

The Pakistan Development Review
36 : 2 (Summer 1997) pp. 115—129

Foreign Aid and the Public Sector: A Model of Fiscal Behaviour in Pakistan

ZAFAR IQBAL

The main aim of this paper is to demonstrate the impact of foreign capital inflows on government's fiscal behaviour in Pakistan. Government's fiscal response is measured in terms of social, non-development, and development expenditures as well as revenues. This paper specifies and estimates a fiscal behaviour model for the period 1976–95. The three-stage least squares results suggest that foreign capital flows into the public sector have strong positive impact on social and non-development expenditures and, in contrast to what the government and donor agencies believe, have little effect on development spending. In other words, proceeds from foreign loans and aid are largely consumed rather than invested productively. The results also reveal the strong substitutable interdependence between social and non-development expenditures. Furthermore, the finding clearly demonstrates that foreign assistance causes a strong shift of public domestic resources from development projects to non-development activities. In addition to the above, the results show that a large fraction of government revenues is used to finance social and non-development expenditures. The results also demonstrate that foreign assistance enhances taxation efforts of the Government of Pakistan.

I. INTRODUCTION

Economists began about 40 years ago to map the linkages between foreign aid and economic activities (e.g., investment, saving, and economic growth) for developing countries. Gradually, their analysis has become more sophisticated. The development of the two-gap models [for example, Chenery and Bruno (1962); McKinnon (1964); Chenery and Strout (1966); Adelman and Chenery (1966); Chenery and McEwan (1966); Landau (1971) and Weisskopf (1972, 1972a), among others] was an important contribution to the literature of economic development. The central idea of the two-gap analysis is that foreign aid can serve as a means of breaking the bottlenecks, thereby permitting fuller utilisation of all resources and a continuation of development in an economy. Two-gap models, however, have been subject to a number of general criticisms, some directed more specifically at their application to analysing the impact of foreign aid on economic growth in developing countries. For example, Bruton (1969); Griffin and Enos (1970); Findlay (1973); Voivodas (1973) and Mosley (1980)

Zafar Iqbal is Research Economist at the Pakistan Institute of Development Economics, Islamabad.

Author's Note: This paper is based on the author's Ph.D. dissertation (University of Tilburg, 1996). The author is grateful to his supervisors, Professor Jaffrey James and Professor Graham Pyatt, for their guidance during his studies and research project. The author is also thankful to anonymous referees of this journal for their helpful comments on an earlier version of this paper.

all argued that foreign aid can impede rather than facilitate development in recipient countries. More recently, two-gap models have been extended into three-gap models [for example, Bacha (1990); Taylor (1990, 1990a, 1993, 1994); Solimano (1990) and Iqbal (1995, 1996)], adding a fiscal constraint to the traditional foreign-exchange constraint and savings constraint as a third gap limiting the growth prospects of highly indebted developing economies. The fiscal gap takes into account the fiscal limitations on policy choice that have become crucial in many developing economies. In such cases, the fiscal constraint is intended to reflect potential limitations on the availability of resources to finance the public investment that may be required to support a given level of output. Two-gap and three-gap models, however, have been mainly criticised because of one strong assumption common to both that foreign assistance provides a one-to-one increment to the capital stock, as there is a range of mechanisms through which foreign aid may displace domestic capital formation and enhance domestic consumption in recipient countries.

Another recent advancement in aid literature is the analysis about the effectiveness of foreign aid on government's fiscal behaviour in developing countries. For example, empirical studies by Heller (1975); Mosley *et al.* (1987); McGuire (1987); Gang and Khan (1986, 1991, 1994); Khilji and Zampelli (1991); Pack and Pack (1990, 1993); Khan and Hoshino (1992) and White (1993, 1994), among others, are important contributions to this topic. However, all these studies come to conflicting conclusions about the effectiveness of foreign assistance in terms of the public sector's fiscal behaviour. Proponents and opponents of foreign aid have each produced evidence to support their own particular point of view. In general, these studies explicitly recognise that foreign aid reduces taxation efforts and is substituted between public investment and public consumption. I believe, however, that this evidence is flawed because of some theoretical and methodological shortcomings. This paper aims to contribute not only to the general debate on how the effects of foreign aid might be evaluated but also to the specific debate on the effect of foreign aid on the public sector's fiscal behaviour in Pakistan.

This analysis is chosen because of the ongoing hot debate between the aid-donor agencies and the policy-makers in Pakistan. It has policy implications not only for the government's foreign borrowing strategy but also for its fiscal policy. Like most developing countries, the role of the public sector in economic activities has been considerable in Pakistan. Moreover, increases in taxes have become increasingly difficult for the public decision-makers because of economic cost and political resistance by the masses. The existing literature has paid little attention to the impact of foreign aid on fiscal behaviour in the case of Pakistan. To my knowledge, there is only one study, by Khilji and Zampelli (1991), which is built upon McGuire's work on Israel, testing the fungibility hypothesis for Pakistan. Taking time-series data for the

period 1960–86 and using full information maximum likelihood, the study found that both US military and non-military aid to Pakistan were fully transferred into fungible resources with an impact on public spending less significant than expected.

This paper, however, diverges from Khilji and Zampelli and the other aforementioned studies on this topic for five reasons. First, it presents systematic fiscal accounts of the public sector. Second, contrary to Khilji and Zampelli, this paper disaggregates government's total expenditure into three main components, namely, non-development expenditure, social expenditure, and development expenditure. It is worthwhile to note that in this paper social expenditure is treated as public investment on human capital because it mainly includes government's expenditures on education and health. Third, we provide an accurate judgement of the targeted fiscal variables fixed by the policy-makers; no one has bothered to collect the necessary data before. Fourth, this paper re-specifies the loss function adopted by the policy-makers and develops a simple macroeconomic fiscal framework. Furthermore, we use an iterative three-stage least squares procedure to estimate the simultaneous equations model.¹ Finally, this paper uses the latest available consistent time-series data for the period 1976–95 of an individual country (Pakistan) as the empirical aid literature [for example, Riddell (1987); Mosley (1987); Pack and Pack (1990, 1993) and Gang and Khan (1991)] emphasise the need for time-series analysis of individual countries (instead of cross-section countries) to draw concrete and country-specific policy implications. In sum, this paper overcomes the limitations of earlier empirical literature on this topic and provides more reliable estimates with improved methodological framework using consistent time-series data for the period 1976–1995 in the case of Pakistan. The rest of the paper proceeds as follows. Section II explains how the budget constraint is derived. At the same time, this section develops the fiscal behaviour model for Pakistan. Section III briefly describes the data. Section IV estimates the model and interprets the results. The final section concludes the main findings, with some policy implications.

II. THE BUDGET CONSTRAINT AND THE FISCAL BEHAVIOUR MODEL

The Budget Constraint

This section, with its main goals to derive the budget constraint and to develop the fiscal behaviour model for the public sector in Pakistan, disaggregates the combined account of domestic economy into three main institutions: the private sector, the public sector, and the rest of the world. These accounts are reported in Table 1, which provides a complete picture of financial interdependence and the interactions among the private sector, the public sector, and the rest of the world. It shows how savings are allocated to investment within a sector and how the surplus capital is transferred to the other sectors.

¹The iterative three-stage least squares procedure is asymptotically full information maximum likelihood as used by Khilji and Zampelli (1991) in such type of analysis.

Table 1

Accounting Identities of the Fiscal Behaviour Model for Pakistan

	Capital Accounts of Institutions			All other Accounts (4)	Σ
	Private (1)	Public (2)	ROW (3)		
Capital Accounts					
Private (1)	*	R_p	F_p	S_p	$R_p+F_p+S_p=SS_p+KF+I_p$
Public (2)	SS_p	*	F_g	T	$SS_p+F_g+T=R_p+\Delta R+G$
ROW (3)	KF	ΔR	*	M	$KF+\Delta R+M=F_p+F_g+X$
All other Accounts (4)	I_p	$C_g+SE_g+D_g=G$	X	*	I_p+G+X = S_p+T+M
	SS_p+KF+I_p	$R_p+\Delta R+G$	F_p+F_g+X	S_p+T+M	
Σ	=	=	=	=	*
	$R_p+F_p+S_p$	SS_p+F_g+T	$KF+\Delta R+M$	I_p+G+X	

In accordance with accounting principles, the total of each row in Table 1 must be equal to the total of its corresponding column. In the flow-of-funds block—capital accounts of the institutions—each column represents lending by the concerned sector, while each row represents the borrowing by the concerned sector from the other sectors. The first row of Table 1 refers to total funds of the private sector, which includes its own savings (S_p), capital transfers from the rest of the world (F_p), and repayment of internal loans by the public sector (R_p). The corresponding column indicates that these funds are used for the private sector's own investment (I_p), the capital transferred to the public sector (SS_p) through purchasing public bonds, currency issued by the government, other direct and indirect loans to the public sector, and capital flight (KF) to the rest of the world. The capital flight defined in this paper is the errors and omissions in the balance of payments—assuming, as we are, that these errors are attributed to the private sector, since the public sector keeps a formal record of all transactions made with the rest of the world.

Row 2 in Table 1 represents total funds available to the public sector, which includes its own revenues (T), capital transferred from the rest of the world (F_g), and capital transferred from the private sector (SS_p). Total uses of these funds are reported in the corresponding column 2, which indicates that the public sector utilises its funds for non-development expenditure (C_g), social expenditure (SE_g) and development expenditure (D_g), [which are equal to aggregate public expenditures (G)], and repayments of domestic loans to the private sector (R_p); the balancing item is net changes in official foreign exchange reserves (ΔR) recorded in the balance of payments of the domestic economy. Finally, the total available funds and their uses by the rest of the world are reported in row 3 and column 3, respectively. The total available funds to

the rest of the world are their own exports, which are imports of the domestic economy (M), net changes in the foreign exchange reserves, and private capital flight. The total uses of these funds account for capital transferred to the private sector (F_p), capital transferred to the public sector (F_g), and exports of the domestic economy (X). Figure 1 depicts how the public sector's deficit is financed through capital transferred from the private sector and the rest of the world.

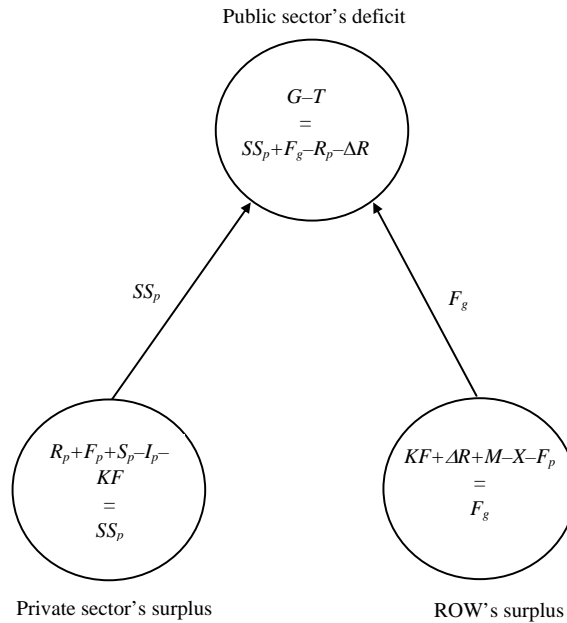


Fig. 1. Financing of the Public Sector's Deficit.

Surplus of the private sector: $R_p + F_p + S_p - I_p - KF = SS_p \quad \dots \quad (1)$

+
Surplus of the ROW: $KF + \Delta R + M - X - F_p = F_g \quad \dots \quad (2)$

=
Deficit of the public sector: $G - T = (F_g - \Delta R) + (SS_p - R_p)$
or
 $(C_g + SE_g + D_g) - T = NF_g + NSS_p \quad \dots \quad (3)$

The above Equations (1)–(3) must satisfy the budget constraint for any time-period. Equation (3) reveals that the public sector's budget deficit is partially financed by domestic net capital transferred from the private sector (NSS_p) redefined as $(SS_p - R_p)$ and the remaining deficit through the net capital transferred from the rest of the world (NF_g) redefined as $(F_g - \Delta R)$. This framework, however, provides the simplest and

systematic way of formulating the budget constraint for the public sector. Rewriting Equation (3) gives:

$$C_g + SE_g + D_g = NSS_p + T + NF_g \quad \dots \quad \dots \quad \dots \quad (4)$$

The budget constraint given in Equation (4) can be decomposed into two sub-constraints reflecting the alternative uses of the public sector revenues and net foreign capital inflows in the following way:

$$D_g = NSS_p + (1-\mu_1)T + (1-\mu_2)NF_g \quad \dots \quad \dots \quad \dots \quad (5)$$

$$C_g + SE_g = \mu_1 T + \mu_2 NF_g \quad \dots \quad \dots \quad \dots \quad (6)$$

The first constraint given in Equation (5) shows that public development expenditure can be financed partly by public revenue, domestic borrowing, and foreign loans. $(1-\mu_1)$ and $(1-\mu_2)$ are the respective fractions of public revenue and net foreign capital inflows going to development expenditure. Following Heller (1975); Gang and Khan (1986, 1991, 1994) and Khan and Hoshino (1992), the rationale for two budget constraints is based on a strong assumption that government does not use domestic borrowing to finance non-development expenditures.² The second constraint given in Equation (6) reflects the μ_1 proportion of public revenue and μ_2 proportion of net foreign capital inflows used for public current and socio-economic expenditures. Both the budget constraints are the nucleus of the following fiscal behaviour model for Pakistan.

The Fiscal Behaviour Model

Following Mosley *et al.* (1987); Binh and McGillivray (1993) and White (1993, 1994), we take the commonly used quadratic loss function adopted by the policy-makers in developing countries:³

$$U = \alpha_0 - \alpha_1/2(D_g - D_g^*)^2 - \alpha_2/2(SE_g - SE_g^*)^2 - \alpha_3/2(C_g - C_g^*)^2 - \alpha_4/2(T - T^*)^2 - \alpha_5/2(NSS_p - NSS_p^*)^2 \quad \dots \quad \dots \quad \dots \quad \dots \quad (7)$$

where $\alpha_i \geq 0$ for all i and the variables with asterisks represent the target variables (i.e., C_g^* for non-development expenditure, SE_g^* for socio-economic expenditure, D_g^* for development expenditure, NSS_p^* for net domestic borrowing, and T^* for total revenue) that policy-makers plan to meet. The functional form given in Equation (7) reflects

²The assumption that the government does not use domestic borrowing to finance non-development expenditures is obviously not correct for Pakistan. The government has consistently resorted to domestic borrowing from the banking system and the private sector to cover its fiscal deficit. For further analysis in the area, this assumption needs to be relaxed.

³For other alternative utility loss functions, see Heller (1975); Khilji and Zampelli (1991); Gang and Khan (1991) and Khan and Hoshino (1992).

diminishing marginal utility for each of the variables D_g , SE_g , C_g , and NSS_p as they rise above their target levels and by the specific set of α parameters for each variable. This loss function implies that the farther the observed variables from the respective desired target variables, the lower the level of government utility. In this paper, policy-makers in Pakistan are assumed to maximise the objective function reported in Equation (7), subject to budget constraints given in Equations (5) and (6) in the following lagrangean way:

$$\begin{aligned} \max V = & \alpha_0 - \alpha_1/2(D_g - D_g^*)^2 - \alpha_2/2(SE_g - SE_g^*)^2 - \alpha_3/2(C_g - C_g^*)^2 - \alpha_4/2(T - T^*)^2 - \\ & \alpha_5/2(NSS_p - NSS_p^*)^2 + \lambda_1[D_g - NSS_p - (1-\mu_1)T - (1-\mu_2)NF_g] + \lambda_2[C_g + \\ & SE_g - \mu_1T - \mu_2NF_g] \quad \dots \quad \dots \quad \dots \quad \dots \quad (8) \end{aligned}$$

The first-order conditions are:

$$\partial V/\partial D_g = -\alpha_1(D_g - D_g^*) + \lambda_1 = 0 \quad \dots \quad \dots \quad \dots \quad (9)$$

$$\partial V/\partial SE_g = -\alpha_2(SE_g - SE_g^*) + \lambda_2 = 0 \quad \dots \quad \dots \quad \dots \quad (10)$$

$$\partial V/\partial C_g = -\alpha_3(C_g - C_g^*) + \lambda_2 = 0 \quad \dots \quad \dots \quad \dots \quad (11)$$

$$\partial V/\partial T = -\alpha_4(T - T^*) - \lambda_1(1-\mu_1) - \mu_1\lambda_2 = 0 \quad \dots \quad \dots \quad \dots \quad (12)$$

$$\partial V/\partial NSS_p = -\alpha_5(NSS_p - NSS_p^*) - \lambda_1 = 0 \quad \dots \quad \dots \quad \dots \quad (13)$$

$$\partial V/\partial \lambda_1 = D_g - NSS_p - (1-\mu_1)T - (1-\mu_2)NF_g = 0 \quad \dots \quad \dots \quad \dots \quad (14)$$

$$\partial V/\partial \lambda_2 = C_g + SE_g - \mu_1T - \mu_2NF_g = 0 \quad \dots \quad \dots \quad \dots \quad (15)$$

Assuming $NSS_p^* = 0$,⁴ and substituting out the λ 's and rearranging the first-order conditions, we get:

$$SE_g = \beta_1 SE_g^* - (1-\beta_1)C_g^* + \mu_1(1-\beta_1)T + \mu_2(1-\beta_1)NF_g \quad \dots \quad \dots \quad (16)$$

$$C_g = (1-\beta_1)C_g^* - \beta_1 SE_g^* + \beta_1 \mu_1 T + \beta_1 \mu_2 NF_g \quad \dots \quad \dots \quad (17)$$

$$D_g = (1-\beta_2)D_g^* + \beta_2[(1-\mu_1)T + (1-\mu_2)NF_g] \quad \dots \quad \dots \quad (18)$$

$$T = \beta_3 T^* - \beta_4 \mu_1 (C_g - C_g^*) + \beta_5 (1-\mu_1)[D_g - (1-\mu_2)NF_g] \quad \dots \quad \dots \quad (19)$$

⁴Following Heller (1975); Gang and Khan (1991) and Khan and Hoshino (1992), the target public sector domestic borrowing is assumed to be zero (i.e. $NSS_p^* = 0$) in order to simplify the later analysis. Again, this assumption does not seem to be correct for Pakistan. It is often argued that many of Pakistan's macroeconomic problems can be traced to the fact that the government has been unable to keep its domestic borrowing close to the target level. Therefore, this assumption needs to be relaxed for further analysis in the area.

where

$$\beta_1 = \alpha_2/(\alpha_2+\alpha_3)$$

$$\beta_2 = \alpha_5/(\alpha_1+\alpha_5)$$

$$\beta_3 = [\alpha_4/\alpha_4+\alpha_5(1-\mu_1)^2]$$

$$\beta_4 = [\alpha_3/\alpha_4+\alpha_5(1-\mu_1)^2]$$

$$\beta_5 = [\alpha_5/\alpha_4+\alpha_5(1-\mu_1)^2]$$

In the earlier literature on the fiscal behaviour model, one of the main shortcomings was the accurate judgement of the desired level of target variables. To estimate each target variable, various authors [for example, Heller (1975); Mosley *et al.* (1987); Gang and Khan (1991); Khan and Hoshino (1992) and Gupta and Lensink (1995)] specified regression equations relating the actual variables to some instruments. The predicted values from these regressions are then used as the target variables. As rightly mentioned by Binh and McGillivray (1993) and White (1994), there are two problems with this procedure. First, the target variables produced by this approach may not be consistent with the budget constraints. The second problem is even more serious, if the fitted variable is very closely related to the observed variable (i.e., R^2 very close to one); this implies that we are regressing observed variable on itself. Alternatively, if the R^2 is low, it is difficult to see how the fitted values calculated by using the estimated coefficients represent the target variables. In fact, no one has bothered to collect the necessary data for target variables. Therefore, it appears that the estimates of the budget-constraint parameters and the other reduced-form parameters based on this approach, quite apart from their other shortcomings, can not be treated with much confidence, and hence may provide misleading results about the impact of foreign capital inflows on government's fiscal response. To avoid these problems, this study uses the annual budget estimates of social expenditure, non-development expenditure, development expenditure, and revenues, all representing the targets for the respective variables.

III. DATA REQUIREMENTS

Consistent time-series data for the period 1976–95 are taken for the estimation of the model of fiscal behaviour in Pakistan. The data set has a unique feature in the sense that the matrix format reported in Table 1 is used because of its advantage as a means of compiling consistent data. The data sources are primarily the *Economic Surveys* and the *Annual Reports* of the State Bank of Pakistan. All the data are taken at current market prices. A relatively large sample size would seem to be more appropriate, but the necessary data, particularly for target variables before 1976, are not readily available.

IV. EMPIRICAL RESULTS AND INTERPRETATIONS

Since the model developed in this paper contains simultaneous equations and cross-equation restrictions, it suggests the need for a simultaneous-equation estimation procedure. Equations (16)–(19) are estimated using a systems-estimation procedure, namely, iterative three-stage least squares (ITSL). Using ITSL to simultaneously estimate all the equations of a system has two major advantages over equation-by-equation estimation procedure (i.e., ordinary least squares). First, it is often the case that the residuals of various equations in a system are correlated with each other. The ITLS procedure takes account of this correlation to improve the efficiency of the coefficients, using all the available information in the estimation. Second, if we want to constrain the coefficient(s) of one equation to be the same or to be related to the coefficient(s) of the other equation(s) in a system, this is only possible if all of the equations are estimated jointly to obtain the unique and consistent estimate of the coefficients, which also satisfies the cross-equation restrictions. Furthermore, the budget constraints imply that Equations (16)–(19) are not independent; therefore, one equation must be omitted in estimating the equation system. In this paper, Equation (16) for the public sector social expenditure is omitted in the estimation procedure and its coefficients are derived from the restrictions in Equation (17).

Using data for the period 1976–95, three-stage least squares estimates are summarised in Tables 2 and 3.⁵ The estimated equations describe the government's non-development, social and development expenditures, and taxation behaviour in the presence of foreign capital flows into the public sector. The results are generally satisfactory in the sense that the coefficient signs are mostly as expected and they are generally statistically significant. This paper focuses mainly on the impact of foreign capital inflows to the public sector on four endogenous fiscal variables, namely, SE_g , C_g , D_g , and T . More detailed commentary on the results is offered in the following paragraphs.

Table 2 provides a summary of the key parameters of the fiscal behaviour model for Pakistan. Estimation of Equations (17 to 19) yields the parameters of budget-constraint Equations (5) and (6) and reduced-form coefficients (β 's), showing the government's fiscal response during the period under consideration. Estimates of the impact of foreign capital inflows on each fiscal variable are then derived and the results are reported in Table 3. Both the budget-constraint parameters, μ_1 and μ_2 , are positive and significantly different from zero at 1 percent and 5 percent levels, respectively. The estimate of μ_1 equal to 0.85 indicates that an overwhelming share of government total revenues (i.e., 85 percent) flows to social and non-development expenditures. In other words, only 15 percent of government revenues are used to finance development

⁵It is noted that the gain in efficiency with interactive three-stage least squares procedure may be small when one has only 20 observations to work with.

projects over the period 1976–95. These estimates also verify the fiscal interdependence

Table 2

Iterative 3SLS Key Parameters of the Model

Parameter	Estimate	<i>t</i> -statistic
μ_1	0.849	5.15!
μ_2	1.610	2.34!!
β_1	0.074	1.99!!
β_2	0.019	0.80
β_3	0.872	39.61!
β_4	-0.755	-3.81!
β_5	1.110	0.71

Note: ! and !! denote statistically significant at 1 percent and 5 percent levels, respectively.

Table 3

*Derived Estimates of Social, Non-development, and Development Expenditures, and Revenue Equations***Social Expenditure Equation**

$$SE_g = 0.074SE_g^* - 0.926C_g^* + 0.786T + 1.491NF_g$$

Non-development Expenditure Equation

$$C_g = 0.926C_g^* - 0.074SE_g^* + 0.063T + 0.119NF_g$$

Development Expenditure Equation

$$D_g = 0.981D_g^* + 0.003T - 0.012NF_g$$

Revenue Equation

$$T = 0.872T^* - 0.641(C_g - C_g^*) + 0.168D_g + 0.102NF_g$$

between the development and the non-development budgets. The other key parameter of budget constraint μ_2 provides a somewhat startling result. The estimate of μ_2 equal to 1.61 implies that all foreign aid channelled through the public sector is utilised to finance social and non-development expenditures. In other words, no foreign aid is used to supplement development activities. It is worthwhile to note that the estimated coefficient μ_2 is greater than unity, implying that when foreign capital flows into the public sector are increased, some resources are diverted from development projects to social and non-development activities.⁶

⁶Data also show that over time development expenditure as a percentage of total expenditure was reduced from 38.3 percent in 1975-76 to 18.2 percent in 1995-96 in Pakistan.

The estimates of reduced-form parameters β_1 to β_5 reported in Table 2 show the fiscal response of the public sector. The estimate of β_1 equal to 0.07 demonstrates that setting a lower target for social expenditure leads the public sector to allocate proportionally less domestic resources to social projects (i.e., 7 percent) and more to non-development expenditure (i.e., 93 percent). In this framework, the results clearly show that social expenditure and non-development expenditure are substitutable in the government budget. In the development expenditure Equation (18), the estimated β_2 turns out to be positive but statistically insignificant, implying that the trend in development expenditure is not affected by any increase in government revenues in the presence of foreign aid. However, it seems that development expenditure is closely related to its target fixed by the policy-makers in Pakistan. Turning to revenue Equation (19), the estimate of β_3 equal to 0.87 demonstrates the close link between observed and targeted revenues. With regard to β_4 , if targeted current expenditure exceeds actual current expenditure, then with $\mu_1 > 0$, $\beta_4 < 0$ indicates that the current tax burden is increased. Alternatively, if targeted current expenditure is less than actual current expenditure, then with $\mu_1 > 0$, $\beta_4 < 0$ implies that the current tax burden is reduced. However, the negative coefficient of β_4 implies that the lower the gap between the actual and targeted expenditures, the lesser are the unexpected taxes levied by the tax authorities. Finally, the estimated reduced-form coefficient β_5 in revenue equation is insignificant, suggesting that the revenue decisions of policy-makers are not influenced by development considerations. In other words, the revenue decisions are mainly influenced by the need to meet social and non-development expenditures.

The derived estimates of Equations (16–19) are reported in Table 3. Regarding social expenditure Equation (16) and non-development expenditure Equation (17), we observe that foreign assistance affects social and non-development expenditures positively. These results unambiguously demonstrate that foreign aid has a larger positive effect on social expenditure than on non-development expenditure. One might argue that this result is due to the continuous emphasis of donor agencies, particularly the World Bank and the IMF, that foreign aid should be utilised to enhance the development of the social sector in Pakistan. Currently, under various Structural Adjustment Programmes and the Social Action Programme,⁷ to improve social indicators is a serious concern; these indicators had been very poor in the past. Despite achieving a reasonable growth rate in gross domestic product, Pakistan is still lagging behind in its social sector. Its social indicators are considerably lower than those of

⁷Social Action Programme (SAP) was launched in 1992-93 for five years with the main objectives of improving primary education, primary health, female access to education, nutrition, family planning, and rural water-supply and sanitation. This programme is being assisted by the World Bank, the International Development Association, the Asian Development Bank, as well as by the Netherlands, Japan, and the United Nations Children Emergency Fund. Total allocations of resources under SAP have been Rs 33 billion, Rs 41 billion, and Rs 50 billion during the years 1993-94, 1994-95, and 1995-96, respectively.

some developing countries with comparable per capita incomes. Furthermore, the results show that one unit increase in foreign lending leads to a 1.5 unit increase in social expenditure. This may be a consequence of the Social Action Programme, where the government was committed to provide domestic counterpart to the foreign aid that was offered by the foreign donors. With regard to the link between targeted social expenditure and actual social expenditure, the result reported in Table 3 shows that targeted social expenditure has small effect on the actual level of social expenditure. This implies that the government is consistently off-target.

Turning to the estimates of development expenditure Equation (18) reported in Table 3, we see that foreign capital flows have negative impact on development expenditure. It seems to confirm our earlier finding that some resources are transferred from development projects to social and non-development expenditures when foreign aid is increased. Finally, Table 3 shows the effect of foreign capital inflows on government revenues. The positive estimate of foreign aid in revenue Equation (19) explicates that foreign aid increases government taxation efforts. One explanation might be that loans from the foreign donor agencies, particularly from the World Bank and the International Monetary Fund, are mainly conditional on the government's raising of domestic revenues.

V. CONCLUSIONS AND POLICY IMPLICATIONS

In this paper, an attempt has been made to quantify the relationship between foreign capital inflows and government's fiscal behaviour in Pakistan. This paper, however, overcomes the theoretical and methodological shortcomings of other existing studies on this topic. The fiscal behaviour model has been estimated by iterative three-stage least squares technique for the period 1976–95.

The following major points can be summarised from the empirical analysis. First, in terms of the effects of foreign aid on three types of aggregate public expenditure, namely, social expenditure, non-development expenditure, and development expenditure, the results are truly startling. Corroborative evidence suggests that foreign capital flows channelled through the government have a strong positive impact on social and non-development expenditures. However, such positive impact accentuates the finding that foreign aid has little effect on development expenditure. The results also reveal the strong but not fully substitutable interdependence between the social and non-development expenditures. In addition to the above, the finding clearly demonstrates that foreign assistance causes a strong shift of public domestic resources from development projects to social and non-development expenditures. Second, the results are quite unequivocal in demonstrating that an ample portion of government revenues (i.e., 85 percent) goes to finance social and non-development expenditures. Third, foreign capital flows into the public sector also affect the revenue-raising efforts of the government. The

results show that foreign assistance enhances government taxation efforts in Pakistan.

Some policy implications that can be drawn from these results are dismal. The usual argument about the positive and wholly beneficial impact of foreign capital inflows on social and non-development expenditures appears to be myopic. Foreign aid is not being utilised in the best interest of the country. It is often secured for projects of lower national priority and utilised in an inefficient manner. Policy-makers need to concentrate on the effectiveness of foreign aid. It is, however, suggested that reasonable shares of foreign assistance and domestic revenues should be used for development activities so as to achieve sustainable long-term economic growth.

The paper also suggests that further empirical work on the fiscal behaviour of the public sector may be useful to policy-makers. In this perspective, a further disaggregation of the public revenues and expenditures, with better specification of the determinants of each and further breakdown of foreign assistance (i.e., foreign aid and grants, bilateral and multilateral aid, tied and untied loans), may provide stronger results for better policy formulation. In addition, the assumptions made in the analysis can also be relaxed in further work in the area.

REFERENCES

- Adelman, I. F., and H. B. Chenery (1966) Foreign Aid and Economic Development: The Case of Greece. *The Review of Economics and Statistics* 48: 1–19.
- Bacha, E. L. (1990) A Three-Gap Model of Foreign Transfers and the GDP Growth Rate in Developing Countries. *Journal of Development Economics* 32: 279–296.
- Binh, T., and M. McGillivray (1993) Foreign Aid, Taxes, and Public Investment: A Comment. *Journal of Development Economics* 41: 173–176.
- Bruton, H. J. (1969) The Two-Gap Approach to Aid and Development: Comment. *The American Economic Review* 59: 439–446.
- Chenery, H. B., and A. M. Strout (1966) Foreign Assistance and Economic Development. *The American Economic Review* 56: 680–733.
- Chenery, H. B., and A. McEwan (1966) Optimal Patterns of Growth and Aid: The Case of Pakistan. *The Pakistan Development Review* 6: 209–242.
- Chenery, H. B., and M. Bruno (1962) Development Alternatives in an Open Economy: The Case of Israel. *The Economic Journal* 72: 79–103.
- Findlay, R. (1973) *International Trade and Development Theory*. New York: Columbia University Press.
- Gang, I. N., and H. Khan (1986) Foreign Aid and Public Expenditures in LDCs. *Atlantic Economic Journal* 14: 56–58.
- Gang, I. N., and H. Khan (1991) Foreign Aid, Taxes, and Public Investment. *Journal of Development Economics* 34: 355–369.
- Gang, I. N., and H. Khan (1994) Foreign Aid, Taxes, and Public Investment: A Further

- Comment. *Journal of Development Economics* 45: 165–167.
- Griffin, K. B., and J. L. Enos (1970) Foreign Assistance: Objectives and Consequences. *Economic Development and Cultural Change* 18: 313–327.
- Gupta, K. L., and R. Lensink (1995) Foreign Aid and the Public Sector: A Simulation Approach. *RP 95D21*. University of Groningen, Groningen, The Netherlands.
- Heller, P. S. (1975) A Model of Public Fiscal Behaviour in Developing Countries: Aid, Investment, and Taxation. *The American Economic Review* 65: 429–445.
- Iqbal, Z. (1995) Constraints to the Economic Growth of Pakistan: A Three-Gap Approach. *The Pakistan Development Review* 34: 1119–1133.
- Iqbal, Z. (1996) *Three-Gap Analysis of Structural Adjustment in Pakistan*. Unpublished Ph.D. dissertation. Tilburg University, The Netherlands.
- Khan, H., and E. Hoshino (1992) Impact of Foreign Aid on the Fiscal Behaviour of LDC Governments. *World Development* 20: 1481–1488.
- Khilji, N. M., and E. M. Zampelli (1991) The Fungibility of US Assistance to Developing Countries and the Impact on Recipient Expenditures. *World Development* 19: 1095–1105.
- Landau, L. (1971) Saving Functions for Latin America. In H. B. Chenery (ed) *Studies in Development Planning*. Cambridge, Massachusetts: Harvard University Press. 299–321.
- McGuire, M. C. (1987) Foreign Assistance, Investment, and Defense: A Methodological Study with an Application to Israel, 1960–1979. *Economic Development and Cultural Change* 35: 847–873.
- McKinnon, R. I. (1964) Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation. *The Economic Journal* 74: 388–409.
- Mosley, P. (1980) Aid, Savings, and Growth Revisited. *Oxford Bulletin of Economics and Statistics* 42: 79–95.
- Mosley, P. (1987) *Foreign Aid: Its Defence and Reform*. Lexington: The University Press of Kentucky.
- Mosley, P., J. Hudson, and S. Horrell (1987) Aid, the Public Sector, and the Market in Less Developed Countries. *The Economic Journal* 97: 616–641.
- Pack, H., and J. R. Pack (1990) Is Foreign Aid Fungible: The Case of Indonesia. *The Economic Journal* 100: 188–194.
- Pack, H., and J. R. Pack (1993) Foreign Aid and the Question of Fungibility. *The Review of Economics and Statistics* 75: 258–265.
- Riddell, R. C. (1987) *Foreign Aid Reconsidered*. Baltimore: The Johns Hopkins University Press.
- Solimano, A. (1990) Macroeconomic Constraints for Medium-term Growth and Distribution: A Model for Chile. Country Economics Department, The World Bank. (Working Papers No. 400.)

- Taylor, L. (1990) A Three-Gap Model. In F. D. McCarthy (ed) *Problems of Developing Countries in the 1990s*. Washington, D.C.: World Bank 55–90.
- Taylor, L. (1990a) *Foreign Resource Flows and Developing Country Growth*. Helsinki: WIDER.
- Taylor, L. (1993) *The Rocky Road to Reform*. Cambridge, MA: MIT Press.
- Taylor, L. (1994) Gap Models. *Journal of Development Economics* 45: 17–34.
- Voivodas, C. S. (1973) Exports, Foreign Capital Inflow, and Economic Growth. *Journal of International Economics* 3: 337–349.
- Weiskopf, T. E. (1972) An Econometric Test of Alternative Constraints on the Growth of Underdeveloped Countries. *The Review of Economics and Statistics* 54: 67–78.
- Weiskopf, T. E. (1972a) The Impact of Foreign Capital Inflow on Domestic Savings in Underdeveloped Countries. *Journal of International Economics* 2: 25–38.
- White, H. (1993) Aid and Government: A Dynamic Model of Aid, Income, and Fiscal Behaviour. *Journal of International Development* 5: 305–312.
- White, H. (1994) Foreign Aid, Taxes, and Public Investment: A Further Comment. *Journal of Development Economics* 45: 155–163.