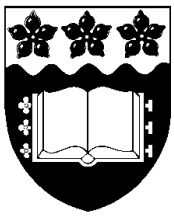

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Deficit Financing in LDCs: Evidence From South Asia

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Abstract

Fiscal policy triggers three distinct effects on the economy such as (1) interest rate effect (2) price effect and (3) exchange rate effect. A VAR system was developed to capture these effects in five South Asian countries. Empirical results suggest that budgetary action does not have any perceptible influence on the interest rate of the sampled countries. In terms of the price effect, fiscal action has opposite effects in Bangladesh and India. Fiscal action tends to increase aggregate price level in India but reduces the price level in Bangladesh, although the magnitude is very small. For Pakistan the price effect is positive but statistically insignificant while the price effect for Nepal and Sri Lanka is negative but statistically insignificant. Fiscal action is found to have no perceptible influence on the exchange rates of the sampled countries except Nepal where increased government expenditure tends to appreciate the Nepali currency. Overall, empirical findings suggest that expansionary fiscal action does not lead to crowding out behaviour in the sampled countries.

JEL Classification: H3, H6, O1, O2

Key words: Deficit financing, crowding-out, South Asia.

DEFICIT FINANCING IN LDCs: EVIDENCE FROM SOUTH ASIA

INTRODUCTION

One of the bones of contention between Keynesians and Monetarists is on the effectiveness of fiscal action in stimulating economic activity. Monetarists argue that fiscal action is totally impotent in stimulating economy's output. The inability of expansionary fiscal action in stimulating economy's output is known as the "crowding out" effect. The modus operandi of crowding out effect is as follows: Increased government expenditure, financed either through taxes or through debt issuance, raises interest rate, lowers private investment and thereby aggregate output.

Crowding out effect can be "total" or "partial" depending on whether expansionary fiscal action has either zero or less than the full multiplier effect. In an IS-LM framework, total crowding out takes place when the LM-curve is vertical (monetarist position). Carlson and Spencer (1975) demonstrate that the crowding out phenomenon is not related to the slopes of the IS and LM curves only. They show that crowding out can occur even without the LM curve being vertical. However, partial crowding out is inherent in the way the IS-LM framework is set up.

Apart from an increase in domestic interest rate induced by expansionary fiscal action, there are three other related macroeconomic effects that are triggered by the action. These relate to (1) price level increase or decrease (2) depreciation or appreciation of the domestic currency in response to increased government demand and (3) decreased consumption and increased saving in anticipation of future tax increase[1].

The price effect of fiscal action can be intuitively understood from the Fisher's identity: $PY = MV$, where P is the aggregate price level, Y is real output of an economy, M is the aggregate money supply whose velocity is V. A fiscal action that reduces Y via a

[1] In this paper we shall not explore the Barro-Ricardo equivalence proposition as the theoretical arguments are not conclusive, and it is difficult to isolate the effects of changes in debt on consumption demand.

reduction in private investment is bound to increase the aggregate price level *P*. However, in the absence of crowding out, a fiscal expansion unambiguously raises output which in turn lowers domestic price level as can be seen from Fisher's equation. Alternatively, if the debt is bond financed and the monetary authorities purchase the bonds, then the initial upward pressure on interest rates could be avoided. However, "monetisation of public debt" can result in inflation through the printing of money (seignorage).

The precise relationship between the size of the budget deficit and the increase in monetary base is

budget deficit = $\Delta B = \Delta B^{p} + \Delta B^{cb} = \Delta B^{p} + \Delta BASE = \Delta B^{p} + \Delta M$.

This equation states government budget deficit equals the total increase in government debt outstanding, ΔB, which can be further broken down into government debt held by the public, ΔB^{p}, and by the central bank, ΔB^{cb}. The increase in ΔB^{cb} translates into an increase in the monetary base, $\Delta BASE$, which increases money supply, ΔM. The change in $\Delta BASE$ is precisely equal to the amount of seignorage collected by the government. Thus seignorage leads to continued money creation ultimately leading to higher inflation.

The exchange rate effect of fiscal action can be easily seen from the national income identity: $(X\text{-}M) = (S\text{-}I) + (T\text{-}G)$[2] where $(X\text{-}M)$ represents the Current Account Balance which is equal to the sum of the saving-investment balance and government revenue-expenditure balance. Assuming saving-investment balance for simplicity, an increase in government expenditure will show up as a Current Account deficit in the balance of payments that tends to depreciate the domestic currency. A perverse, non-conventional result can also be obtained because of expansionary fiscal action that stimulates domestic output (barring total crowding out) giving rise to an increased demand for cash balances. This in turn raises domestic interest rates and stimulates net capital inflow appreciating the domestic currency. Hence, a fiscal expansion can lead either to a depreciation or appreciation of the currency.

[2] This identity is also known as the Twin Deficit Hypothesis in the literature.

Summing up, expansionary fiscal policy tends to have three related effects in the economy: (1) interest rate effect (2) price effect and (3) exchange rate effect. These effects are important and can not be ignored by policy makers, as they tend to have other secondary effects in the economy.

The issue of crowding out is important to researchers and policy makers in LDCs. Given their inability to mobilise enough resources to achieve a desired growth rate, uncertainty of foreign investments and capital flows, and lack of tax elasticity, policy makers in LDCs have increasingly adopted deficit financing as a way of accelerating economic growth. Policy makers should be wary of the three adverse effects (interest rate effect, inflationary effect and currency depreciation) of deficit financing. Similarly, researchers are keen to find out if the principles of macroeconomics developed for developed economies worked in LDCs that are characterised by structural rigidities and constraints as elaborated by Taylor (1983). It would be futile to undertake a generalised policy package for LDCs without explicitly taking into account the specific variety of structures and set of constraints they face.

LDCs suffer from various constraints — in capital, wage goods and foreign exchange and also due to lack of effective demand. In LDCs there are sectors which exhibit fixed-price behaviour with mark-up pricing coupled with some sectors exhibiting flex-price behaviour as in agriculture. Money markets in LDCs are characterised by duality, with its organised and unorganised sectors, with different business practices and interest rates. Flow of funds between the organised and unorganised sectors sometimes takes place but the link between the two is very weak. It is well documented that “financial repression” and “shallow finance” hinder the growth in LDCs. Stiglitz (1994) pointed out seven major market failures that imply a potential role of state intervention.

Against this backdrop, the objective of this paper is to determine the possible effects of fiscal actions enumerated earlier on five LDCs in South Asia. The countries studied include

Bangladesh, India, Nepal, Pakistan and Sri Lanka[3]. These countries are also members of South Asian Association for Regional Cooperation (SAARC). SAARC is a regional forum of 7 South Asian countries (Bangladesh, Bhutan, Nepal, India, Maldives, Pakistan and Sri Lanka) thriving to promote faster economic growth and standards of living through the concept of collective self-reliance, cooperation and harmony. South Asia as a region is under-developed where approximately 20 per cent of the world's population occupies only about 2.7 per cent of its landmass.

The paper is organised in the following manner: Section II shows the trends in fiscal actions in the sampled countries. Section III develops the conceptual econometric framework of the study. A vector autoregressive regression (VAR) system is developed to capture the effects of fiscal action. Section IV contains a discussion of the empirical results obtained and tests of hypotheses are conducted. Section V provides a summary and conclusion of this study.

SECTION II

FISCAL BALANCE IN SOUTH ASIAN COUNTRIES

The sampled South Asian countries have consistently run budgetary deficits over the sampled period 1980-1999 as seen in Table A1 in the appendix. The experience over two decades shows that all the countries in the sample showed remarkable improvement in their fiscal balance with the exception of Nepal. In 1999 all the countries had their fiscal imbalance reduced to under 10 per cent of their GDP while in the earlier decades fiscal imbalance in excess of 10 per cent was the norm for a majority of these countries. Since South Asian economies have constraints on taxation, government expenditures outstripped government revenue on a consistent basis. The constraints on taxation include narrow tax base, overwhelming reliance on taxes on foreign trade (export and import duties) and indirect taxation (sales, excise and value-added taxes).

[3] Bhutan and Maldives are excluded from the study as consistent data are not available for these countries.

In 1980 taxes as a proportion of GDP ranged between 6.5 per cent in Nepal to nearly 18 per cent in Sri Lanka (Table 1). The mean tax revenue as a proportion of GDP stood at a meagre 10.4 per cent in the sampled countries. Tax collection improved marginally after a decade in 1990 with the exception of Bangladesh. In 1990 the mean tax revenue as a proportion of GDP stood at 10.78 per cent. In 1999 tax revenue as a proportion of GDP ranges between 7.1 per cent in India to nearly 15 per cent in Sri Lanka. The average tax revenue as a proportion of GDP was 10.76 which is marginally lower than the previous decade.

Unless a fundamental tax reform is undertaken and implemented, tax collection will remain stagnant in and around the present levels in these countries. Measures of an effective, successful tax reform include: (1) increase or decrease of existing taxes, (2) creation of new sources of tax revenue and (3) improved administrative enforcement of tax laws.

Table 1

Government Taxes, Expenditure and Fiscal Balance as a Percentage of GDP

	Taxes			**Total Expenditures**			**Fiscal Balance**		
	1980	**1990**	**1999**	**1980**	**1990**	**1999**	**1980**	**1990**	**1999**
Bangladesh	6.8	5.6	7.2	17.1	12.4	15.1	-9.1	-0.4	-6.1
India	6.9	8.0	7.1	13.8	16.5	16.2	-5.1	-4.3	-4.1
Nepal	6.5	7.0	8.5	14.9	19.0	18.6	-6.8	-10.0	-7.7
Pakistan	13.9	14.0	14.1	25.0	25.9	23.9	-4.8	-6.5	-6.3
Sri Lanka	17.8	19.3	16.9	35.8	28.7	27.3	-22.5	-10.0	-8.9
Average*	10.38	10.78	10.76	21.32	20.5	20.22	-9.66	-6.24	-6.62

Source: Asian Development Bank Statistical Data Base.
* Caculated by the author.

While tax revenue remained low, government expenditures as a proportion of GDP was high in the sampled countries and continued to remain at a high level except in Sri Lanka

where expenditures decreased steadily. The contributing factors for such high government outlays include: (1) Outlays for wages and salaries of civil service, (2) outlays on non-durable goods and services, including those for public sector employees, maintenance, and spending on military equipment, (3) interest payments on the government debt, (4) transfers to sub-national governments (e.g., provincial, local governments etc.) and (5) subsidies and other transfers to state owned enterprises and individuals. Efforts are underway in the sampled countries to rationalise government expenditure which include progressive withdrawal of subsidies to state owned enterprises and removal of subsidies on goods, services and inputs.

SECTION III

CONCEPTUAL FRAMEWORK

The conceptual framework adopted for this study is based on estimating a relevant vector autoregressions (VAR)[4] system in line with the methodology suggested by Sims (1980). The VAR methodology is chosen because of its usefulness in testing the relationships between variables of interest without imposing structural constraints on the parameters to be estimated. Letting x_1, x_2, … x_n be the endogenous variables and z_1, z_2, … z_m be the exogenous variables, a VAR model in matrix notation can be written as:

$$x_t = A_0 + A_1 x_{t-1} + ... + A_p x_{t-p} + B_0 z_t + B_1 z_{t-1} + ... + B_p z_{t-r} + m_t$$

where A_0 is an (n x 1) vector of intercept terms, $A_{1, ..., } A_p$ are (n x n) matrices of coefficients that relate lagged values of endogenous variables to current values of those variables, B_0, …, B_p are (n x m) matrices of coefficients that relate current and lagged values of the exogenous relate to the number of lags of the endogenous and exogenous variables respectively. variables to the current values of the endogenous variables and m_t is an (n x 1) vector of

[4] Vector autoregressions were introduced as an alternative approach to multi-equation modelling through the work of Sims (1980). A VAR makes minimal theoretical demands on the structure of a model. With a VAR one needs to specify a couple of things: (1) the set of variables (endogenous and exogenous) that is believed

stochastic error terms known as impulses or innovations in the language of VAR. *p* and *r*. This model can be estimated by OLS and will yield consistent and efficient estimates of the coefficients.

In this study a four-variable VAR is appropriate with interest rate (*R*), price level (*P*), investment (*I*) and exchange rate (*E*) being identified as the endogenous variables, while budget deficit (*BD*) and private unrequited transfer (*PUT*) are the exogenous variables of the model.

There the actual model that we estimate is as follows:

$$R_t = a_1 + \sum_{i=1}^{m} B_{1i} R_{t-i} + \sum_{i=1}^{p} g_{1i} P_{t-i} + \sum_{i=1}^{q} d_{1i} I_{t-1} + \sum_{i=1}^{r} q_{1i} E_{t-i} + \Psi_{11} BD_t + \Psi_{12} PUT + e_{1t} \quad (1)$$

$$P_t = a_2 + \sum_{i=1}^{m} B_{2i} R_{t-i} + \sum_{i=1}^{p} g_{2i} P_{t-i} + \sum_{i=1}^{q} d_{2i} I_{t-1} + \sum_{i=1}^{r} q_{2i} E_{t-i} + \Psi_{21} BD_t + \Psi_{22} PUT + e_{2t} \quad (2)$$

$$I_t = a_3 + \sum_{i=1}^{m} B_{3i} R_{t-i} + \sum_{i=1}^{p} g_{3i} P_{t-i} + \sum_{i=1}^{q} d_{3i} I_{t-1} + \sum_{i=1}^{r} q_{3i} E_{t-i} + \Psi_{31} BD_t + \Psi_{32} PUT + e_{3t} \quad (3)$$

$$E_t = a_4 + \sum_{i=1}^{m} B_{4i} R_{t-i} + \sum_{i=1}^{p} g_{4i} P_{t-i} + \sum_{i=1}^{q} d_{4i} I_{t-1} + \sum_{i=1}^{r} q_{4i} E_{t-i} + \Psi_{41} BD_t + \Psi_{42} PUT + e_{4t} \quad (4)$$

Where
R_t = Interest rate in period t;
P_t = Price level (CPI) in period t;
I_t = Gross domestic investment (GDI) in period t;
E_t = Exchange rate (domestic currency/US$) in period t;
BD_t = Budget deficit in period t;
PUT_t = Private unrequited transfer in period t; and
e_{1t}, e_{2t}, e_{3t}, and e_{4t} are random error terms with white noise properties.

to be relevant and (2) the maximum lag lengths that are needed to capture most of the effects that the variables have on each other.

SECTION IV

EMPIRICAL RESULTS

Data for our model are extracted from the World Bank's World Table (various issues) and IMF's International Financial Statistical Year Book (various issues). While the identity of some of the variables are clearly defined, it must be pointed out that we have used the discount rate in our definition of (R), CPI as a measure for price level (P) and gross domestic investment in our definition of (I).

We have estimated equations 1-4 by OLS[5] for Bangladesh, India, Nepal, Pakistan and Sri Lanka. The other two members of SAARC namely Bhutan and Maldives have been left out since data on some of the variables could not be obtained on a consistent basis. A parsimonious representation of the model based on model adequacy and other diagnostics is presented in Tables 2-5. The goodness of fit (R^2-adjusted) of the model is very good and ranges between 42 per cent for Nepal and 92 percent for Pakistan. Durbin's h-statistic does not exceed the critical value of $-1.96 < h < 1.96$ signifying the lack of autocorrelation in the errors terms. Based on the Breusch-Pagan-Godfrey (B-P-G) test we cannot reject the null hypothesis of homoskedasticity since the observed chi-square does not exceed the critical value of 12.5916 with 6 degrees of freedom at the 5 per cent level of significance. Ramsey's RESET test shows the model is adequate and there is no specification error since the observed F-value does not exceed the critical F-value of 4.41 with 1 and 18 degrees of freedom at the 5 per cent level of significance.

[5] One can use Zellner's seemingly unrelated regression (SUR) technique to estimate the four equations. Since each equation contains the same number of lagged endogenous variables, the OLS estimation of each equation will also produce identical and efficient estimates (Gujarati, 1995: 747).

Table 2

Interest Rate Effect of Fiscal Action

	Bangladesh	**India**	**Nepal**	**Pakistan**	**Sri Lanka**
$\mathbf{R_{t-1}}$	0.81474	0.51062	0.57202	0.9501	0.78928
t-value	7.018	2.9	3.372	4.211	3.849
$\mathbf{P_{t-1}}$	-3.66E-04	6.04E-04	4.07E-04	-9.74E-04	3.41E-04
t-value	-1.093	1.868	0.8053	-1.292	0.5972
$\mathbf{E_{t-1}}$	6.58E-04	-6.11E-04	-1.85E-03	1.56E-03	-1.82E-04
t-value	0.721	-0.9342	-1.181	1.015	-7.77E-02
$\mathbf{I_{t-1}}$	1.89E-15	-9.81E-06	2.06E-08	5.74E-04	-5.88E-04
t-value	6.06E-03	-0.7663	1.60E-02	1.973	-0.9514
BD	9.78E-14	6.55E-05	1.71E-07	3.56E-04	-5.79E-04
t-value	0.2483	1.785	6.58E-02	1.679	-0.685
Transfer	2.06E-11	-9.98E-09	-4.89E-05	3.53E-06	1.22E-05
t-value	2.751	-8.03E-03	-0.213	0.6287	0.1828
Constant	1.92E-02	2.84E-02	5.96E-02	2.27E-02	1.25E-02
t-value	2.377	2.989	2.399	1.918	0.7678
$\mathbf{R^2}$**-Adjusted**	0.7932	0.8998	0.4161	0.9176	0.8741
Durbin's h	-1.531	-0.60948	1.0853	Can not be calculated	Can not be calculated
B-P-G Test (DF=6)	7.325	5.537	5.86	11.073	8.051
RESET (2) Test (DF1=1 & DF2=18)	0.16821	2.895	2.01E-02	1.7247	3.65E-02

The primary point of interest is the coefficient associated with the variable BD. First, the estimated coefficient is positive for all countries (except Sri Lanka) but it is very small in magnitude. Secondly, the coefficient of BD is statistically insignificant for all countries at the usual 5 per cent level of significance. However, the coefficient of BD for India becomes statistically significant at the 10 per cent level (critical value = 1.729 with 19 degrees of freedom). Based on the above results we can conclude that budgetary action does not have any perceptible influence on the domestic interest of the sampled countries. Nevertheless, if we relax the level of significance to 10 per cent, we see that budgetary action tends to raise domestic interest rate in the Indian economy.

The above finding that government budget deficits have no significant effect on interest rates is consistent with a large number of studies namely Giannaros and Kolluri (1989), Darrat (1989, 1990) and Findlay (1990)[6].

Table 3 summarises the results of fiscal action on the aggregate price level. The model has an excellent fit with a very high R^2 in excess of 99 per cent for all countries. The model has no autocorrelation based on the Durbin's h-statistic and errors are homoskedastic based on the B-P-G test. The model is also adequate as shown by the RESET test.

Once again our primary concern centres on the coefficient of BD. Once again, the coefficient is small in magnitude for all countries in our sample. However, it is positive for India and Pakistan but the coefficient is statistically insignificant for Pakistan but statistically significant for India at the 10 per cent level. In the case of Bangladesh, Nepal and Sri Lanka, the coefficient of BD is negative. In terms of statistical significance the coefficient of BD is insignificant for Nepal and Sri Lanka but is significant in the case of Bangladesh. Thus, in terms of the price effect, fiscal action has opposite effects in Bangladesh and India. Expansionary fiscal action tends to increase aggregate price level in India but reduces the price level in Bangladesh, although the magnitude of increase or decrease is very small indeed.

Our finding on the possible relationship between the rate of inflation and deficits fits in with a wide variety of empirical studies done elsewhere. Crozier (1976) found no causal relationship between deficits and the Canadian inflationary surge in the 1970s[7].

[6] In contrast, Zahid (1988) and Liargovas et al. (1997) have found that large government deficits cause high interest rates.

[7] Other studies found a positive relationship between deficits and inflation. These include Hafer and Hein (1988) for Peru, Dogas (1992) for Greece, Metin (1995) for Turkey among others.

Table 3

Price Effect of Fiscal Action

	Bangladesh	India	Nepal	Pakistan	Sri Lanka
R_{t-1}	73.771	-187.56	29.144	63.34	55.909
t-value	2.446	-1.864	0.5592	1.107	0.6992
P_{t-1}	1.01E+00	1.43E+00	1.01E+00	7.78E-01	1.12E+00
t-value	11.56	7.745	6.5	4.073	5.039
E_{t-1}	-1.67E-01	-1.74E-01	4.70E-01	7.25E-01	2.06E-01
t-value	-0.7048	-0.4668	0.9751	1.864	2.26E-01
I_{t-1}	-8.00E-12	-8.39E-03	-3.50E-04	1.14E-01	-1.43E-01
t-value	-9.87E-02	-1.147	-8.85E-01	1.549	-0.5936
BD	-2.22E-10	3.87E-02	-1.26E-03	7.81E-03	-0.27097
t-value	-2.167	1.844	-1.57E+00	0.1454	-0.8228
Transfer	7.03E-09	3.76E-04	-5.65E-02	2.17E-04	-1.18E-02
t-value	3.608	5.29E-01	-0.7995	0.1526	-0.4561
Constant	-1.76E-01	5.20E+00	-3.48E+00	-6.64E-01	-6.10E+00
t-value	-8.36E-02	0.9573	-0.4554	-0.2211	-0.9586
R^2-Adjusted	0.9982	0.9973	0.9972	0.9987	0.9955
Durbin's h	1.972	-3.84E-01	-0.13941	1.4083	Can not be calculated
B-P-G Test (DF=6)	10.385	3.782	4.124	3.098	4.385
RESET (2) Test (DF1=1) & DF2=18	0.975	4.974	1.62	0.973	2.84

Table 4 contains the result of fiscal action on the exchange rates of the sampled countries. The overall fit of the model is very good with R^2 in excess of 99 per cent. There

Table 4

Exchange Rate Effect Of Fiscal Action

	Bangladesh	**India**	**Nepal**	**Pakistan**	**Sri Lanka**
$\mathbf{R_{t-1}}$	4.67E+01	-20.136	15.494	-51.737	27.719
t-value	2.368	-0.6326	1.312	-2.134	1.129
$\mathbf{P_{t-1}}$	9.89E-02	9.35E-02	-6.21E-02	1.38E-01	7.77E-02
t-value	1.738	1.598	-1.766	1.705	1.136
$\mathbf{E_{t-1}}$	0.55362	8.31E-01	1.09E+00	6.02E-01	7.52E-01
t-value	3.572	7.025	9.996	3.648	2.68E+00
$\mathbf{I_{t-1}}$	4.82E-12	8.46E-04	-4.18E-05	-1.76E-02	-8.44E-02
t-value	9.10E-02	0.3656	-0.4656	-0.5627	-1.14E+00
BD	3.47E-11	8.62E-03	-1.16E-03	1.28E-02	-5.45E-02
t-value	0.5181	1.299	-6.43E+00	0.5617	-0.5391
Transfer	-2.20E-10	-5.02E-04	3.77E-03	-7.82E-04	3.78E-03
t-value	-0.1727	-2.24E+00	0.2354	-1.296	0.4743
Constant	-1.44E-01	9.43E-02	-1.06E+00	4.02E+00	-1.09E+00
t-value	-1.05E-01	5.49E-02	-0.6111	3.158	-0.556
$\mathbf{R^2}$**-Adjusted**	0.986	0.9885	0.9973	0.988	0.9893
Durbin's h	0.19455	-7.35E-01	-1.7372	-1.2636	Can not be calculated
B-P-G Test (DF=6)	8.246	8.47	10.119	9.765	6.159
RESET (2) Test (DF1=1 & DF2=18)	0.92183	3.3645	3.45E+00	0.28041	1.05E+00

seems to be no autocorrelation or heteroskedasticity as shown by Durbin's h-statistic and B-P-G test respectively. The RESET test also indicates that the model is adequate and properly specified.

In Table 4 the primary focus is on the magnitude, sign and significance of the coefficient of BD. The coefficients are very small in magnitude for the sampled economies. Secondly, the coefficients are positive for Bangladesh, India and Pakistan but are statistically

insignificant. On the other hand, the coefficients are negative but statistically significant for Nepal and negative but statistically insignificant for Sri Lanka. Thus, it may be concluded that fiscal action does not have any perceptible influence on the exchange rates of the sampled countries except Nepal where increased government expenditure tends to appreciate the Nepali currency. This is a non-conventional result but can be theoretically justified by the monetary theory of exchange rate determination[8].

SECTION V

SUMMARY AND CONCLUSION

This study has examined the issue of crowding out phenomenon along with its related effects of fiscal actions in five South Asian economies using a VAR model. Based on the results we found that budgetary action does not have any perceptible influence on the domestic interest of the sample countries. Nevertheless, if we relax the level of significance to 10 per cent, there is evidence of budgetary action tending to raise domestic interest rate in the Indian economy. Earlier study by Kulkarni and Erickson (1995) on India found no interest rate effect due to fiscal action. Kulkarni and Erickson (1975) argued that interest rates in India are controlled by the Reserve Bank of India and banks follow the guidelines set by the Reserve Bank.

In terms of the price effect, fiscal action has opposite effects in Bangladesh and India and no price effect in Nepal, Pakistan and Sri Lanka. Expansionary fiscal action tends to increase aggregate price level in India but reduces the price level in Bangladesh, although the magnitude of increase or decrease is very small.

Lastly, it was found that fiscal action does not have any perceptible influence on the exchange rates of the sampled countries except Nepal where increased government expenditure tends to appreciate the Nepali currency. This is a non-conventional result. Such a result can be theoretically explained by the monetary theory of exchange rate determination.

[8] Refer to Rivera-Batiz and Rivera-Batiz (1994) Chapter 19.

The results obtained in this study have enormous policy implications for LDCs. The results will allay fears among policy planners in LDCs about the alleged deleterious effects of fiscal actions. Thus, more and not less of fiscal actions is recommended for accelerating growth in LDCs.

Appendix

Table A1

Government Budget: deficit (-) or surplus

	Bangladesh (Taka)	India (Billion Rupees)	Nepal (Billion Rupees)	Pakistan (Billion Rupees)	Sri Lanka (Billion Rupees)
1970	na	-13.6	24	-3.94	-0.873
1971	na	-16	-39	-3.069	-1.023
1972	na	-21.8	-125.8	-2.583	-1.168
1973	-864000000.00	-17	-222.8	-4.554	-0.960
1974	-330000096.00	-23.600	-247.6	-5.145	-0.767
1975	1444000000.00	-31.970	-236.4	-11.466	-1.704
1976	-3728000000.00	-36.870	-422.0	-12.239	-2.518
1977	209000000.00	-37.930	-575.7	-12.580	-1.671
1978	4273999872.00	-50.790	-582.0	-13.247	-5.290
1979	874000128.00	-62.980	-587.7	-17.997	-6.300
1980	4976001024.00	-88.630	-705.0	-13.344	-12.157
1981	-7395999744.00	-87.320	-728.2	-16.138	-10.518
1982	3135000064.00	-107.340	-1590.5	-15.351	-13.927
1983	9002999808.00	-133.310	-2953.9	-24.784	-12.846
1984	2872999936.00	-175.800	-2984.9	-25.928	-10.482
1985	-5923999744.00	-222.540	-3379.6	-33.783	-15.678
1986	-2600999936.00	-271.950	-3637.0	-46.917	-18.202
1987	-6625000960.00	-278.810	-3902.4	-48.783	-17.073
1988	-5880999936.00	-320.600	-4280.3	-42.426	-28.195
1989	-2828000000.00	-361.790	-8013.5	-56.982	-21.778
1990	-7375709	-434.580	-7013.2	-46.232	-25.153
1991	na	-358.260	-9915.0	-77.105	-35.197
1992	na	-399.090	-10054.0	-95.418	-22.912
1993	na	-605.280	-10359.0	-118.999	-32.084
1994	na	-567.530	-7463.0	-108.591	-49.474
1995	na	-656.937	-10001.0	-89.291	-55.196
1996	14317600000	-648.420	-12563.0	-90.00	-59.931

Source: World Bank World Tables (various years).

References

Asian Development Bank, "Statistical Data of DMCs".

Carlson, K.M. and R.W. Spencer (1975), "Crowding Out and Its Critics", Federal Reserve Bank of St. Louis: 2-18.

Chowdhury, K. (1998), "Socio-Economic Performance and Structural Adjustment in SAARC Countries", *Indian Economic Journal*, Conference Volume: 322-336.

Crozier, R. B. (1976), "Deficit Financing and Inflation: Facts and Fiction", Occasional Papers No. 3, Conference Board of Canada.

Darrat, A.F. (1989), "Fiscal Deficits and the Long-Term Interest Rates: Further Evidence from Annual Data", *Southern Economic Journal*, Vol. 56, No. 2: 363-374.

Darrat, A.F. (1990), " Structural Federal Deficits and Interest Rates: Some Causality and Co-integration Tests", *Southern Economic Journal*, Vol. 56, No 3: 752-759.

Dogas, D. (1992), "Market Power in a Non-monetarist Inflation Model for Greece", *Applied Economics*, Vol.24: 367-378.

Findlay, D.W. (1990), "Budget Deficit, Expected Inflation and Short-Term Real Interest Rates", *International Economic Journal*, Vol. 4, No 3: 41-53.

Friedman, B. (1978), "Crowding Out or Crowding In? Economic Consequences of Financing Government Deficits", Brookings Papers on Economic Activity, Vol 3:593-654.

Giannaros, , D.S. and Kolluri, B.R. (1989), "The Impact of Budget Deficits on Real Interest Rates: An International Empirical Investigation", *International Economic Journal*, Vol.3, No 2: 17-25.

Gujarati, D.N. (1995), *Basic Econometrics*, Third Edition, McGraw-Hill: Sydney.

Hafer, R.W. and S.E. Hein (1988) "Further Evidence on the Relationship between Federal Government Debt and Inflation", *Economic Inquiry*, Vol. 26:239-251.

International Monetary Fund (IMF), *International Financial Statistics Year Book* (various issues).

Kulkarni, K.G. and E.L. Erickson (1995), "Is Crowding Out Hypothesis Evident in LDCs?: A Case of India", *The Indian Economic Journal*, Vol 43 (1):116-126.

Liargovas, P. et al. (1997), "The Relationship Between Government Budget Deficits and Interest Rates in Greece", *International Review of Economics and Business*, Vol. 44, No. 4: 807-817.

Metin, K. (1995), "An Integrated Analysis of Turkish Inflation", *Oxford Bulletin of Economics and Statistics*, Vol. 57: 513-533.

Rivera-Batiz, F.L and L.A. Rivera-Batiz (1994), *International Finance and Open Economy Macroeconomics*, Second Edition, Macmillan: New York.

Sims, C.A. (1980), “Macroeconomics and Reality”, *Econometrica*, Vol 48:1-48.

Stiglitz, J.E. (1994), “The Role of The State in Financial Markets”, Proceedings of the World Bank Annual Conference on Development Economics, 1993, World Bank, Washington DC: 7-52.

Taylor, L. (1983), *Structuralist Macroeconomics*, Basic Books: New York

World Bank, *World Tables* (various issues).

Zahid, K.H. (1988), “Government Deficits and Interest Rates”, *American Economic Review*, Vol. 77, No 5: 1007-1012.