AID, SAVINGS, AND GROWTH IN THE ASIAN REGION

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I

The question to what extent foreign aid contributes to enhance economic development in Third World countries has gained new prominence in the recent North-South dialogue. At the Cancun Meeting and at the UN Conference on Least Developed Countries in Paris, developing countries claimed that a massive inflow of resources from the North was needed to stimulate more rapid economic development and eradicate widespread poverty in the South. Some industrialized countries, in particular the United States, rejected this claim and instead emphasized the importance of self-help and well-functioning market mechanisms to promote development.

This controversy on the political level reflects a vigorous debate which has been taking place in the economic literature roughly over the last ten years. Based on balance of payments data for the fifties and sixties, it has been argued that there was no general relationship between foreign aid, domestic savings, and economic growth which would support the case for more aid. The purpose of this paper is to reconsider this debate in the Asian context using more accurate data for the seventies. In this decade, Asia has grown quite rapidly compared to other developing areas and for some Asian countries, the growth rates are unmatched in the developed world today (Table I). While not conclusive, these growth rates suggest that aid flows seem to have been well utilized in many countries of the Asian region and would suggest that a significant and positive relationship existed between aid and economic growth in the seventies. However, Table I also shows considerable differences of the growth performance between low and middle income countries. For low income Asian countries (Bangladesh, Nepal, Burma, India, Sri Lanka, and Pakistan), growth has been comparable to that of other poor developing countries while for the middle income countries (Thailand, Philippines, Malaysia, Republic of Korea, Republic of China, Hong Kong, Singapore, and Indonesia), growth has been considerably higher than the average and two and one half times more rapid than the growth of the industrialized countries. These differences seem to imply a more effective use of foreign aid in middle income countries.

Section II discusses various explanations for differences in the effectiveness of

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TABLE I

Average Annual Growth Rate in Gross Domestic Product, 1970-78

	Growth Rate (%)	Sample (No.)
Low income Asian countries	3.5	6
All low income countries	3.6	38
Middle income Asian countries	8.0	8
All middle income countries	5.7	51
Latin American countries	5.4	15
Industrialized countries	3.2	18

Source: World Bank, World Development Report, 1980 (Washington,

D.C.: World Bank, 1980), pp. 112-13.

foreign aid. Based on this review of the literature, a model is developed in Section III to test the validity of the above hypotheses. The model contains the standard explanatory variables—foreign financial aid, private capital inflows, and gross domestic savings—as well as several policy variables. These policy variables are designed to measure the impact, often crucial, which government intervention can have on the effectiveness of foreign aid. Results of regressions are presented in Section IV and some tentative conclusions are drawn in Section V.

II

The developing countries' claim for more aid is based on the proposition that there is a positive relationship between the volume of capital inflow and the rate of economic growth. They maintain that a substantial inflow of financial resources at concessional terms is needed to generate sufficient savings and investment to accelerate economic growth so that the "self-sustained" growth which will ultimately free these countries from the need for foreign assistance can be achieved. But the validity of this basic proposition has not yet been conclusively verified for developing countries as a whole. Cross-country studies as well as time-series analysis of the impact of foreign aid and foreign capital inflows on domestic savings and on the rate of economic growth show no general relationships.

Studies by Rahman [17], Landau [12], Weisskopf [19], Papanek [16], and Gupta [6] covering different groups of countries and different time periods, show a negative relationship between the inflow of foreign aid (or in some cases, financial capital including foreign aid) and the share of domestic savings in GDP. Only one study (Begley [1]) shows that foreign aid increased total domestic savings, and that was established only for some Latin American countries.

Findings with regard to the relationship between the inflow of foreign aid and the rate of economic growth reported in various studies are even more varied. Except for Papanek [16], earlier cross-country studies suggest that financial foreign aid has not led to higher rates of growth of GDP (IBRD [7], OECD [15])—in some cases, quite the contrary (Mosley [14]). Recent studies using breakdowns of donor and recipient countries show that the growth impact of foreign

aid varies among recipient countries (Gulati [5], Mosley [14]). Only in relatively poor countries was a positive relationship between foreign financial aid and income growth. This relationship was found to be negative or statistically insignificant in more advanced countries. Conversely, time-series analysis of a few countries in Asia (Pakistan, Republic of China, Republic of Korea) seems to suggest that aid contributed to growth both in poor and middle income developing countries (Brecher and Abbas [2], Islam [8], Jacoby [9], Krueger [11]).

Aside from well acknowledged data problems, the findings of these various studies are not easy to interpret for several reasons. First, the savings and growth performances of a country depends on many factors besides the foreign capital inflow, e.g., the level and structure of consumption, the balance of trade, the tax system, financial markets, the rate of population growth, etc., but most of these factors have not been taken into account in these empirical studies. Secondly, foreign aid may both influence economic development and be influenced by the level of development to the extent that poorer countries can attract more aid in relative terms. If this is true, the ordinary least square regressions applied in most studies would be inappropriate. Thirdly, there is a lag between the flow of capital and its growth effects and the length of this lag varies, for the gestation period will vary with the nature of the projects undertaken and with the ability of countries to absorb foreign capital inflows. Such time lags will be different in different countries and it is therefore difficult to incorporate them adequately, at least, in a cross-country analysis. And fourthly, insofar as countries with low levels of development receive larger volumes of aid, regression analysis can produce misleading results, for these countries tend to have lower savings and growth rates. Therefore, a cross-country analysis can show a negative impact of foreign aid on savings or economic growth simply for statistical reasons.

Irrespective of these methodological difficulties, the available empirical evidence suggests that financial aid does not necessarily accelerate economic growth. And there is no a priori reason why such an outcome should be taken for granted. The presumed growth impact of foreign aid rests on two principal ceteris paribus assumptions, namely, that foreign aid will add to domestic (and other foreign) savings in order to increase total investment in the economy, and that the average capital-output ratio is not negatively affected by the foreign aid inflow.

An examination of these two assumptions shows that they do not necessarily hold true in reality. For example, if foreign aid is granted for infrastructural development, a government may use this "relief" to divert funds either to increased government consumption expenditure in the form of higher salaries for civil servants, larger armies, etc., or to investment in prestige projects such as certain heavy industries, airlines, military equipment, etc. In the first case, domestic savings (and investment) may be reduced by more than the offsetting amount of capital inflow; in the second case, the capital productivity of the new projects may be so low that the average capital-output ratio of total investment increases. Hence, economic growth may slow down despite increased total investment.

Other unwarranted side effects may result from policies governments adopt to finance their share of the cost of development projects. Tightening the tax screw may increase government savings but reduce private savings or discourage private investment by a larger amount. If governments opt for deficit financing, this may have an adverse effect on the private sector's contribution to economic growth; for if the government drains the domestic financial market or increases the money supply, either interest rates or the inflation rate will increase. Both effects are likely to lead to a crowding out of private investors and total investment will stagnate or even decline despite the inflow of foreign aid.

These examples are only illustrative and certainly not exhaustive. The synthesizing view which emerges from the controversial evidence (Islam [8], Görgens [4]) is that enhanced economic development depends on an improved allocation of all resources, both domestic and foreign. This points at the crucial importance of domestic policies to improve the "effectiveness" of foreign financial aid. Such influences have been, however, neglected in cross-country studies though they were taken in consideration in the analysis of some individual countries, (e.g., Islam [8] and Brecher and Abbas [2] for Pakistan).

III

Since data limitations severely limit time-series analysis for a larger number of individual countries, we have elected to study the effectiveness of foreign aid in the Asian region in the 1970s based on a pooled sample of time-series and cross-country data. The approach applied in this paper is an extended version of the model fitted by Papanek [16] as well as more recently by Mosley [14]. Criticizing Papanek's simple least square estimates, Mosley has, however, used a two-stage least square approach to capture a possible interdependence between national income and aid flows. The model fitted by Papanek and Mosley contains the following regression equation:

$$\Delta GDP = f(FA, KM, S), \tag{1}$$

where $\triangle GDP$ equals the rate of growth of real gross domestic product, FA equals foreign financial aid, KM equals private capital inflow, and S equals gross domestic savings. FA, KM, and S are measured as percentages of GDP.

To this model, we added four policy variables designed to express different aspects of government policy in each country. They are: (1) The degree of openness of the economy (ET) expressed by exports plus imports, both net of oil, as a proportion of GDP. Since international trade strengthens competition in domestic product and factor markets (Krueger [10]), openness is expected to improve resource allocation and accelerate income growth; (2) The role of governments in domestic resource mobilization (T) measured by central government tax revenues as percentage of GDP. Higher taxes can contribute to domestic resource mobilization as well as become a disincentive to private capital formation. Therefore, the expected sign of this coefficient is a priori ambiguous; (3) The share of the public sector in economic activities (E) measured by total government ex-

TABLE II DETERMINANTS OF GDP Growth: Regression Results of All Countries (n=52)

Row	С	FA	KM	S	ET	T	E	M_2	D	\overline{R}^2	D.W.
1	0.47	0.46	0.72	0.24						0.43	1.96
		(2.46)	(2.72)	(4.5)							
2	-0.86	0.40	0.71	0.15		0.17		0.03		0.48	1.94
		(2.14)	(2.79)	(2.33)		(1.94)		(1.80)			
3	0.25	0.43	0.64	0.20	0.01		0.03			0.43	1.92
		(2.14)	(2.13)	(3.31)	(1.25)		(0.50)				
4	1.11	0.43	0.38	0.15					2.03	0.45	2.07
		(2.35)	(1.16)	(2.08)					(1.65)		
5	0.20	0.36	0.27	0.02		0.18		0.04	2.97	0.52	2.07
		(2.03)	(0.85)	(0.27)		(2.13)		(2.28)	(2.24)		
6	0.77	0.37	0.27	0.08	0.01		0.06		2.77	0.46	2.04
		(1.87)	(0.76)	(1.02)	(1.39)		(0.90)		(1.96)		

Note: t-values in parentheses.

penditure in GDP. The unfavorable performance of public enterprises in many countries as well as the impediments created by oversized bureaucracies suggest that this variable is negatively related to income growth; (4) A measure of "financial repression": M_2 over GDP. Small values are associated with repression, large values with financial liberalism. Such a measure has been suggested by Fry [3] based on the seminal work of McKinnon [13] and Shaw [18]. Financial repression is expected to be detrimental to GDP growth.

To exclude short-term fluctuations, all data in the model are calculated as arithmetic averages of the three-year periods, 1968–70, 1971–73, 1974–76, and 1977–79. Financial flows were taken from the OECD series on the *Geographical Distribution of Financial Flows to Developing Countries* (various issues). This series provides a more accurate set of data on official and private flows than the balance of payments data used in earlier studies. Other sources of data are given in Table IV.

IV

The results of least square regressions using equation (1) augmented by the four policy variables are displayed in Table II. From row 1 we see that domestic savings, foreign aid, and private capital inflows are all statistically significant with the correct a priori signs without any policy variables being included. These results strongly support the hyphothesis that foreign aid contributes to economic growth and are roughly consistent with similar conclusions drawn by Papanek from an analysis of data drawn from the 1960s. These results are also supporting of the hypothesis that the rapidly growing economies of Asia are able to utilize aid effectively, perhaps more so than countries in other regions where growth may be slower and aid is not well spent because of bottlenecks and less efficient allocative mechanisms.

The coefficient on savings and foreign aid in row 1 are nearly identical to those

reported by Papanek [16, p. 121] for Asia in the fifties and sixties (0.46 in both studies for aid and 0.24 in this paper versus 0.21 in Papanek's study for savings) while the coefficient on foreign private investment is nearly double the sixties coefficient. This suggests that the effectiveness of private investment in Asia may have increased in the seventies, perhaps as a consequence of greater maturity and ability to take advantage of joint ventures which were not possible fifteen or twenty years ago.

While the results presented in row 1 of Table II support the findings reported by Papanek, the econometric methodology used here and by Papanek has been criticized by Mosley as mentioned above. We offer two points in rebuttal to the Mosley criticism but before listing them, we should note that we did perform a two-stage least squares regression using the policy variables, savings and private capital inflow as instruments, and indeed found a negative but insignificant relationship between aid and growth. We also observed a negative and insignificant relationship between savings and growth. Only foreign private investment remains positive in sign, being marginally significant. Overall, the coefficient of determination drops to an insignificant level. In short, then, the use of two-stage least squares virtually destroys the entire relationship between growth and the explanatory variable. This alone should be sufficient evidence for us to disregard these results out of hand.

However, the other points are equally relevant and deserve mention. (1) The alleged bias in the least squares estimate of the coefficient on foreign aid arises because of the feedback between aid and the level of GDP, the argument being that low levels of GDP/capita call forth higher levels of aid. Notice that the feedback is alleged to exist between aid and GDP/capita, not between the growth rate in GDP and aid. There is no obvious reason why the rate of growth in GDP and the level of GDP/capita should be highly correlated at any point in time over a broad cross-section of countries. Relatively poor countries such as Burma, Indonesia, and Pakistan in fact experienced above average rates of GDP growth in recent years. In our sample, we find in fact a positive and significant correlation between per capita GDP and GDP growth (r=0.439) for the more developed countries but this correlation is negative and insignificant for the poor countries $(r = -0.121)^{1}$ (2) If a simultaneous technique is to be used then the complete underlying model should be specified. If aid and growth are involved in a feedback, the same should be true of savings which, it is often contended, is inversely relative to the level of aid. Without specification of such an underlying model, the instruments to be used in the two-stage procedure are completely arbitrary.² Experiments we have performed for the Asian data suggest that the results are quite sensitive to the instruments employed. While we would applaud attempts to construct the required underlying model, we also feel that the least squares can stand by themselves as a first approximation to the true structural relationship.

¹ Country classification as in Section I.

² It is unclear what instruments Mosley used.

Turning now to the regressions employing the policy variables (rows 2 and 3), it is important to note that the introduction of these variables does not alter the positive relationship between the standard variables and economic growth. Because of high inter-correlation between T and E as well as ET and M_2 , the policy variables were entered into separate regressions. The results show that tax efforts of governments and financial liberalization have contributed to GDP growth. The respective coefficients are statistically significant at the 90 per cent level while the coefficients for openness of the economy and the public share in economic activities were not statistically significant and of the wrong sign in the case of the latter variable. In sum, these results suggest a limited independent influence of financial and tax policies on economic development. However, they do not falsify the hypothesis that economic policies were conducive to an optimal allocation of foreign capital inflows and domestic savings in the Asian region.

As noted above, despite high growth rates for many developing Asian countries, the six relatively poor countries of the Indian subcontinent have experienced only average growth when compared to other poor countries and much slower growth than the more developed Asian countries (Table I). This raises the question whether differences in the structural aid-growth relationship between less and more developed countries as observed by Mosley also prevails in the Asian region. Therefore, we performed several additional regressions to explore potential differences in the aid-growth relationship among country groups. In the first instance, we incorporated a dummy variable D for the South Asian countries and found a statistically significant coefficient (Table II, rows 4-6) indicating the substantial divergence in the average growth performance of South Asian from other Asian countries. Yet, the basic aid-growth relationship remains intact as do the findings with respect to the impact of economic policies (rows 5 and 6). However, these regressions do not yield significant coefficients for domestic savings and private capital inflow and the magnitude of these coefficients is considerably smaller compared to the earlier estimates (rows 2 and 3). These results suggest that the level of domestic savings and private capital inflows rather determines the difference of the growth performance between slow and high growth countries than variations of GDP growth within the subsamples. In rows 5 and 6, this intercept difference is captured by the dummy variable. In fact, Table IV shows substantial differences in the order of magnitude of these two variables in the two subsamples and little variation (i.e., a relatively small standard deviation) at least in the case of high growth countries.

To explore potential differences among country groups further, separate regressions were fitted for the two subsamples (Table III). The explanatory power of these separate regressions is somewhat lower compared to the results of the combined sample and they suffer from having relatively fewer observations. Nevertheless, they provide a few interesting results. The determinants of changes in GDP growth are now distinctly different between high and low growth countries. In the case of high growth countries (rows 1 and 2), the changes of GDP growth are related to foreign financial aid and the degree of openness of the economy as well as of financial liberalization. The coefficients of these three variables are

Table III

Determinants of GDP Growth: Regression Results of Subsamples

Row	С	FA	KM	S	ET	T	E	M_2	\overline{R}^2	D.W.
			Α.	High gro	owth cou	ntries (n	=31)			
1	0.82	1.74	-0.44	0.05		0.02		0.09	0.39	1.78
		(3.53)	(1.38)	(0.40)		(0.23)		(4.37)		
2	4.04	1.49	-0.52	0.09	0.03		-0.09		0.20	1.70
		(2.73)	(1.28)	(0.70)	(2.91)		(1.01)			
			В.	Low gro	wth coun	tries (n=	=21)			
3	-0.91	0.30	0.55	0.15		0.29		-0.01	0.33	2.14
		(1.58)	(0.42)	(1.30)		(2.43)		(0.11)		
4	-0.56 ·	0.12	1.70	0.19	0.21		-0.08		0.49	1.90
		(0.68)	(1.40)	(1.86)	(2.75)		(0.64)			

Note: t-values in parentheses.

statistically significant at the 95 per cent level. The coefficients of the other variables are not statistically significant and the coefficient of private capital inflow even changes sign. Foreign aid also has an overproportionate impact on GDP growth in this country group, i.e., a one per cent increase in the inflow of aid has resulted in a more than one per cent increase in the rate of economic growth. This seems to indicate that foreign aid supplemented indigenous resources in a highly productive way with an immediate impact on the overall growth performance of the countries in this group. This performance was further improved when the allocation of resources was guided by liberal trade and financial policies. However, the impact was only marginal in size (the regression coefficients being 0.03 and 0.09 respectively).

Turning to the relationship between growth, domestic savings, and private financial inflows, the above arguments apply. In high growth countries, these variables rather determine the average level of growth than variation in growth since the magnitude of private inflows and the savings performance were fairly stable over time and among countries in this group (Table IV). For low growth countries on the other hand, the standard deviation is large relative to the mean for both variables.

In the regressions for the latter country group (rows 3 and 4), all coefficients (except for M_2) show the expected sign but the relationship between aid and growth collapses. The coefficient for private financial inflows is again not statistically significant and a relationship between domestic savings and growth emerges only in row 4. For the policy variables, trade liberalization is found to be an important determinant of GDP growth, more important in fact than in the case of the other country group as judged by the magnitude of the coefficient (0.21 versus 0.03). Contrary to the high growth countries, the government contribution to domestic resource mobilization (T) emerges as another important determinant while the coefficient of M_2 is not statistically significant. The latter finding may result from uniformly repressive financial policies pursued in most low growth countries.

TABLE IV

Mean and Standard Deviation of Regression Variables

Variables	Me	an	Standard Deviation			
	High Growth Countries	Low Growth Countries	High Growth Countries	Low Growth Countries		
∆GDP	8.61	4,40	2.62	2,45		
FA	2.00	4.07	3.02	1.34		
KM	1.85	0.09	0.38	1.37		
S	23.70	9.69	5.94	5.50		
ET	74.29	18,29	10.30	60.64		
T T	12.53	9.93	4.67	3.71		
E E	17.31	18.27	7.19	5.26		
M_2	42.41	25.29	9.38	24.03		

Sources: IMF, International Financial Statistics, Vol. 34, No. 10 (October 1981). IMF, International Financial Statistics Yearbook, Vol. 33 (1980). OECD, Geographical Distribution of Financial Flows to Developing Countries, 1976/79 (Paris: OECD, 1980). World Bank, World Tables: The Second Edition (1980) (Baltimore: Johns Hopkins University Press, 1980). World Bank, World Development Report, 1981 (Washington, D.C.; World Bank, 1981). United Nations, Yearbook of International Trade Statistics, 1979, Vol. 1 (New York: United Nations, 1980). IMF, Government Finance Statistics Yearbook, Vol. 4 (1980). Asian Development Bank, Key Indicators of Developing Member Countries of ADB, various issues. Various country sources.

The weak relationship between the standard variables (FA, KM, S) and GDP growth requires further explanation. The regression results suggest that progress in the mobilization of domestic resources was much more decisive for economic development in low growth countries than foreign aid (or private capital inflows). Various reasons can be suggested for the lack of effectiveness of foreign aid in these countries. First, foreign aid may have encouraged government consumption or crowded out private investment as suggested in Section II. Secondly, domestic policies focussing on import substitution in agriculture and industry as well as on tight government control over economic activities may have driven up the capital-output ratio thus lowering the marginal productivity of aid. And thirdly, the marginal productivity of aid may be low in the short run by the very nature of projects financed in poor, low-growth countries. Projects improving the physical and social infrastructure as well as energy substitution or conservation measures often have long gestation and payoff periods, which are not adequately captured by the data used in this paper. To discriminate among the above possibilities would require much longer time series for all variables and which would simultaneously permit more rigorous statistical approaches.

v

The analysis of foreign aid and economic development in the Asian region in the seventies shows that foreign financial aid has contributed to GDP growth as did domestic savings and the inflow of private capital. These findings confirm Papanek's results for earlier periods and contradict Mosley's recent pessimistic

estimates. However, domestic savings and private capital inflow rather seem to explain the substantial differences in the performance between the groups of slow and fast growing Asian countries than variations within these country groups. Yet, the domestic savings rate was found to be of greater importance for GDP growth in the slow growing South Asian countries than foreign aid to these countries. Whether this low effectiveness of aid is due to an inefficient use or to long gestation and payoff periods cannot be determined on a cross-country basis.

The above result suggests that economic policies have been conducive to a productive allocation of foreign aid (and the other resources), especially in high growth countries of the Asian region. Incorporating various aspects of government policies into the regressions points at liberal trade and financial policies as means of improving the overall growth performances in the case of high growth countries. Liberal trade policies seem to play an even more important role in explaining income growth in slow growing countries together with improvements in government tax revenues. The share of government expenditure in GDP was not found to have a significant impact on growth in either country group.

It should be kept in mind, however, that precise policy conclusions for individual countries cannot be drawn from cross-section analysis of the type presented in this paper. To do this would require more detailed study of country specific institutions and interactions between the government and the private sector within a time-series context.

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