

can hide its actions from the lender it may choose to consume or re-invest abroad some of the borrowed funds.

Similar model developed by Cohen and Sachs (1986) seems to fit well with the experiences of most of the developing countries.[4] The model shows that, with a possibility of debt repudiation and endogenous growth ceiling, there would be two stages of economic growth. In the first stage the growth rate of external capital inflow will be higher then the output growth rate. But in the second phase, the resource inflow and growth, both will slow down. Along this path the debt servicing will not be complete, and permanent refinancing of debt servicing will be the only equilibrium strategy consistent with no default by the borrowing country. The refinancing should be linked to output growth of the country.

The literature also emphasises that political economy considerations leading to over-borrowing resulting in capital flight may retard the growth prospects of the borrowing country, if the costs of high taxes to service the debt are not internalised. The debt-overhang theories imply that if debt is greater than the country's repayment ability and the expected debt servicing is an increasing function of output then returns from investment in the country face a marginal tax by the external creditors, and new domestic and foreign investment is discouraged. Thus, large stock of debt reduces growth by lowering investment.

According to Cohen (1993), capital accumulation is the sole contributor to economic growth and the impact of external resource flow is not linear. The study emphasise that the impact of debt on economic growth depends significantly on capital flight, since the high distortionery tax burden on capital is required for debt-servicing, lowering the return on capital, and lowering investment and growth. Low levels of debt leads to opposite results and in the intermediate range the effect on growth is indeterminate. This creates a possibility of multiple equilibria as a result of non-linear relationship between debt and economic growth. Thus, debt can lead to positive/negative impact on economic growth, crowding out of investment or debt over-hang effect.

Another channel is that any activity incurring costs today for the sake of increased output in the future will be discouraged as part of the proceeds will be taxed away by creditors. Thus, government will have less incentive to undertake difficult reforms such as trade liberalisation or fiscal adjustment impling that debt-overhang effect will not only work through lower investment but also through a weak macroeconomic policy environment. This, in turn, affects the efficiency of investment, i.e., if expectation is that debt-servicing will be through distortionary taxation, such as inflation tax, or with cuts in productive public investment then it will reduce the efficiency of investment.

Uncertainty regarding the source of debt servicing, and probability of rescheduling increases the risk regarding the growth prospects of a country. In this

[4]The model seems to explain the debt situation of Pakistan.

situation, even if fundamentals are improving, investors will continue to exercise their option of waiting. Investment in risky environment will be in trading activities with quick returns, rather than in long-term, high-risk, irreversible investment that will also affect the efficiency of investment. All this implies that reasonable levels of debt have a positive impact on economic growth and a large stock of debt may be a constraint on economic growth.

The debt over-hang effect can also be captured by burden of future debt services. It takes not the face value of debt but net present value of debt (NPVD) reflecting the degree of concessionality of loans and thus more accurately measure the expected burden of future debt-servicing across countries. For many developing countries, the extra earnings and rescheduling of existing debt led to an increase in domestic output and imports since 1980s and 1990s. However, all major credit worthiness indicators deteriorated in 1980s resulting in to reduction in resource availability to the developing countries and difficulty in debt servicing. This forced the affected countries to opt for the stabilisation programme leading to domestic policy adjustment to reduce fiscal deficit, exchange rate misalignment, rationalisation of taxation structure and reduction in government spending. In response to growing debt problems of the developing countries, rescheduling agreements also increased after the debt crisis of Latin America.

These developments created an interest in the empirical analysis of debt-growth relationship. However, according to White (1992), before answering the question whether aid *(foreign resource inflow)* affects economic growth?—there is still a need to develop theoretical understanding of aid's impact on savings further and develop better econometric methodology. The studies examining the debt-growth or the external resource inflow and growth relationship for developing countries show that slower growth in world trade, weak/declining prices of export, declining resource inflow with large repayment obligations on debt, particularly on external debt, have affected the economic growth after the decade of 1980s.

Using the data for 93 developing countries for the period 1968–98, Pottillo, *et al*., (2001) find that the nonlinear impact of debt on economic growth is through the impact on total factor productivity not through the impact on efficiency of capital. The result of the study suggest that average impact of debt on economic growth becomes negative when debt is at about 160–170 percent of export-earnings or 35–40 percent of gross domestic product. The marginal impact of debt starts becoming negative at about half of these values. High debt reduces economic growth mainly by lowering the efficiency of investment rather than its volume. This implies that negative effect works through decline in total factor productivity not through reduction in contribution of capital. Similarly Chawdhury (2001) finds that debt servicing as a percentage of either export earnings or GDP affect growth rate of GDP per capita adversely. This effect is equally important and statistically significant for HIPCs and other developing countries facing heavy debt burden.

Thus, whereas the theoretical literature develops the argument for an adverse impact of foreign resource inflow on economic growth, the empirical literature estimates these relationships showing that the relationship may be negative and nonlinear in all the developing countries, including HIPCs and others.

4. MODEL AND DATA ISSUES

In this paper we examine the impact of various indicators of debt burden on the economic growth of South Asian countries. We also examine, whether this relationship is linear or not. For estimation, the model is specified as:

$$G_{it} = \alpha_I + \gamma_t + \Sigma \beta_j X_{itj} + \Sigma \delta_k X_{itk} + \mu$$

Where:

G = growth rate of gross domestic product per capita.
X_j = set of j conditioning variables. It includes:
X_1 = investment-GDP ratio.
X_2 = Deficit-GDP ratio.
X_3 = indicator of external competitiveness, measured as Trade-to-GDP ratio or the growth rate of exports or the growth rate of import or terms of trade.
X_4 = population growth rate.
X_5 = log of lagged GDP.
X_k = set of k variables measuring debt burden. It includes:
X_6 = Foreign Debt-to-GDP ratio.
X_7 = Foreign Debt-to-GDP squared.
X_8 = Debt servicing-to-Export ratio.
X_9 = Debt servicing-to-Export ratio squared.
X_{10} = Foreign Debt-to-Exports.
X_{11} = Foreign Debt-to-Exports squared.

α_I controls for the country-specific fixed effects, γ_t controls for time-specific fixed effects, β_j are the coefficients of the first five conditioning variables, δ_k are the coefficients of six variables measuring debt burden and finally μ is the random error term. The impact of debt-burden is captured by including various indicators, X_6 ….. X_{11}. The coefficients may be positive or negative. However, if the relationship is nonlinear then we expect the coefficient of the squared-term to be negative. This will support the view that the positive impact of the resource inflow becomes negative after a threshold level of debt burden is reached.

The set of conditioning variables includes investment-GDP ratio, deficit-GDP ratio, openness, population growth rate, and log of lagged GDP-per capita. The effect of investment-GDP ratio is expected to be positive and statistically significant. The impact of deficit-GDP ratio is expected to be negative if deficit crowds-out public saving and resource inflow encourages corruption and resource outflow. The impact

of openness is expected to be positive as the rise in trade flows relative to GDP represents improved competitiveness and productivity of the economy. The effect of population growth will be negative if the population is bottleneck to the growth process and it lowers the productivity in the economy. The coefficient of log of lagged output per capita is expected to be negative to support the convergence hypothesis.

The growth model is estimated using the data for three South Asian countries, viz., Sri Lanka, Pakistan, and India. In order to capture the effect of country-specific factors, most studies using panel data apply Fixed Effects/Random Effects models. In this study, we estimate the equations by applying OLS and Fixed Effects Models. The implication is to control the country specific effects in the data. Country dummies are used for the three countries included in the analysis. These dummies are not correlated with other independent variables, but have constant or fixed effect on the dependent variable that is on the per capita growth. The advantage of using the technique is that by employing the conventional tests we can see whether the same regression applies to all data points or not.

The data sources for the study are "International Financial Statistics Yearbook-2000" published by International Monetary Fund, "Global Development Finance-2001" and "World Debt Tables" (various issues), published by the World Bank. The time period covered is 1975–98. Furthermore, in order to reduce the impact of cyclical fluctuations, we have computed three years moving of all the variables.

5. RESULTS

A number of equations are estimated with same control variables and alternative variables representing debt burden. However, we report only those equations which include the variables found consistently significant. Furthermore, the comparison of estimated coefficients of the growth equations with and without adjustment for the country-specific fixed effects, show that the results improve significantly, if we control for the presence of country-specific effects. Therefore, we are reporting the results of Fixed Effect model only.

The results of estimated equations are reported in Table 3. The coefficients of all the conditioning variables have expected signs. The impact of conditioning variables, like investment-GDP ratio, defi-GDP ratio, openness, population growth and lagged GDP per capita (in log) have expected signs and they are statistically significant, except for defi-GDP ratio. The sign of the coefficient of defi-GDP is negative in most equations and it is not statically significant. The impact of investment-GDP ratio is positive and statistically significant, supporting the findings of the earlier studies that capital formation is the main source of economic growth. Furthermore, the coefficient is quite robust in different estimated equation.

Table 3

Results of Estimated Growth Equations-Fixed Effect Model

	Equation 1	Equation 2	Equation 3	Equation 4
Inv-GDP	2.865	2.954	1.966	2.796
	(2.739)	(3.185)	(1.640)	(3.550)
Deficit-GDP	0.768	–0.671	–1.34	–0.561
	(0.822)	(0.755)	(1.153)	(0.576)
Openness	0.805	1.473	0.854	1.655
	(2.995)	(5.244)	(2.405)	(4.768)
Population Growth	–	–10.55	–9.501	–13.411
		(2.888)	(2.039)	(3.310)
Ln (GDP (t–1))	–	–46.53	–32.112	–35.613
		(5.436)	(3.111)	(4.086)
Fdebt-GDP	4.260	3.707	–	–
	(2.087)	(2.027)		
Fdebt-GDP:sq.	–0.035	–0.021	–	–
	(0.146)	(2.014)		
Debt-servicing-to-Export	–	–	0.204	–
			(2.963)	
Debt-servicing-to-Export-sq.	–	–	–0.008	–
			(0.295)	
Debt-Export	–	–	–	0.394
				(4.374)
Debt-Export Sq.	–	–	–	–0.001
				(4.015)
Adjusted R-Sq.	0.424	0.433	0.243	0.339
N (Number of Observations)	63	63	63	63

As expected, openness has a positive and statistically significant impact on economic growth. The impact of population growth is negative, as expected, and statistically significant. The result shows that rise in population affect the productivity adversely. This calls for improving the effectiveness of the population programmes in the South Asian countries. The coefficient of lagged GDP is negative, as expected, and statistically significant, supporting the convergence hypothesis.

However, surprisingly, the impact of foreign debt on economic growth is positive and statistically significant. The coefficient of the squared term is not statistically significant, except in the second and the last equation, but in all the equations its presence improves the significance of the variables indicating the debt burden. Interestingly the results of the other indicators of debt burden, i.e., debt-servicing-to-exports ratio and debt-to-export ratio support the results of the second equation. We also find that rise in debt servicing affects the contribution of investment, but the impact of other variables, indicating debt burden, does not seem to affect the contribution of investment rate in economic growth. The results also support the findings of earlier studies, like the study by Pottillo, *et al.* (2001), partially.

The results show that the coefficient of squared terms for debt indicators are statistically significant in two equations. The exclusion of these terms affects the coefficient of debt indicators adversely, in the other equations also. Thus, we conclude that our result support the presence of a nonlinear relationship between economic growth and all the indicators of debt burden. The comparison of computed critical values of debt-to-GDP, debt servicing-to-exports and debt-to-exports, based on the results reported in Table 3, with the ratios reported in Table 1, shows that in most cases, the impact on economic growth in Pakistan is expected to be negative whereas for the other two countries these ratios are below the critical levels. (see Table 4.) This has important implications for the countries in South Asian region, particularly for Pakistan.[5]

Table 4

Critical Values of Debt Burden and Impact on Growth

	Critical Values*	Impact on Economic Growth		
		Sri Lanka	Pakistan	India
Debt-to-GDP-1	61	+/–	+/–	+
Debt-to-GDP-2	88	+	+/–	+
DS-to-Exports	12.75	+	–	+/–
Debt-to-Export	197.0	+	–	+

Note: *The critical values are computed on the basis of estimated equations in Table 3.

6. CONCLUSIONS AND POLICY IMPLICATIONS

The results of this study support, partially, the findings of Pottillo, *et al.* (2001) and other earlier studies that ignoring the nonlinearities in the growth-debt relationship and the presence of country-specific fixed effects can lead to biased coefficient estimates and consequently wrong policies for a region or a specific country. All the indicators of debt burden, included in the study, highlight the importance of improving the economic management. This could be in the form of improving the efficiency of the resource use so that the debt burden can be effectively reduced. In case of Pakistan, all the debt indicators increased sharply in the 1990s, whereas for Sri Lanka the debt-export ratio has not crossed the critical levels and for India the ratio is declining.

The effect of population growth is productivity reducing. This effect can be controlled by reducing population growth rate and by improving human capital. We have not included the variable of human capital in the analysis due to non availability of comparable time series data across countries. Furthermore, earlier studies like Guhu-Khanobus and Bari (2000) find insignificant impact of education

[5] The study reports mixed evidence regarding the impact of debt burden on economic growth.

(measured by enrolment) claiming that the quality, not quantity, is important to capture the effect of human capital on economic growth.

In case of Pakistan, mismanagement of resources, macro imbalances, loss of competitiveness in the international market and the role of political interest groups has aggravated the debt burden. There is a need to improve the competitiveness of the economy and to improve the macro imbalances.

Given the rising debt burden, particularly for Pakistan, it is critical to reduce dependence on foreign aid. This requires efforts to mobilise domestic resources. For example, Kemal (1975) suggests that, "The elimination of aid flows within a reasonable time period implies increasing the marginal rate of saving and lowering capital intensity either through the adoption of less capital-intensive techniques or by changing the sectoral compositions of investment towards sectors with lower capital-output ratios". Furthermore, there is need to provide conducive macroeconomic environment by reducing mismanagement and by improving governance to promote economic growth.

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