Aid and Its Impact on the Recipient and Donor: A Case Study*

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Introduction

The Official Development Assistance (ODA) began to flow to developing countries on an unprecedented scale in the wake of India's foreign exchange crisis and her urgent need for balance of payments support in 1958 during the Second Five Year Plan. African independence, particularly of former British territories, further transformed the aid situation (Little and Clifford 1965). Initial interest generated in developed economies in foreign aid programme began to wane since the mid sixties, as evidenced in the deceleration in the growth of nominal aid flow from 41% between 1960 and 1965 to only 7.7% between 1965 and 1970 (World Bank 1980, 1990).

Although the total nominal value of ODA from DAC (Development Assistance Committee) countries to developing countries increased from $4.66 billion in 1960 to $48.2 billion in 1988, its share in donors' GNP declined from 0.48% in 1960 to 0.35% in 1975 and remained at that level until 1987 only to increase by 0.1% in 1988 (*ibidem*).

However, criticisms of ODA programmes that these have mainly served donors' commercial, economic and political interests, that the tying of aid has greatly reduced recipients' benefits and that the form and manner in which aid has been distributed and administered has severely reduced its ability to promote development and alleviate poverty began to emerge since the late sixties (Roy and Lougheed

1979, 1976; Streeten 1972; Hanover 1970; Bhagwati and Desai 1970; IMF 1969, 1970; Pearson 1969; Haq 1968; OECD 1967; Pincus 1963).

Counter arguments that progress made by many developing countries over the past thirty years is inconsistent with the charge that aid hinders development have also been put forward in support of aid (World Bank 1985; Cassen 1986).

Criticisms of aid have resurfaced again in the nineties: Hancock claims that a great percentage of the outlay for international aid ends up being spent not in the third world but in the West in purchasing industrial goods at outrageous prices, in financing the luxurious lifestyles of the international aid bureaucrats in western capitals and in financing the cost of associated expenses like public relations and conferences etc. In some cases, the cost of staff, public relations and conferences etc. approaches 80% of total financial aid (Hancock 1989).

This paper attempts to re-examine this issue of aid and recipients' development with reference to Australia's aid to Papua New Guinea (PNG).

Growth Theories: Some Comments

Since the pioneering work of Harrod-Domar, lack of savings has been accepted by most growth theorists as being the effective constraint on growth in developing countries. Consequently the importance of raising savings to achieve the desired rate of growth has also been emphasised. However, in developing countries the rate of domestic savings is generally low and even if the rate of savings rises, it cannot be easily transformed into capital goods. Hence the importance of foreign assistance in supplementing domestic savings has been recognised by Rosentein-Rodan (1961), Papanek (1972, 1973) and Chenery and Strout (1966). In their two gap model, Chenery and Strout suggested that since trade gap may impose a more serious constraint than domestic savings gap on the economic growth of many LDCs, foreign savings can lead to a proportional rise in essential imports without which development programmes cannot be implemented.

It is however generally recognised that for foreign savings to be able to provide an effective stimulus to growth, it should account for a significant proportion of a country's GDP. But countries which in the past received substantial amounts of aid in both absolute and per capita terms did not necessarily achieve high growth rates. As an explanation, it is suggested that these countries may lack such complementary inputs to development as human skills, administrative capacity, infrastructure, economic institutions and political stability without which even high saving rates may not stimulate growth (Gillies, Perkins, Roemer and Snodgrass 1987).

Even if such complementary inputs are available, foreign savings, instead of adding to domestic savings, may substitute for it and lead to increases in consumption and decreases in exports. Bowles (1987) provided evidence of negative correlation between aid and domestic savings. However Mosely (1980) suggested that aid can increase both consumption and investment. The leakage to consumption may be greater if the community's preference for present consumption becomes stronger than before. Even if aid increases both consumption and investment, these can be conducive to economic growth of the aid recipient, provided of course that the community at large becomes the major beneficiary of such an increase in consumption. On the other hand, if a significant proportion of aid gets spent in the donor country, then it may also increase donor's consumption and investment. Even if aid supplements the aid recipient's domestic savings, the aim of that additional saving would be to boost the recipient's investment to generate and accelerate growth. Thus the crucial issue in the relationship between aid and growth appears to be whether aid produces a positive impact on investment in the recipient's economy. If it does, then the aid programme can be said to be beneficial to the aid recipient. Therefore following Mosely's thesis in examining Australian aid, we shall analyse its impact on investment and consumption of the recipient and the donor.

Australian Aid: Salient Features

Although at current prices the total value of Australia's Official Development Assistance increased from $197.2 million in 1970 to

$828.2 million in 1988, the ODA/GNP ratio declined from 0.52 in 1970 to 0.37 in 1988 (Commonwealth of Australia 1990). Although Australian aid policy is strongly influenced altruistic and humanitarian, Australian aid policy is strongly influenced by strategic considerations and by the economic benefits likely to accrue as developing countries become richer (Commonwealth of Australia 1984). Australia's preference for financing projects which can be ident-ified as Australian built also stems from the same strategic and political considerations. The observation of Griffin and Enos (1970) that how much a country lends to another country will not be determined by its need or its potential, or its past economic performance, but by the benefit it yields in terms of political support also seems to be applicable to the Australian aid policy. More than 90% of Australia's bilateral aid other than to PNG and almost all food aid are source tied (Common-wealth of Australia 1984). Being source tied such aid, in the short run, benefits Australia's economic interests by facilitating the development which expands the market opportunities for direct investment abroad by Australian companies (Roy 1991). Australian firms benefit directly when the aid program buys their goods and services. Taking into account the longer-term trade effects of aid expenditure together with the value of purchases of Australian goods and services directly resulting from aid expenditures, it is clear that every dollar of aid ultimately produces substantially more than a dollar of business for the Australian sector. It was estimated that in 1987-88, the aid programme generated purchases of Australian goods and services to a value equivalent to 87% of total aid expenditure (AIDAB 1990).

The aid is disbursed in two forms: (a) programme aid allowable by sector and (b) non-programme aid. The total amount of pro-gramme aid is distributed among 10 projects: (i) economic planning and public administration, (ii) development of public utilities, (iii) agriculture, (iv) industry, mining and construction, (v) trade, banking, tourism and other services, (vi) education, (vii) health, (viii) social infrastructure and social welfare, (ix) multi sector and (x) unspecified. Substantial amounts of aid fund are allocated to education and development of public utilities. In 1984-85 and 1985-86, education alone accounted for 45.8% and 46.1% of total programme aid and these two projects together accounted for 63.8% and 64.9% of the total programme aid in those two years (AIDAB 1987). While all goods and services provided under the programme aid originate in Australia thereby helping Australia's export industries and increasing the level of investment, a significant percentage of this aid also

increases the level of domestic consumption. Almost the entire amount allocated to education involves expenditure in Australia on overseas students and personnel. A certain percentage of other project aids also involves training in Australia of overseas personnel. In the non-programme category, the aid is channelled as (i) general purpose grant to finance current imports, (ii) emergency and disaster relief including food aid, (iii) contributions not directly linked to imports (iv) debt reorganisation and (v) others. Although all goods and services provided under the non-programme aid also originate in Australia, a significant proportion of the aid is directly related to consumption in recipient countries. The share of programme aid in this total has gradually declined over the years, from 76.3% in 1976-77 to 48.5% in 1985-86 (ibidem). It would appear that apart from the amount allocated to emergency and disaster relief and contributions to finance current imports which are likely to be influenced by altruistic motive and humanitarian consideration, the rest of the aid amount is influenced by strategic, economic and political considerations. But the share of these two items in total aid has declined considerably from 20% in 1974-75 to only 9% in 1986-87 (ibidem). In terms of the regional distribution of aid, Papua New Guinea, South-East Asia and South Pacific account for the largest percentage with their respective shares in 1989-90 being 28.8%, 22.3% and 9.2% (Commonwealth of Australia 1990).

However, in terms of per capita aid which is a better measure of aid distribution, low income Asian countries which includes China and India and represent about 85% of total population covered by Australian aid receive only a few cents whereas Papua New Guinea representing about 0.01% of total population covered by Australian aid receive very large amounts. Thus considerable regional disparities exist in the distribution of aid which is heavily concentrated in Australia's neighbouring regions.

PNG Economy and Australian Aid

Papua New Guinea, which gained independence from Australia in 1975, is a small fragmented economy with vast natural resources and a dualistic society where 90% of the 2.7 million people live in

traditional ethnic groups in the agricultural subsistence sector along a few towns where locals and expatriates enjoy a predominantly Australian life style. In accordance with the recommendations of the Jackson Report that Papua New Guinea's development was lagging and required more attention to long term development issues, especially the acute shortage of skilled personnel, the Development Co-operation Treaty signed on 24 May 1989 by the Prime Ministers of Australia and Papua New Guinea re-affirmed that development assistance should mainly be in the form of budget support and project aid and that it should contribute to development and self-reliance (AIDAB 1989).

Inadequate infrastructure, very low level of social development, particularly a serious shortage of educated indigenous people at middle and upper management levels in both the public and private sectors, and low level of domestic savings have posed major constraint to development since its independence. Domestic savings as a proportion of GDP increased from 13.9% in 1975 to 23.4% in 1979 but declined to very low levels in subsequent years and reached 20.6% in 1988. PNG has been the largest recipient of Australian aid. Although in recent years (1987, 1988) the share of Australian aid in the total aid received by PNG from all sources has declined below 80% in most years since PNG's independence, the share has remained very high. Australian aid in per capita terms and as a proportion of PNG's GDP remained very high until 1984 after which year both exhibited sharply downward trend.

The trends are illustrated in Table 1.

Thus, in a country where most people earn very modest cash incomes of a few hundred dollars a year and enjoy a real standard of living well below the average for the low income group of countries, bridging the resource gap between its high investment requirements and low level of domestic savings necessitated a large amount of aid in the form of capital goods, technical knowledge, management and skilled manpower etc.

Impact Assessment of Australian Aid

Since Australian aid accounts for a large percentage of PNG's GDP, it is likely to produce perceptible effect on consumption and

TABLE 1

AUSTRALIAN AID TO PAPUA NEW GUINEA

		1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1.	Total Australian aid (US$ million)	294.6	249.4	268.4	247.2	261.2	264.0	273.8	286.0	268.4	260.3	273.6	226.7	221.4	223.8	243.0
2.	Total aid as a proportion of PNG's GDP (%)	19.7	19.0	20.0	13.9	12.0	10.6	9.9	10.6	10.4	10.2	10.7	9.4	8.4	7.2	6.8
3.	Per capita aid (US$)	111.6	92.7	97.6	88.0	91.0	90.1	92.5	94.1	86.3	81.9	86.0	68.0	65.1	64.3	68.3

Sources: IMF (1990) International Finance Statistics Year Book, Washington D.C.
World Bank (1991), World Tables, Baltimore: Johns Hopkins University Press.
World Bank (1988, 1990), World Development Report, New York: Oxford University Press.
Commonwealth of Australia (1990), 1990-91 Budget Related Paper No. 4: Australia's Overseas Aid Program 1990-91, Canberra.

investment of the recipient. However, since 90% of the population live in traditional sharing societies in remote villages their consumption needs are extremely limited. Therefore while the impact of aid on the recipients' consumption is likely to be small, its impact on the recipients' investment is likely to be large.

The most important domestic variable which influences consumption in the short run is GDP. But a significant change in the price level and interest rate can also exert considerable influence on consumption although such a change in these two variables is unlikely in the short run. Thus, in analysing the impact of aid on the domestic consumption of PNG the variables included are: GDP, price level, interest rate and Australian aid.

On the other hand, domestic savings, interest rate and capital inflow can produce significant impact on investment. Hence the variables included are: GDP, domestic savings, interest rate, direct foreign investment and Australian aid. It should however be noted that both consumption and investment are also influenced by a number of long run variables which cannot be easily quantified and hence cannot be included in our analysis.

Statistical Analysis

The data used for the statistical analysis represent the period 1974 to 1988 (both inclusive) for Papua New Guinea as well as the donor country, Australia. The statistical analysis is carried out using regression techniques to study (i) the impact of Australian aid on Papua New Guinean economy and (ii) the impact of total Australian aid on its own economy.

(i) The Impact of Australian Aid on PNG Economy

To study this impact, the consumption and investment functions for PNG are estimated using the traditional variables such as GDP, interest rate, price level, savings and capital inflow. Latter Australian aid is introduced into the function to find out its impact on consumption and investment of Papua New Guinea. Of course, consumption and investments are investigated separately. All the monetary variables are measured in millions of U.S. dollars. Firstly or-

dinary least squares method is used to estimate these functions. These equations are found to have first order autocorrelation. The application of least squares on models whose disturbances are autocorrelated does not provide efficient estimates. Also the standard errors of the coefficients will be underestimated (Johnston 1984). Hence the equations are re-estimated assuming that the equations have autocorrelated disturbances of the first order autoregressive scheme, *i.e.* $u_t = \rho u_{t-1} + \varepsilon_t$ *for* $|\rho| < 1$. To account for the autocorrelated disturbances of this type, the method used here is a modified Cochrane-Orcutt procedure as developed by Beach and MacKinnon (1978). Only the equations estimated after adjusting for the first order autoregression scheme are presented in this section.

Equation 1 gives the model when total consumption (CON) is regressed on GDP, interest rate (INT) and price level (PRI). The figures in parentheses are corresponding t values. Some caution is needed in drawing the conclusions. When income (GDP) is included among explanatory variables for consumption (CON), GDP may be correlated with aid (AID) as aid influences income; when such dependence among independent variables (multicollinearity) exists, the t values would be somewhat underestimated. Both unadjusted and adjusted coefficients of multiple determination, Durbin-Watson statistic and error degrees of freedom are also provided.

$$CON = -3289.0 + 1.7843 \text{ GDP} + 119.56 \text{ INT} + 9.7504 \text{ PRI (1)}$$
$$(2.99) \qquad (1.39) \qquad (0.39)$$

$$R^2 = 0.9122, \ \overline{R}^2 = 0.8882, \ \text{D.W. statistic} = 1.598, \ \text{D.F.} = 11$$

As expected GDP has significant positive effect on consumption. Interest rate is not significant at the 5% level though its t value is greater than one. And the price level is found to have very little effect on consumption. Equation 2 provides the consumption equation when Australian aid (AID) variable is added to the other independent variables included in equation 1.

$$CON = -1822.9 + 1.9233 \text{ GDP} + 123.95 \text{ INT} + 2.2336 \text{ PRI} +$$
$$(2.96) \qquad (1.39) \qquad (0.08)$$
$$- 4.8085 \text{ AID} \qquad (2)$$
$$(0.62)$$

$$R^2 = 0.9150, \ \overline{R}^2 = 0.8810, \ \text{D.W. statistic} = 1.818, \ \text{D.F.} = 10$$

Australian aid is found to have no significant effect on PNG consumption and the effect is found to be negative. The t value is very small around 0.62.

Turning to investment, the investment (INV) in PNG is regressed on GDP, savings (SAV), interest rate (INT), and capital inflow (CAP) and the estimated model is presented in equation 3. To the same independent variables of equation 3, Australian aid (AID) is added and investment in PNG is regressed on all these variables and the estimated model is given by equation 4.

$$INV = -265.55 + \underset{(3.66)}{0.2721} GDP + \underset{(0.19)}{0.0445} SAV + \underset{(0.44)}{5.9159} INT$$
$$+ \underset{(2.16)}{1.8775} CAP \tag{3}$$

$R^2 = 0.9261$, $\overline{R}^2 = 0.8965$, D.W. statistic = 1.773, D.F. = 10

and

$$INV = -606.01 + \underset{(4.35)}{0.2967} GDP - \underset{(0.47)}{0.11490} SAV - \underset{(0.19)}{2.7750} INT$$
$$+ \underset{(1.86)}{1.6773} CAP + \underset{(1.66)}{1.7205} AID \tag{4}$$

$R^2 = 0.9293$, $\overline{R}^2 = 0.8900$, D.W. statistic = 1.755, D.F. = 9

From the equations 3 and 4, it is clear that GDP and capital inflow have significant positive influence on PNG investment. Savings and interest rates have a very little influence on investment. Their effect is positive in equation 3 and negative in equation 4. These variables could have been omitted from the models but are kept to study the effect of Australian aid on investment in their presence. From equation 4 it is clear that Australian aid has positive effect on PNG investment but significant only at about 12% level of significance.

It can be said that Australian aid has very little influence on PNG consumption but has some positive influence, significant at 12% level, on PNG investment. Now, we can turn to find the effect of Australian total aid on its own economy.

(ii) The Impact of Australian Aid on Its Own Economy

To study this impact, the consumption and investment functions for Australia are estimated using the same traditional variables that were considered for PNG. All monetary variables for Australia except total aid which is in millions are measured in billions of Australian dollars. All the four equations in this section are estimated by the

method of least squares. The same variables used for explaining the consumption function for PNG are used for Australian consumption. The estimated equations excluding and including Australian total aid are presented in equations 5 and 6.

$$CON = -9.6654 + \underset{(16.03)}{0.6676} GDP + \underset{(1.96)}{0.4667} INT + \underset{(2.22)}{0.2897} PRI \tag{5}$$

$R^2 = 0.9996$, $\overline{R}^2 = 0.9995$, D.W. statistic = 1.517, D.F. = 11

and

$$CON = -8.9951 + \underset{(15.59)}{0.6749} GDP + \underset{(1.96)}{0.4745} INT + \underset{(1.34)}{0.2153} PRI$$
$$+ \underset{(0.81)}{0.005236} AID \tag{6}$$

$R^2 = 0.9996$, $\overline{R}^2 = 0.9995$, D.W. statistic - 1.867, D.F. = 10

Looking at equation 5, Australian consumption is well explained by GDP, interest rates and price levels which are all significant at least at 0.08% level. Total Australian aid (equation 6) has very little impact on its consumption though its effect is positive with a t value less than one.

In arriving at the investment function for Australia, the same variables that were used in estimating investment equation for PNG are included. The two investment equations obtained are given in equations 7 and 8 excluding and including Australian aid variable respectively.

$$INV = -6.8441 - \underset{(0.39)}{0.0302} GDP + \underset{(3.84)}{1.1675} SAV + \underset{(1.91)}{0.6850} INT$$
$$+ \underset{(0.20)}{0.000063} CAP \tag{7}$$

$R^2 = 0.9953$, $\overline{R}^2 = 0.9935$, D.W. statistic = 1.896, D.F. = 10

and

$$INV = -8.8085 - \underset{(1.73)}{0.1530} GDP + \underset{(4.93)}{1.4926} SAV + \underset{(2.33)}{0.7209} INT$$
$$+ \underset{(0.53)}{0.00015} CAP + \underset{(2.13)}{0.0132} AID \tag{8}$$

$R^2 = 0.9969$, $\overline{R}^2 = 0.9952$, D.W. statistic = 2.071, D.F. = 9

The disturbing aspect of the above two investment equations is that the coefficient for GDP is negative. High savings component and

random variation could possibly explain this. Looking at equations 7 and 8 one thing is clear, that Australian aid abroad has a significant (at 0.07% level) and positive impact on Australian investment.

The statistical analysis carried out in this paper leads to the following conclusions.

The Australian aid has very little effect on the PNG consumption or on the Australian consumption expenditure. But the Australian aid has a positive effect on PNG investment and this is significant at 0.12% level while it has positive and significant (at 0.07% level) influence on Australian investment.

Comments on the Results

The results indicate that Australian aid produced negative impact on PNG's consumption and significant positive effect on its investment. Since 90% of the total population of the community live in hills and villages and follow their tribal customs and traditions, their consumption pattern has not changed to any significant extent to cause a leakage from aid to consumption. This has allowed the vast proportion of aid to be directed to investment activities and this in turn has encouraged larger proportion of domestic resources to be directed to the production of investment goods.

Although one component of Australian aid to PNG consisting of budget support is completely untied and there is lively debate as to whether budget support has been the most effective instrument for promoting PNG's development, this was PNG's preferred form of development assistance as partial compensation for the many advantages enjoyed by Australia in PNG's economy, such as the favourable balance of trade (AIDAB 1990). Thus, this form of aid indirectly helps Australia's private sector to increase its export to PNG. On the other hand, the second component consisting of project aid also significantly benefits Australian economy. The results of the impact study of aid on Australian economy prove this. But it has to be noted that the primary objective of Australian aid has been to build the foundation for future growth by developing infrastructure, and skilled manpower, strengthening public sector agencies and increasing the supply of scarce capital.

Such assets will continue to provide benefits to PNG's economy in the long run. The skilled manpower and other infrastructure created from aid expenditure are permanent assets to the PNG economy. Furthermore, the experience gained by PNG in managing Australian project aid since 1986 has facilitated its utilization of aid grants and loans from other bilateral and multilateral donors.

Concluding Remarks

The facts that Australian aid produces negative impact on consumption and positive impact on investment in PNG would tend to suggest that Australian aid is producing the desired result and that Mosely's thesis has some relevance to the case of Papua New Guinea. Furthermore this aid imposes no debt servicing obligations, a great advantage because Papua New Guinea's debt service commitments already take up about one third of its exports, a high level by developing country standards. If the present pattern of aid disbursement continues, it is likely that in the long run the beneficial effects of this aid would be stronger.

However despite the enormous significance of Australian aid to Papua New Guinea, the disbursement of aid in certain particular forms has not been beneficial to many other recipients of Australian aid (Roy 1991).

Australian agricultural technology can be of value to poor countries in Africa only where it concentrates on low cost and small scale projects and is adapted to individual African states. Similarly, in the field of education, a high proportion of aid is needed to be channelled into in-country training (Development Studies Centre 1987). Training and degrees offered in Australia to students and public servants from low income Asia and Africa have, in many cases, been of little relevance to the domestic needs of these countries (Roy 1991). After completing their education, many such students live permanently in Australia and serve the donor country. In such cases the aid recipients become the net loser. The effectiveness of Australia's aid programme can improve, if measures are taken to address these issues. The present study also indicates that the socio-cultural elements play a basic role in explaining the outcome of aid in the recipient country.

Hence bilateral aid policy would be better organised and be made more effective by ensuring that it provides a stimulus for domestic demand in the donor country and that social and cultural traits of people in the recipient country are not neglected in formulating aid policies.

Such considerations would assume greater importance as increasing demands are placed by a growing number of newly emerging countries on the limited supply of DAC funds.

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