Aid-effectiveness: The Micro-Macro Paradox

Paul Mosley

Introduction

Those who wish to determine empirically whether overseas aid has improved the standard of life in developing countries are quickly confronted with a paradox. The microeconomic data from evaluations of aid-financed projects are encouraging: all donors who calculated *ex-post* rates of return on their projects reveal a large preponderance of successful projects. The World Bank, the largest development agency, reports average *ex-post* rates of return of over 10 per cent in every continent and every economic sector over the 20 year period 1961-81.[1]

Yet the macroeconomic data, from regressions of aid on growth across a cross-section of developing countries, are discouraging. When other determinants of growth, such as savings rates and export growth, are held constant, we cannot confirm, for any continent or either decade, the significant and positive relationship between aid and growth in recipient countries which the microeconomic data might suggest. Table 1 also shows that the micro and the macro results from Asia are consistently more encouraging than the results from Africa.

What is going on? Is it true, as the data suggest, that aid projects are succeeding while aid as a whole is failing, and if so how? Or do the data in fact deceive?

The Logical Causes of 'Macro-Micro Slippage'

There are at least three logically possible reasons why macro and micro data on aid-effectiveness may tell a different story:

(i) *Inaccuracies in the data*

Estimates of the *ex-post* rate of return on projects frequently depend on guesstimates of a high order of magnitude. Most aid-financed development projects of which I have experience lack monitoring systems good enough to tell us accurately what increased outputs were caused by the project and what price they were sold at, let alone to give us useful measures of the shadow prices of inputs and outputs.[2]

However, it would be a mistake to turn with relief from messy project data to 'authoritative' data on the growth of GNP. The latter often lack any rigorous basis of estimation, particularly in the poorer countries, where we are most interested in the impact of aid, but where the enormous relative size of the non-monetary sector makes any objective measurement of economic growth very difficult.[3] For an immediate illustration of the arbitrariness to which these deficiencies can lead, turn to the appendix table on page 187 of the original *Berg Report*, where the growth of the Upper Volta economy in the 1960s is given as 0.7 per cent according to UNCTAD data, but as 3.9 per cent according to French Government data; in sub-Saharan African countries overall, the highest available estimate of GNP growth for the decade is more than twice the lowest available estimate [World Bank 1981, unnumbered Table p.187]. In short, both the micro and macro data are seriously defective; as a consequence, either the 'pessimistic' macro-based view of aid or the 'optimistic' micro-based view advanced in our introduction may be wrong for this reason alone.

[1] World Bank (1983) Table 6. Figures for the 1970s, taken individually, are less good; see World Bank, *Tenth Annual Review of Project Performance Audit Reports* (August 1984), vol. 1, page 24. Also, failure rates were high in some regions and sub-sectors; see page 25 of the same volume.

[2] For example, very few project monitoring systems conduct surveys on 'control groups' in order to determine what proportion of changes in target variables was due to the project, and what proportion was due to extraneous factors such as weather and crop prices.

[3] Measures of the output of the non-monetary sector invariably depend on sample surveys of food, clothing, etc., for domestic consumption based on a very small sample of the population; and the pricing of this output is arbitrary, since the figure which statisticians need, namely the price which non-monetary output would fetch *if* instead of being consumed it were sold on the free market, is hypothetical.

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Table 1

Macro and Micro Indicators of Aid-effectiveness, 1960-80

	Partial regression coefficient of aid on growth of GNP			*Average* ex post *rate of return on World Bank financed projects*
	1960-70	*1970-80*	*(sample size)*	*1961-81*
AREA				
Africa south of Sahara	-0.04	-0.20*	28	14.5
East and South Asia	0.099	1.35*	18	21.9
Latin America and Caribbean	0.07	1.01	21	15.8
All developing countries	-0.04	0.024	67	17.3

Source: Columns 1 and 2: Mosley, Hudson and Horrell (1986) Table 4. Sample comprises all less developed countries listed in appendix tables of World Bank *World Development Report*; other variables in regression set are non-concessional capital inflows, growth of exports, growth of literacy. Aid is grant equivalent of gross ODA (using a discount rate of 10 per cent) and is lagged according to the estimated gestation periods of World Bank loans to developing countries. For more details of method of calculation, see Mosley, Hudson and Horrell (1986) appendix 1.

Column 3: World Bank (1983) Table 6.

Symbols: *significance at 5 per cent level.

(ii) *Possible Biases in Project Data*

First, there is a problem of sampling bias: we simply do not have feedback on the performance of all, or even a large random sample, of aid-financed projects. The World Bank, from which the 'optimistic' view of project performance is largely derived, is the only development agency which tries to measure *ex-post* rate of return on most of its projects, but the Bank only accounts for some 20 per cent of annual project aid disbursements by value within the OECD aid-giving community.[4] The other 80 per cent of projects may boast higher or lower rates of return than the Bank's; we simply do not know.

Second, the rate of return figures which we do have are computed at an arbitrary termination date, usually just after the date at which aid money was withdrawn.[5] Yet all readers will know of projects, most of whose benefits materialised long after this date. There are also projects whose detrimental effects came to be seen only after the donor had decamped.[6] The introduction to this *Bulletin* presents alarming reports of such Bank projects in Africa.

Finally, project aid has occupied a declining share of disbursements since the 1970s. As a rule, it is only project aid whose impact is evaluated quantitatively *ex-post*. Hence, even if the *ex-post* rate of return data on projects could be made 100 per cent accurate, they would represent the return on a sample of aid activities over a proportion of their life-span, and hence could not give a full picture of 'aid-effectiveness'. We do not, of course, know whether the apparent return on all aid projects and programmes (weighted by the cost of each) would be increased or decreased, if all these factors were allowed for.

(iii) *Macro Effects which Rate of Return Formulae do not try to Measure*

The rate of return formula tries to measure what an aid-based project achieved in its own right, not what happened to the entire economy as a consequence of

[4] World Bank (1984), introductory tables. This proportion rises if allowance is made for projects which the Bank co-finances with other donors.

[5] World Bank Project Completion Reports, see for example World Bank (1983), are usually done about six months after the end of disbursement; full-scale Project Performance Audits are done a few months after this. There are occasional exceptions to this practice: some evaluations are done just before, and a few many years after, the cessation of disbursements. For more details on the timing of evaluation see Mosley (1983).

[6] As examples of the former effect consider forestry and soil conservation projects, which yield their benefits over many generations; as example of the latter, consider rural roads which collapse just after *ex-post* evaluation. The World Bank has instituted a series of 'impact evaluations' whose intention is to measure these long-term effects. It has also published a study of the sustainability of projects after the termination of aid agreements; for details see World Bank (1985).

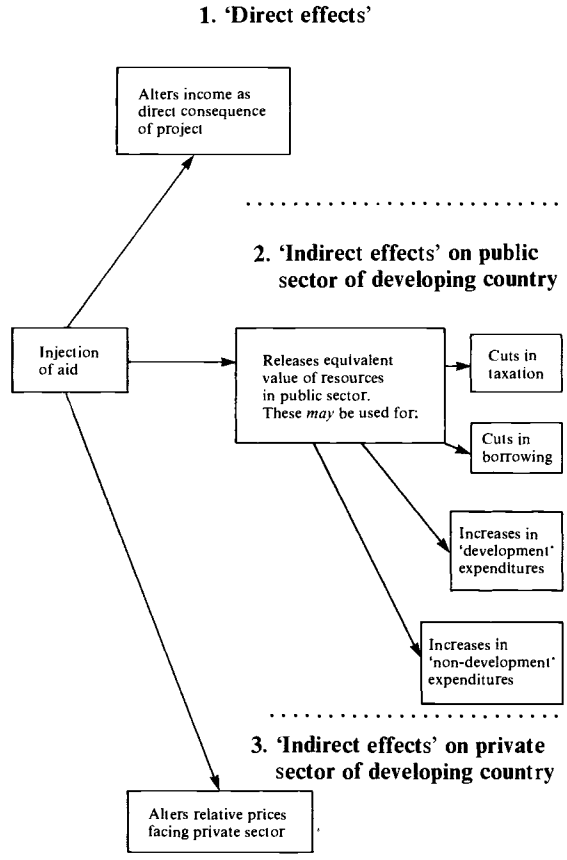
the aid. There are two issues at stake here. First, there is the question of what happens to the *spending* pattern of the public sector. If the Ethiopian Government receives free food aid as famine relief, then to the extent that it would have bought food on the open market in the absence of overseas aid, the aid releases resources which can be used for any purpose: development expenditure, military expenditure, reducing taxes, reducing borrowing, etc. This is the famous problem of 'fungibility'. Secondly, aid disbursements affect relative prices and hence the economic behaviour of the private sector. An example is food aid, which in the short term relieves starvation but in the long term brings down the domestic price of food and thus the incentive for local farmers to supply the home market. But there are less dramatic cases on both the credit and debit side of the balance sheet, as when aid supplies electric power which pulls down the real price of energy throughout the economy, or when aid causes a minor boom in a remote rural area which pushes up the price of transport, unskilled labour and so on to the entire private sector in that region.

We may attempt to summarise the argument so far by means of Fig. 1, which divides the effects of aid into direct effects, indirect effects on public-sector behaviour, and indirect effects on private-sector behaviour. Measured *ex-post* rate of return data do not attempt to measure the last two of these, and may not satisfactorily capture the first if all data are inaccurate or do not last over the entire duration of the project. As regards the third effect — indirect effects of aid on private-sector behaviour — a regression of aid inflows on private sector investment suggests a strong and significant 'crowding-out' effect in the 1960s, but that the effect became insignificant in the 1970s.[7]

Fig. 1, with Table 1, provides a possible explanation of the change in the overall regression coefficient of aid on growth of GNP from negative to near-zero between the 1960s and the 1970s. However, if we confine our attention to the 1970s, the neutral impact of aid on the private sector is not sufficient to bridge the gap between the highly satisfactory *ex-post* rates of return on projects and the absence of relationship between aid and growth at the macro level. The explanation of the difference must therefore, by our previous analysis, rest either with unrepresentative data about *ex-post* rates of return, or with the problem of 'fungibility', viz. (since private investment was

Fig. 1

Channels through which Government-to-Government Aid Inflows may affect Recipient Economy



apparently not 'crowded out' by aid in the 1970s) the substitution of public-sector investment by aid inflows. We have no data at the cross-country level which will give us a handle on the relative importance of these two factors, so let us now consider the relationship between macro and micro measures of aid-effectiveness at the level of one country, Kenya.

Country-Level Analysis: Kenya

If we examine Kenyan data for the 1960s and 1970s we find that the 'macro-micro paradox' repeats itself at the country level. There is no significant relationship, positive or negative, between aid inflows measured as a percentage of GNP and the growth of the Kenyan economy over 1966-82.[8] However, World Bank

[7] The regression coefficient of aid inflows on private-sector capital investment (domestic and foreign, including subsistence sector) was measured as:

- 1.84 (t = 3.83) for 1960-70
- 0.10 (t = 0.86) for 1970-80

by ordinary least squares against the sample of countries provided by appendix tables of successive *World Development Reports*. For further details see Mosley, Hudson and Horrell (1986, Table 5).

[8] The statistical relationship between the two variables is: Growth rate of GDP = 6.5 + 0.013 (aid inflow as a percentage of GNP, 0.078) unlagged, $r^2 = 0.1581$.

projects in Kenya over the period show respectable, if declining, rates of return.[9]

The response of most donors to the decline has been to try to offset a presumed constraint in absorptive capacity in the public sector, partly by disbursing more aid in programme rather than in project form,[10] partly by disbursing more aid through the private rather than the public sector,[11] and finally by applying conditionality to the aid which continues to go through the public sector.[12] All of these measures are intended to 'raise the effectiveness of aid', ie to raise the yield on projects. This they may do, but it is the central argument of this paper that a high measured rate of return on projects is perfectly consistent with a low effectiveness of aid overall. We have identified two possible channels through which this may occur, namely displacement of productive private-sector activities and productive public-sector activities by aid.

The extent of these two 'leakages' is hard to measure statistically, but there is much suggestive evidence concerning the former. Fertiliser aid provided by USAID has remained in the warehouse whilst American aid staff bargained with the Kenya Treasury over the price at which it was to be sold to farmers, with the result that many small farmers were unable to buy any fertiliser at all to put on the 1983 long rains crop.[13] Integrated rural development projects in remote areas such as Turkana and Isiolo have pushed up the cost of transport and handling materials in those areas. Source-tying of aid by the multiplicity of different donors who currently exist in Kenya has created a situation in which the country's water engineers have to deal with 18 different makes of water pump, with enormous costs in terms of training and of diseconomies of small scale. And, finally, each donor operates its own procedure for the reimbursement of money spent in Kenya under aid agreements, a complication which in recent years has led to delays in many aid-financed projects.

Manifestly, not *all* the side-effects of aid in the Kenya private sector are negative. But negative side-effects exist, and if they were done away with, the overall productivity of aid would surely rise. In the last two of the four cases above, the costs inflated by aid flow not from its disbursement as such, but rather from its supply by many competing donors. This creates a presumption in favour of coordinating aid disbursement to particular sectors to the fullest possible extent.

What of public-sector 'fungibility' — replacement of productive state expenditures by aid? The larger the share of the development budget which is financed by aid, the smaller is the scope for switching. In countries such as Bangladesh, Somalia or Nepal, where virtually the whole of the development budget is paid for by donors, there is little scope for switching: where the government uses its entire income for recurrent services and is too poor to budget any money for development activities, there is nothing for aid to drive out. In Kenya the share of aid in the total development budget averages 45 per cent over the last 10 years (although the figure has gone up very sharply in the recent recession). The 55 per cent of development spending financed from local sources has been vulnerable to being switched into unproductive expenditure, reduction of borrowing and reductions of taxation, if the Kenya Government so chose.

Does this happen? One comprehensive study of aid to Kenya has argued that the government has not responded to extra aid by switching its own outlays away from economically useful (and towards merely political) activity. However, this depends more upon assertion (and upon the Kenya economy's generally good growth record) rather than upon factual analysis of expenditure switching. This, in fact, is enormously difficult to conduct, since it requires a comparison between the observed pattern of spending in a given period and the purely hypothetical pattern which *would have been observed* in the absence of aid. However, if a decline in tax effort or an increase in the ratio of recurrent expenditure to national income regularly accompanies an increase in the share of aid inflows to national income, then that indicates that some aid is leaking into tax cuts or increase in the recurrent budget, particularly if the share of development expenditure in national income is not rising at the same time. Fig. 2 is inconclusive for the period from 1966, but after 1978 it shows aid disbursements *rising sharply*, government development expenditure *static*, and government recurrent expenditure[14] *rising sharply*. This suggests that in the

[9] Average *ex-post* rates of return on World Bank projects in Kenya have been as follows in recent years:

Projects ending	Average rate of return (unweighted)
	%
1976	22
1977	16
1978	14
1980	19
1982	10
1983	11
1984	12

Source: World Bank, *Annual Reviews of Project Programme Performance Audit Results*, various.

[10] For the United States the proportion has risen from 32 to 49 per cent between 1972 and 1983, and for the UK from 16 to 26 per cent.

[11] In particular the United States [see USAID, *Annual Budget Submission, Fiscal Year 1985: Kenya*] but also Britain and Holland.

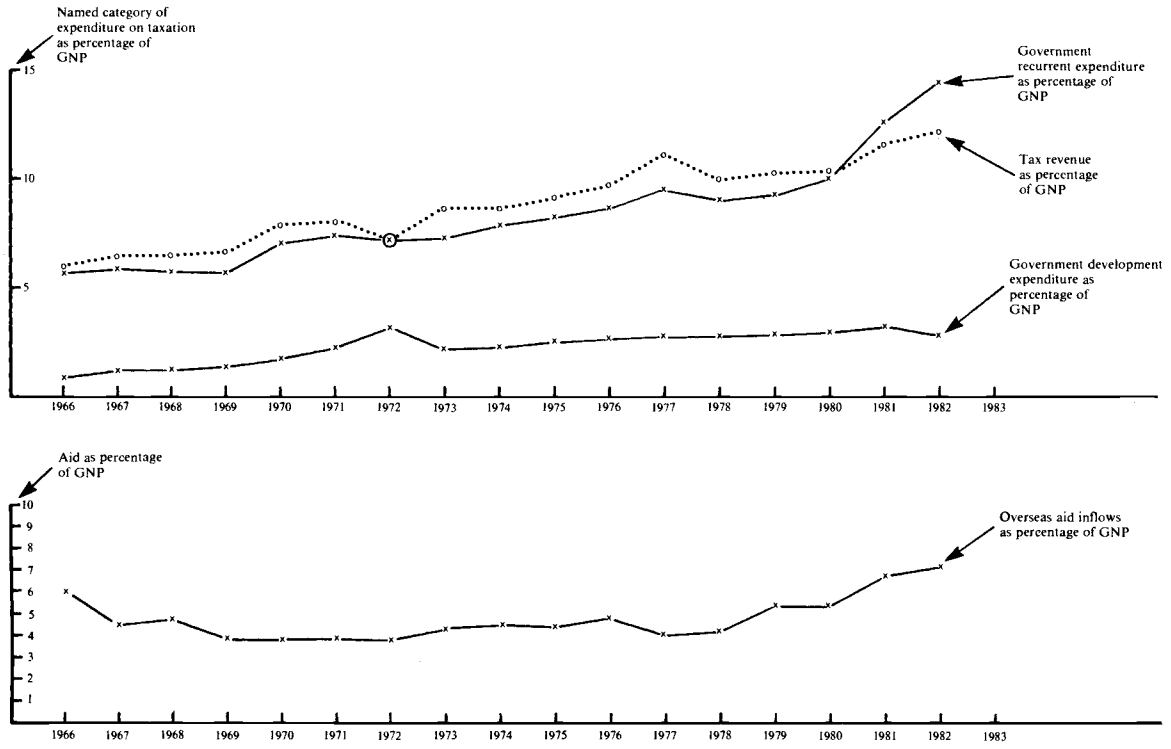
[12] Above all this conditionality has been attached to the World Bank's Structural Adjustment Loans, or large scale programme loans. This is discussed in Mosley (1985).

[13] For the detailed story of the episode see Mosley (1986).

[14] All variables measured as percentage of GNP.

Fig. 2

Kenya: Aid, Taxation and Public Spending, 1966-1984



recent recession, at least, not all overseas aid was used for its ostensible purpose of supporting development expenditure and that some of the aid leaked through into the recurrent budget. There is no trace of declining tax effort, nor therefore of leakage into tax reductions.

In short, some evidence suggests that the difference between micro- and macro indicators of aid-effectiveness in Kenya may in part be accounted for by harmful side-effects of aid in the private sector and by leakage into the recurrent budget;[15] but the evidence for this explanation of the 'paradox' is much weaker than we would wish.

Conclusions

There is a sharp discrepancy between macro- and micro-level measures of the effectiveness of overseas aid. Many operations have been conducted which are successful in their own (rate of return) terms, but if the patient has not died there is a lack of evidence that aid inflows are making him any better. The pessimistic macro-results must be interpreted with extreme caution — in particular, aid works with a lag, and there is a link running from economic crisis to aid by donors in the following period, as well as the link currently under investigation from aid in one period to economic development in the next. But even when these sources of bias have been removed it is not possible to demonstrate that aid inflows account in any statistically significant sense for the variance between those Third World countries which are growing rapidly and those which are not.[16]

[15] There is a counter-argument, which is that the Kenya government's explicit strategy of protecting the recurrent budget through the recession and letting the development budget go hang may in fact be the best way of sustaining current growth — even if possibly at the expense of future growth. Allocating aid to the maintenance of existing roads may do more for current growth rates than allocating it to the construction of new ones.

[16] On the simultaneous-causation argument see Papanek (1972) and for an attempt to deal with the problem by means of two stage least squares analysis see Mosley, Hudson and Horrell (1986:25).

As Hirschman has reminded us, there are three possible responses towards an institution which is not performing as well as it should [Hirschman 1970]. There is no evidence, in our view, to justify 'exit' from the international aid process: even at the macro-level there is no statistical support for the arguments of Bauer (1965) and Griffin (1970) that it actually impoverishes, and at the micro-level there is ample evidence that it does good in individual countries and sectors. But by the same token there is little evidence to justify blind 'loyality', for example, in the shape of a pressure for higher levels of aid without regard to its destination or effectiveness. This leaves 'voice', or efforts towards reform.

But in what direction should the efforts be made? As we saw earlier, there are two pathways (apart from simple errors in measurement) which may cause the overall effect of aid to diverge from the effect of individual projects; these are 'switching' of aid money within categories of public expenditure and side-effects on the private sector. Currently the World Bank and the OECD aid community, not quite unanimously, are trying to deal with the second problem by giving more money direct to the private sector, and with the first by conditional programme or sector aid designed to raise the quality of the entire public investment programme rather than the rate of return on individual projects.

There is nothing wrong with the general approach. But it may not go very far, because conditions, like aid itself, are fungible. Just as there is a risk that in some countries, aid is paying for what the government would have done in any case, so there is an equivalent risk that in other countries, 'policy dialogue' may merely seem to persuade governments to implement policy reforms which they would have carried out in any case [see Mosley 1985].

A better approach to 'aid-effectiveness' might be to give more aid to countries — or perhaps regions — which use it well and less to regions which use it badly, on the grounds that the latter are leopards which no conditional aid will ever persuade to change their spots. For example, Table 1 suggests that Asian developing countries, on both micro and macro criteria, have over the last 20 years used aid more effectively than African countries. There is little doubt that if donor agencies were to redirect a good deal of their aid from Africa to Asia in the 1980s, it would become more effective.[17] Likewise, within countries, they could increase effectiveness by switching aid from sectors and sub-sectors which are going badly to sectors of the economy which have a track record of absorbing aid well.[18] But that would represent the triumph of experience over hope; and in the past it is hope, not to mention faith, charity and material interests, which more than 'effectiveness' have motivated the allocation of overseas aid money.

[17] This, of course, is to over-generalise: there are Asian countries which exhibit all the problems of aid ineffectiveness commonly found in Africa (eg Nepal, Cambodia and to a lesser extent the Philippines) just as there are exemplary aid recipients in Africa (eg Malawi, Botswana and until recently the Ivory Coast).

[18] For example, in Kenya where the Water Development Ministry has a notorious record for the profligate use of aid whereas the Transport Ministry has a very good record, donors could switch (and to a limited extent are switching) their aid portfolio from the former to the latter. Likewise, at the cross-national level, it may be fairly useless to give aid to the health sector in order to increase the emphasis of a particular country on primary health care, but one can to good effect switch health aid towards countries already interested in primary health care rather than big teaching hospitals.

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