

# Foreign Aid, Domestic Savings and Economic Growth (Pakistan: 1960 to 1988)

NAHEED Z. KHAN and ERIC RAHIM

## INTRODUCTION

One of the core tenets of foreign aid theory, particularly as encapsulated in the two-gap model, is that the insertion of foreign resources via free grants, loans, direct investment etc., into a developing economy sets in motion a causal chain of positive influences in the following broad manner<sup>1</sup>:

aid → increase in investible resources → increase in domestic investment → more rapid rate of economic growth.

Spirited and specific challenges to this approach came from many critics, supported greatly by a number of broad theoretical<sup>2</sup> and empirical analyses. For a large part of the latter, the available evidence pointed to a negative relationship between aid and domestic savings. The evidence was largely based on cross-sectional data, showing that, there was, in addition, reason to suggest a negative relationship between aid and economic growth.<sup>3</sup>

The aim of this study is to provide some quantitative evidence on the relationship between foreign aid, domestic savings and economic growth for Pakistan. The analysis is carried out in three parts. Part one contains the methodology and the description of the data. Part two explores the correlation between aid and several other explanatory variables with Pakistan's savings rate, while part three attempts to analyse and explain the regression findings in terms of the effect of aid on economic growth.

## 1. METHODOLOGY AND DATA

We intend to examine the impact of annual changes in the net economic assistance receipts on changes in two indicators of economic development, domestic

Naheed Z. Khan is associated with the Islamia University, Bahawalpur and Eric Rahim is associated with the University of Strathclyde, Glasgow, Scotland.

<sup>1</sup>See, Chenery's work with Adelman (1966); Bruno (1962); Eckstein (1970); MacEwan (1966) and Strout (1966).

<sup>2</sup>See, Bruton (1969); Myint (1969); Little (1982); Fei and Ranis (1968); Bhagwati (1972); Griffin (1970); Findlay (1972) and Joshi (1970).

<sup>3</sup>See, Areskoug (1973); Griffin and Enos (1970); Rehman (1967, 1968); Heller (1975); Weisskopf (1972); Haavelmo (1965).

savings and economic growth. However, we also intend to examine the effect of some distinct types of foreign capital inflow separately. By dividing foreign capital inflow into three distinct categories, foreign direct investment,<sup>4</sup> grants<sup>5</sup> and loans,<sup>6</sup> the analysis is also carried out in terms of their separate effects on the economy. In this analysis, along with economic assistance, we also examine the impact, on our dependent variables, of annual changes in foreign exchange earnings via home remittances. The latter is reckoned to be a very important exogenous source of foreign exchange earnings by Pakistan since the second half of the 1970s.

We are using single equation models for both domestic savings and GNP, formulated in the following manner:

$$Y = X\beta + u$$

To eliminate year-specific effects, we have introduced in our growth equations a set of year dummy variables. We adopt the "general to specific" search method,<sup>7</sup> and we intend to estimate both restricted and unrestricted versions of the model for each dependent variable. The restricted version is formed under the restriction that the effect of foreign aid could only be measured when all aid is treated as an aggregate homogeneous inflow. This restriction is removed in the unrestricted version. Also, we will generally impose straightforward exclusion restrictions on our models by dropping those variables for which the t-statistic is less than one. We are using the Ordinary Least Squares method to estimate our models.

All domestic variables are measured in constant market prices of Pakistan, with 1959-60 as the base year. We use the GDP deflator of industrial countries for all international flows. The data for all variables, except those of foreign capital inflows, are taken from the Pakistan Economic Survey. The foreign capital data are taken from the International Monetary Fund, Balance of Payments Year Book. Measurement is in Pakistani Rupees.

## 2. FOREIGN CAPITAL INFLOW AND DOMESTIC SAVINGS

For the statistical measurement of the relationship, we define the following single equation savings models.

### *Restricted Form Equation*

$$S_t/Y_t = \beta_0 + \beta_1 t/Y_t + \beta_2 REM_t/Y_t + \beta_3 RRI_t = \beta_4 PCI_t + \beta_5 S_{t-1}/Y_{t-1} + u \quad (1)$$

<sup>4</sup>The flows consist of, (i) the exchange record data on foreign investment in shares of companies registered in Pakistan and on other long-term investment net of repatriated foreign capital, (ii) data derived from special surveys, representing investment in the form of capital goods supplied to direct investment companies by their parent companies abroad and the reinvestment of undistributed income.

<sup>5</sup>The flows include Colombo Plan grants received, including grants from Canada, grants of agricultural commodities other than U.S., grants under various U.N. programmes, and grants from abroad to Indus Basin Development Fund (IBDF), and Tarbela Development Fund (TBF).

<sup>6</sup>Covers both long-term and short-term loans and trade credits received by the private and public sectors, excluding loans in Pakistani Rupee from the U.S. Government.

<sup>7</sup>See, IDS Working Paper No. 2: Econometric Methodology.

## Unrestricted Form Equation

$$S_t/Y_t = \beta_0 + \beta_1 FDI_t/Y_t + \beta_2 GRT_t/Y_t + \beta_3 CRE_t/Y_t + \beta_4 REM_t/Y_t + \beta_5 RRI_t + \beta_6 PCI_t + \beta_7 S_{t-1}/Y_{t-1} + u \quad \dots \quad \dots \quad \dots \quad (2)$$

where,  $S_t$  is domestic savings;  $Y_t$  is GNP;  $F_t$  is foreign assistance;  $REM_t$  is home remittances;  $RRI_t$  is the real rate of interest;  $PCI_t$  is the growth rate of per capita income;  $FDI_t$  is Foreign direct investment;  $GRT_t$  is Foreign grants;  $CRE_t$  is Foreign loans; and  $u$  is the stochastic error term.

The addition of a lagged value of the dependent variable ( $S_{t-1}$ ) is attributable to Brown,<sup>8</sup> who assumed that people usually change their behaviour slowly and previous consumption affects current consumption and, hence, the level of domestic savings.

The estimated coefficients of relationships are given in Table 1. Part (a) lists the coefficients of all but two variables ( $REM_t$ ,  $RRI_t$ ) on the right-hand side of the restricted form savings equation. We observe that the estimated coefficient on the foreign aid variable in Equation (1), which has a negative sign, is not significant at the 95 percent level of confidence.

Table 1

Estimated Regression Coefficients Dependent Variable Domestic Savings  
(Pakistan: 1960 to 1988)

| (a)                            |             |              |        |
|--------------------------------|-------------|--------------|--------|
| Equation (1)                   |             |              |        |
| Regressor                      | Coefficient | t-Statistics |        |
| (i) Intercept                  | 4.636       | 2.639*       |        |
| (ii) $F_t/Y_t$                 | -0.097      | -1.187       |        |
| (iii) $PCI_t$                  | 0.339       | 2.716*       |        |
| (iv) $SAV_{t-1}/Y_{t-1}$       | 0.572       | 4.165*       |        |
| R-Squared                      | F-statistic | DW-statistic | CHI-SQ |
| 0.472                          | 7.15        | 1.38         | 2.855  |
| (b)                            |             |              |        |
| Equation (2)                   |             |              |        |
| (i) Intercept                  | 5.422       | 3.167*       |        |
| (ii) $FDI_t/Y_t$               | -2.029      | -1.183       |        |
| (iii) $CRE_t/Y_t$              | -0.348      | -1.985*      |        |
| (iv) $PCI_t$                   | 0.348       | 2.982*       |        |
| (v) $SAV_{t-1}/Y_{t-1}$        | 0.593       | 4.506*       |        |
| R-Squared                      | F-statistic | DW-statistic | CHI-SQ |
| 0.544                          | 6.866       | 1.407        | 1.760  |
| F test of Restrictions = 0.78. |             |              |        |

\*Significant at 5 percent level.

<sup>8</sup>See, Brown (1952).

Only four independent variables ( $FDI_t$ ,  $CRE_t$ ,  $PCI_t$ , and  $SAV_{t-1}$ ) are retained in the final estimated unrestricted savings Equation (2). One out of three variables of foreign aid, i.e., foreign loans turns out to be significant at the 5 percent level. The results of Equation (2) show a negative relationship between foreign loans and domestic savings. We also observe that different types of foreign aid have different effects on domestic savings. First, the results show that the aid in outright grants has no measured effect on domestic savings. Second, both foreign direct investment and loans are inversely correlated with domestic savings, but the size of the coefficient on  $FDI$  is much larger and insignificant. The size of the coefficient on foreign loans is relatively small, but it is significant at the 95 percent level of confidence. Our results show that every additional percent of foreign loans, as a proportion of national income, results in a decline of about 1/3 percent of average savings, and vice versa.

### 3. FOREIGN CAPITAL INFLOW AND ECONOMIC GROWTH

In this part we intend to estimate the following restricted and unrestricted versions of a single equation growth model:

#### Restricted Form Equation

$$\dot{Y} = \beta_0 + \beta_1 F/Y_t + \beta_2 REM/Y_t + D_1 + D_2 + D_3 + u \quad \dots \quad (3)$$

#### Unrestricted Form Equation

$$\dot{Y} = \beta_0 + \beta_1 FDI/Y_t + \beta_2 GRT/Y_t + \beta_3 CRE_t/Y_t + \beta_4 REM/Y_t + D_1 + D_2 + D_3 + u \quad \dots \quad (4)$$

Where,  $\dot{Y}$  is growth rate of GNP;  $D_1$  is the dummy variable for wars and civil war;  $D_2$  is the dummy variable for radical change in government policy; and  $D_3$  is the dummy variable for weather (average annual growth rate of agriculture over the period is 3.4 percent:  $D_3 = 0$  if the growth rate  $\geq 3.40$ ).

The results, listed in Table 2, show that the final regression equations do not include coefficients on the contemporaneous values of any of the foreign aid variables. However, the one-year lagged independent variable for the total inflow of all types of foreign aid ( $F_{t-1}$ ), in Equation (3), produces a significant and positive estimated coefficient of correlation. But, its size is small and implies that for the growth rate of increase by one percent in the next year the foreign assistance should increase by 3 percent of GNP in the current year. The results for the lagged foreign aid variables in the unrestricted form Equation (4) lend some support to the estimates of Equation (3), since the lagged independent variable of foreign loans ( $CRE_{t-1}$ ) turns out to be significant at the 5 percent level with a positive sign on the

estimated coefficient. Aid in grant ( $GRT_{t-1}$ ) also exhibits a positive effect on economic growth after one year of actual disbursement, but its estimated coefficient is not significant. Further, the effect of foreign loans on the dependent variable is more than double the effect of aid in grants. An increase of one percent of loans as a proportion of GNP increases the growth rate by about 1/2 percent, while for the growth rate to increase by one percent the aid in grant would have to increase by about five percent of GNP. Given the results listed in Table 2, we cannot suggest a negative relationship between foreign aid and economic growth in Pakistan. However, we observe that, also in this case, different forms of foreign aid have different impacts on growth.

Table 2

*Estimated Regression Coefficients Dependent Variable Gross National Product (Pakistan: 1960 to 1988)*

| (a)                            |                     |                      |               |
|--------------------------------|---------------------|----------------------|---------------|
| Equation (3)                   |                     |                      |               |
| Regressor                      | Coefficient         | t-Statistics         |               |
| (i) Intercept                  | 4.286               | 4.137*               |               |
| (ii) $F_{t-1}/Y_{t-1}$         | 0.318               | 2.475*               |               |
| (iii) $REM_t/Y_t$              | 0.131               | 1.531                |               |
| (iv) $D_3$                     | -1.200              | -1.473               |               |
| <i>R</i> -Squared              | <i>F</i> -statistic | <i>DW</i> -statistic | <i>CHI-SQ</i> |
| 0.255                          | 2.734               | 2.154                | 0.285         |
| (b)                            |                     |                      |               |
| Equation (4)                   |                     |                      |               |
| (i) Intercept                  | 3.935               | 3.489*               |               |
| (ii) $CRE_{t-1}/Y_{t-1}$       | 0.524               | 1.918*               |               |
| (iii) $CRT_{t-1}/Y_{t-1}$      | 0.225               | 1.292                |               |
| (iv) $REM_t/Y_t$               | 0.139               | 1.609                |               |
| (v) $D_3$                      | -1.258              | 1.533                |               |
| <i>R</i> -Squared              | <i>F</i> -statistic | <i>DW</i> -statistic | <i>CHI-SQ</i> |
| 0.279                          | 2.226               | 2.194                | 0.384         |
| F test of restrictions = 0.79. |                     |                      |               |

\*Significant at 5 percent level.

## SUMMARY AND DISCUSSION

Our estimates for the growth model tend to contradict the conclusions of the critics of aid. Yet so far as the effectiveness of aid in increasing the GNP growth

rate is concerned, the results we have obtained remain essentially of a low key in view of the optimism voiced, particularly, by the architects of gap models. The positive but statistically insignificant relationship between economic growth and the various different forms of the contemporaneous values of economic assistance illustrate the inability of pure statistical analysis to capture the relevant effects of foreign aid on the economic growth of the recipient country. Although the one-year lagged values of foreign aid variables produce positive and statistically significant coefficients of correlation with economic growth, the weak explanatory power of the estimated equation does not indicate that foreign aid is a serious contributor to economic activity. Also, the estimated positive coefficients on foreign aid variables are strictly subject to Bauer's criteria for the evaluation of the effectiveness of aid, i.e., it can be determined only after considering the factors behind economic development, and the repercussions of aid on policies and institutions and on the allocation of resources in the recipient countries.<sup>9</sup> Indeed, for any meaningful analysis of the effects of foreign aid, the fundamental question is what international and domestic real resource shifts accompany international transactions, an issue that depends on the reactions of policy-makers and private investors and consumers to these transactions.

The estimated regression equations for domestic savings provide negative coefficients of correlation between foreign aid and domestic effort for resource mobilisation. Also, the strong explanatory power of Equation (2) implies that, apart from factors not included in our savings model, foreign aid played an important role in determining the behaviour of savings in Pakistan. However, the estimated coefficients give us no information about the nature of the negative relationship between these two variables. They do not tell us if savings increase with a decrease in aid or vice versa. If the former is true then, *a priori*, foreign aid cannot have any adverse effect on Pakistan, since during the aid period the country can enjoy both high growth and high consumption levels, and once aid is reduced or withdrawn the domestic accumulation can be increased to sustain future growth. On the other hand, it is possible that the population in general, and key institutions in particular, might develop aspirations and habits towards consumption that are difficult to break at the end of the aided period, thereby causing a decline in the post-aid growth rate. In order to make a convincing case about aid, one has to be clear about its long-run dynamic effects. The inability to capture these dynamic effects in the present, and any other, statistical exercise renders the results only suggestive. The literature on aid, between the early 1960s and the mid-1980s, indeed records numerous statistical exercises conducted to resolve the question of the contribution of aid to raising economic growth. But, there is little doubt that the results of these tests provide a far from reassuring picture.

Finally, the discussion and, by and large, the failure to provide conclusive evidence of a positive relationship between aid, savings and economic growth raises

<sup>9</sup>See, Bauer (1972).

a fundamental question. Can the whole approach in the literature of attempting to derive a quantitative link between aid, savings and economic growth be expected to support or challenge the validity of foreign aid theory? If the answer is 'no' then criticisms of foreign aid cannot be taken as convincing proof that aid's assertion is misplaced. Hence, one is obliged to look into the real factors and form the chain of causation in order to be in a better position to judge the claims of foreign aid theory.

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**Comments on**  
**"Foreign Aid, Domestic Savings and Economic Growth**  
**(Pakistan: 1960 to 1988)"**

Faster economic growth is a major economic policy objective in most of the developing countries. Faster economic growth, usually, requires a good quality and higher quantity of investment. In turn, more resources for investment require higher levels of both national and foreign savings. The impact of national savings on economic growth is unambiguous. However, there is a controversy, at the theoretical and empirical levels, over the effect of foreign savings on both economic growth and national savings. A detailed study of foreign and national savings and economic growth would certainly help in settling the controversy at least for a single economy. At the same time policy-makers need to know what policies can raise national saving and they need to be aware of how policies pursued for other purposes will affect national savings. The importance of the paper under review (henceforth, present paper) should be seen in this context.

I do not see any problem with the standard arguments presented in the present paper, the methodology used is fairly straightforward and the results presented are fairly standard, at least in the Pakistani context. At this stage I want to point out that in the last PSDE annual general meeting about five papers were presented which dealt with more or less the same topic which has been studied in the present paper. Moreover, some more studies are also available in the same area, mostly published in the PDR or mimeographed in PIDE. It appears from the list of references reported in the paper that the authors of the paper were unaware of all these studies. In order to evaluate the present paper I will only compare the results of this paper with other studies which to me have used more appropriate techniques and have used better specification of the model. For the sake of evaluation I will refer to two studies by Shabbir and Mahmood (1992) and Mahmood *et al.* (1992). The study by Shabbir and Mahmood covered the period 1960-61 to 1987-88—the same time period covered in the present study—while studying the effects of foreign capital inflow on economic growth and savings in Pakistan. On the other hand, Mahmood *et al.* covered the period 1971 to 1988 while studying the capital accumulation behaviour of institutional agents in Pakistan.

The present paper uses OLS technique to estimate two equations; namely savings and economic growth. On the other hand, Shabbir and Mahmood specified a Simultaneous Equation Model of economic growth and saving in order to estimate the direct as well as total effects of foreign capital inflow on these variables. Shabbir and Mahmood's technique has an obvious advantage over the estimation technique of the present paper if one really believes that saving and growth are embedded in a simultaneous system. For the saving equation one can

note two marked differences in the results of the two studies. First, although both of these studies found a displacement effect of foreign direct investment on savings, however, the significance level of the estimate found by Shabbir and Mahmood is much higher compared with that of the present paper. If one really cares about the precision of the results and the explanatory power of the estimated model then this difference in results calls for the use of the simultaneous equation technique. Second, whereas the present paper could not find a statistically significant relationship between savings and the real rate of interest, Shabbir and Mahmood found quite a significant relationship between the two variables, thus giving an indication to the policy-makers to liberalise the financial markets in order to increase the saving rate in the country. Mahmood *et al.* also confirmed the presence of financial repression in Pakistan.

In the growth equation of the present paper one can also note the same kind of problems as I pointed out for the saving equation.

Talking of the study by Mahmood *et al.* which was taken up while considering the drawbacks in using national aggregates, that is public sector saving responds very differently from private sector saving the response of public sector saving masks that of private sector saving. Although the study covered a different time period and, unlike Shabbir and Mahmood, used an OLS technique but by disaggregating total savings into government sector saving, public enterprise saving, corporate sector saving and household sector savings, came up with some interesting results which are quite different than the present study. Mahmood *et al.* found that direct foreign investment complement corporate savings because most of the direct foreign investment in Pakistan comes in the form of equity participation and the local partner has to raise its savings to complement the foreign investment. On the other hand, foreign loans substitute corporate savings. Thus by disaggregating the data one can draw quite different inferences than can be drawn from the use of aggregate data as is done in the present paper. Mahmood *et al.* also used the terms of trade variable in the savings equations and found that a deterioration in the terms of trade led to an increase in saving in the country. This finding is the reflection of a behaviour where the country has tried to achieve a target level of saving even under aggravating external economic conditions.

In the household saving equation contrary to the present paper Mahmood *et al.* found a positive and quite significant relationship between worker's remittances and household savings. On the other hand, for the public enterprise savings Mahmood *et al.* found a strong negative relationship between foreign public sector loans and domestic bank credit to the public sector, but such a relationship was totally ignored in the present paper. Similarly, Mahmood *et al.* also found a strong negative relationship between foreign debt servicing and savings of the government sector, again such an important variable has not been tried in the present paper.

To conclude, I may suggest to the user of this paper, that while drawing any implications from the results of the present paper they should also keep in front those studies which use somewhat complex but better techniques and in the light of

those studies which stress more on the varied saving response of various institutional agents of the economy to internal and external factors.

**Zafar Mahmood**

Pakistan Institute of  
Development Economics,  
Islamabad.

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