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Aid dependence. Issues and indicators

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Table of contents

List of acronyms

CFC	Chlorofluoro Carbon (freon)
DAC	Development Assistance Committee
GDI	Gender Development Index
GDP	Gross Domestic Product
GEQ	Gender equality indicator (GDI/HDI)
GFS	Government Finance Statistics
GNP	Gross National Product
HDI	Human Development Index
HDR	Human Development Report
HFI	Human Freedom Index
ICOR	Incremental Capital Output Ratio
IFIs	International Finance Institutions
IFS	International Finance Statistics
IMF	International Monetary Fund
IMR	Infant Mortality Rate
NNP	Net National Product
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OED	Operations Evaluation Department, World Bank
PPP	Purchase Power Parity
SPA	Special Program for Africa
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
WDR	World Development Report

Preface

This report has been prepared for the Expert Group on Development Issues (EGDI), which meets under the auspices of the Swedish Ministry for Foreign Affairs, as a part of their ongoing analysis of aid dependence. We propose here a concept of aid dependence which is somewhat different from that used in the studies so far and one which had potentially far reaching implications for aid policy. We welcome discussion on our arguments and conclusions.

Helpful comments on earlier drafts were received from members of the Reference Group of the EGDI (and Ben Ndulu) and Robert Cassen. We also thank Peter Koster, Marco van Hoek, Annamarie Voorvelt and Jola Meyer for their assistance in the preparation of this report. The usual disclaimer applies.

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In this publication, two technical appendices from the original manuscript are excluded, one containing a model on developing countries' access to private capital flows and one, presenting data base indicators as box diagrams. Both appendices are available from the EGDI secretariat on request.

The text has been edited by the secretariat in order to adjust to the exclusion of the appendices.

EXECUTIVE SUMMARY

1. Worries about "aid dependence" are one factor behind the aid fatigue which is in part responsible for the stagnating, or even declining, aid flows from many of the world's rich nations. Although the concept of aid dependence is much used it is seldom defined. An examination of the literature shows five common uses of the term: (1) receiving aid at all or aid above a certain level; (2) receiving more aid than can usefully be utilised; (3) ineffective aid; (4) when aid itself generates either the "need" for aid or mitigates against achieving its intended objectives; and (5) when the design of aid programmes (or policies more generally) is dominated by the donor community.
2. We argue that each of these five points is indeed a legitimate cause for concern (except the first, of high aid: high aid is not *in itself* a problem, but becomes so if associated with one of the other four issues listed). However, we do not believe that any of these points constitute a satisfactory definition of aid dependence.
3. We define aid dependence as the case of a country needing aid to obtain an objective in the foreseeable future. The main objectives identified from a review of donor policies are: growth, poverty reduction, female emancipation and/or gender equality, environmental sustainability and good governance. Our definition of aid dependence implies that aid is necessary to achieve the objective, but we would stress that aid will never be sufficient.
4. Aid dependence has usually been defined as a bad thing, but this is no longer the case with our definition. Seeing aid dependence as bad is to confuse aid dependence with "bad aid". Bad aid may simply be ineffective aid, or more perniciously, aid with harmful effects so that the recipient would be better off with less aid (an idea we encapsulate in the aid Laffer curve).
5. We develop a framework for which the starting point is to divide countries into four groups by the following two criteria: (1) is the country on the path toward achieving the specified objective (e.g. income growth or poverty reduction); and (2) does the country have access to international capital? Countries with access to international capital are deemed not to be aid dependent. We further identify if countries currently receive substantial amounts of aid or not: those which do and which are achieving the objective are aid dependent. Possibly countries may receive aid and not achieve the objective: some of these may be constrained by lack of capacity or commitment and in the others aid must be labelled as ineffective.
6. The application of our definition requires indicators for the following:

achievement of development objectives, aid inflows, access to international capital, domestic capacity and external debt burden. We identify indicators to be used for each of these.

7. In respect of objectives we restrict ourselves to growth and poverty reduction. We argue that neither objectives nor efficacy are sufficiently clear with respect to gender, environment and governance. Indicators for self-sustaining growth are defined as: (1) growth of total and agricultural GDP per capita; (2) the savings rate; (3) growth in the capacity to import (exports deflated by the import price index); (4) an index of export diversification; and (5) the ICOR. Given the scarcity of income poverty data, we look at infant mortality rates, female illiteracy and the human development index for the poverty objective. Measures of aid and debt are easy to come by, but those of capacity and commitment are not.
8. Application of the framework shows that data are most readily available in relation to the growth objective, poor for social indicators and very sketchy for measures of capacity and commitment.
9. One finding is that normalised measures of aid – such as aid per person and aid as a per centage of GDP – have risen markedly in the last twenty years. By the early 1990s over thirty countries received very high aid (defined as over $100 per person or 30 per cent of GDP). Sustaining inflows at this level over any period (except for purposes of debt relief) is of questionable value for the country's development effort.
10. Another main finding is how few countries are doing well in terms of growth, despite the fact that many of them receive high aid. We are not saying that these countries would be better off without aid – for which counterfactual analysis is required – but that such high aid levels should be able to deliver more in terms of growth. Hence we identify many countries in which aid is ineffective. In others we are able to identify constraints of capacity or commitment, although the indicators here are somewhat imperfect.
11. There are hence decidedly few countries which appear aid dependent in our sense of the term: that is countries being assisted to achieve developmental objectives by aid inflows. There is another small group of countries which may move toward achieving these objectives were they to receive more aid than at present. But for the vast majority of countries the major problems seem to be those of lack of either capacity or commitment, or that aid is for some other reason simply ineffective.
12. Despite poor economic performance, most countries continue to enjoy improvements in social indicators, although the rate of improvement may have slackened. Hence social deprivation is defined in relative terms of poor performance. Even then, some countries perform well despite low levels of expenditure in social services. These findings point to the need for a better understanding of the link between aid and social indicators, which is an underdeveloped area compared to economic analysis.

1. Introduction

After nearly three decades of more or less sustained growth, real aid has started to fall. In an era of tightening budgets, critics are keen to highlight the perceived failure of aid. Faced with increasing demands for emergency assistance and new forms of cooperation for peace-keeping and security, supporters of aid are hard-pressed to mount a convincing defence of conventional forms of aid. Part of aid's claimed failure goes under the name of "aid dependence" – which many see as a situation in which a country sucks in more and more aid but with increasingly little to show for it.

It is difficult not to accept that aid has had many failures: there has been much "bad aid". An important part of bad aid has been a lack of ownership – the "let the donors do it" mentality – amongst recipients. There is no doubt that this problem is a serious one, which has rightly become a major preoccupation of many aid donors. Some commentators identify this mentality itself as aid dependence. We would rather see it as an important factor in the analysis of aid dependence, and accordingly pay much attention to the issue below, but we define aid dependence itself differently.

Aid donors have clear developmental objectives and aid can play a valuable role in achieving those objectives. We define aid dependence as a situation in which aid is in fact necessary to achieve the development objectives of a specific country. Whilst many commentators on aid dependence give the term a negative connotation, the definition adopted here does not do that. Rather it is a restatement of aid's legitimate moral basis as a tool to assist the world's poor.

In Chapter 2 we elaborate on this definition and contrast it with existing definitions of the term, leading to the development of a conceptual framework for the analysis of aid dependence. This framework requires us to collect a range of indicators related to development performance and recipient country capacity and commitment. Chapter 3 discusses the range of measures we use for this purpose. Underlying this approach is the explicit intention that donors should adopt a log frame mentality to the planning of their whole aid programme. That is the planning of the programme should be entirely in the context of the donor's stated activities and explicit attention paid to the meeting of those objectives. It is commonly accepted these days that aid will not work where there is neither domestic capacity nor commitment to the programme, and our approach also demands that this fact be taken seriously.

In Chapter 4 we apply the framework by an analysis of the indicators we have collected, in the first instance to identify threshold values and then for the classification of countries. Chapter 5 summarizes the conclusions from some studies on aid effectiveness and chapter 6 draws out the conclusions from our analysis.

2. Defining aid dependence

2.1 Introduction: existing definitions

The term aid dependence is often used without a clear definition of what it means. In this chapter we first review some uses of the term to identify the different concepts underlying the notion. We argue that current usage seems to conflate several separate issues, which are all important and often related to aid dependence, but not actually a definition of aid dependence itself. In section 2.2 we offer our own definition, which provides the basis for a conceptual framework for analyzing aid dependence presented in section 2.3. Section 2.4 summarises the main points from this chapter.

The following quotations illustrate the range of uses of the term aid dependence.

1. In *Does Aid Work?* aid dependence is discussed in a section on aid and self-reliance:

   Aid dependency is not an unchanging phenomenon. Many countries have graduated from soft, IDA-type finance. (Cassen *et al.*, 1984: 30).

2. Ryrie's recent critique of aid mentions aid dependence in a few places, for example:

   Most significant of all, perhaps, is the fact that many years of high and rising aid levels of aid create a condition in which African governments cannot conceive of doing without it. The corrosive effects of aid dependence and the mentality of dependence are evident in Africa today. (Ryrie, 1995: 49–50).

3. Hydén warned of "the dependency trap":

   Another pathological aspect of foreign aid is the dependency trap, whereby grants designed to meet temporary need elicit such successful adaptation to those inputs that the needs become permanent: grants actually create the situation in which they are perceived as necessary. (Hydén, 1986: 274).

4. Stokke asks:

   To what extent may the governing system of a poor, debt-ridden, aid-dependent African country be termed democratic, even if the government has emerged from free and fair elections with several parties competing, when overall economic policy is decided from outside? (Stokke, 1995: 77).

5. The World Bank's C*ountry Assistance Review* for Ghana (World Bank, 1995a) warns that the country may be becoming aid dependent:

   Beware the downside of excessive aid-dependency. The Bank should give

> greater consideration to minimizing the potential adverse effects of "too high" levels of external assistance, including the behaviour of government officials. Excessive aid may allow governments to postpone adoption of needed but politically difficult reforms, thus reducing savings and private investment and delaying the expected supply response. But it may also lead to excessive numbers of projects relative to the country's absorptive capacity, dependency behaviours (such as "let the donors do it"), distortions in incentives created by multiple scales of donor-financed supplements and allowances, and the dominance of donor-driven objectives and donor-specified performance indicators. (World Bank, 1995a: 15).

The report goes on to offer an explicit measure of aid dependency, which is the aid to GDP ratio (World Bank, 1995: Table 5.8, 106).

6. Riddell has described aid dependency as:

   > the notion that aid itself might be playing a particularly influential role in continuing, exacerbating or even furthering the existence of structures and institutions within the recipient country, which are detrimental to development. (Riddell, 1996a: 4)

7. Elsewhere, Riddell has defined aid dependence as

   > that process by which the continued provision of aid appears to be making no significant contribution to the achievement of self-sustaining development (Riddell, 1996b: 40).

8. Finally, Ndulu has said

   > one form of aid dependence is related to the concerns with the apparent inability of development assistance over more than two and a half decades to provide an impetus for self-sustenance by recipient countries. (Ndulu, 1995: 1)

From these eight quotations we can list the following ideas as being equated with aid dependence:

- receiving aid at all (quote 1) or aid above a certain level (quote 2 and 5);
- receiving more aid than can usefully be utilised (quote 5);
- ineffective aid (quotes 5, 7 and 8);
- when aid itself generates either the "need" for aid or mitigates against achieving its intended objectives (quotes 2, 3, 5 and 6); and
- when the design of aid programmes (or policies more generally) is dominated by the donor community (quotes 4 and 5).

Let us look at each of these ideas in turn, to consider if they usefully capture the notion of aid dependence. Before doing so, we point out that the last four

of the five may be seen as "a bad thing". By contrast, high aid is not in itself a bad thing but may be so if it has as consequence one of the other four problems listed. Behind the following discussion is our own conception that aid dependence is best defined by saying *what* the recipient depends on aid for.

High aid inflows, however normalised, are not *in themselves* a measure of "dependence", however defined. To take a simple example, if a person were to give you $2,000 each month your "aid to income" ratio would be high. But in what sense are you dependent upon that "aid"? In reaction to our interim report one reader gave two examples which illustrate our definition. The first was the aid to Tanzania has doubled from 20 to 40 per cent over the last twenty years, during which time growth has been on average about zero. The second case is that of a college student receiving monthly support from his or her parents to perfect his/her PhD prior to submission. The first case is clearly one of ineffective aid. The second one is aid dependence given the objective of perfecting the PhD.[1] In both cases we can only interpret the high aid ratio given some additional information, which is why we say that *high aid ratios do not in themselves signify aid dependence.*

For similar reasons, it is not clear that cases of receiving more aid than can be utilised and bad aid may usefully be called aid dependence. If the aid is not achieving anything, then in what sense is a country dependent on it? We must stress that we are not rejecting these problems as unimportant: indeed they are central to the debate on aid effectiveness and will occupy us below. The question of "how much aid?" enters into our own analysis of aid dependence. But bad aid and aid dependence are not the same thing.

Of course, whether aid is bad aid or not is not an immutable fact, but depends also on the environment into which it is disbursed (see, for example, the argument by Mosley, 1992, that aid effectiveness depends on the policy environment, and the more recent restatement of this view by Burnside and Dollar, 1996). A critical issue here is whether the aid itself may play a role in the policy environment being poor, which brings us to the last use of the term aid dependence.

The last meaning given to aid dependence are the cases when the recipient abdicates management of its development strategy to the donors, a situation which we would agree is more likely at high aid volumes or which may be exacerbated by the nature of aid. This point is crucial to current concerns over aid effectiveness, and it is built into our own analysis by a consideration of the conditions for aid to be effective. However, we argue that sustainable development is achieved by recipient ownership, and so not compatible with a situation in which donors dominate policies and programmes. But to the extent that the problem is created by aid itself then the recipient would be

[1] The argument was made that there is no dependence since the PhD may be submitted as it is. But this is a case of a difference in objectives (here between the parent and the student).

better off in the long run with less aid, so that such a situation may not be labelled aid dependence in the light of our definition given below.

As indicated in the above discussion, dependence means dependent on aid in order to achieve something. This point was recognised in Mutasa and White (1994) which, based on a two gap model, defined aid dependence as the situation in which

> aid will be required indefinitely to maintain growth at the desired level (Mutasa and White, 1994: 114).

However, this definition is defined simply in relation to growth, whereas aid in fact has a broader range of objectives. In the next section we define aid dependence in a way so as to recognise this fact.

2.2 A definition and related issues

We have chosen a simple definition of aid dependence:

> A country is aid dependent if it will not achieve objective X in the absence of aid for the foreseeable future.

The main rationale for this definition is that it is based on the actual meaning of the word "depend". We realise that adopting of this definition means that we side-step an analysis of many problematic issues in aid management. However, our search for an operational measure of aid dependence led us firmly in this direction.

Although simple, this definition requires elaboration in a number of ways. First, aid dependence is seen as neither a good or bad thing, but rather an input into the donor's aid policy. Second, the definition is in relation to an unspecified objective. The actual "Xs" which concern us are the objectives of development aid, which may in principle be those of the donor, recipient or a third party. Third, the definition implicitly assumes that aid is effective in the realisation of X. And fourth, the ability of aid to achieve X can be broken down into required resource inputs and the institutional capacity and commitment to properly utilise those inputs. A last issue which is discussed in the literature is whether there are circumstances under which aid can itself exacerbate the problem of aid dependence. We elaborate each of these points in turn below.

Before that, a final point to make is to draw a sharp distinction between our definition of aid dependence and the 1960s two gap model. The two gap model is a structuralist model in which a target growth rate gives rise to required levels of investment and imports. If domestic savings are insufficient to cover the former or export earnings too little to pay for the latter than there are said to be, respectively, a savings gap and a trade gap. Aid is "needed" to fill the larger of these two gaps. The main problems in such analysis are that (1) it is a poor model of how developing economies work; and (2) aid is

not in practice determined endogenously with reference to these gaps so the *ex ante* calculations are irrelevant.

However, a similar philosophy to gap analysis may be adopted whilst abandoning the structuralist orientation of the gap model. Suppose (as economists are famous for supposing the unimaginable!) we have a perfect economic model of a particular economy from which we can forecast the growth rate. Suppose further that with no aid flows this growth rate would be 3 per cent. We could then examine what level of aid flows, if any, would raise this growth rate to 5 per cent (our perfect model takes into account all the adverse effects of aid).[2] If the objective is a 5 per cent growth rate, then this country is aid dependent since it needs the aid to achieve this growth rate. A similar logic could be applied to any objective (poverty reduction, gender empowerment etc. – although an even larger leap of faith toward the modelling capacity of economists is required to apply the approach).

Is aid dependence a bad thing?

The notion of dependence has negative connotations. It may conjure up images of countries using aid to live beyond their means, and so "depending" on aid to support their standard of living. In such cases the policy reaction to aid dependency would be to reduce aid. Our definition of aid dependence may *not* be interpreted in this way. We argue below, that the negative images of aid dependence come from different interpretations of the term.

If a country requires aid to attain an objective then we designate the country as aid dependent; but there is no judgement as to whether this is a good or bad state of affairs. Rather the statement becomes a positive aid allocation rule. If the donor adopts objective X as an objective of its development cooperation, then aid dependence with respect to that objective is potentially a reason to give aid to that country. It is only *potentially* a reason since, whilst the notion of aid dependence implies that aid is necessary to attain objective X, *aid alone is never sufficient to achieve any objective.* Certain conditions have to be satisfied for aid to work, and donors should be satisfied that these preconditions are met in making their aid allocation decisions.

What is aid for?

The notion of aid dependence is most often used in relation to economic performance. A country which appears to require large aid inflows to either sustain or achieve modest improvements in living standards is said to be aid dependent. But of course aid has many objectives and in Table 2.1 we summarise the stated development objectives of the major donors. It would also

[2] The model in the appendix is an attempt at such a model, though we do not claim it to be perfect.

Table 2.1 Objectives of bilateral development agencies

Donor	Objectives
Australia	".. to promote sustainable economic and social advancement of the peoples of developing countries in response to Australia's humanitarian concerns as well as Australia's foreign policy and commercial interests" (1994); ".. to assist developing countries help meet the basic needs of the people, and to assist in achieving a more secure and equitable international order" (1996).
Austria	".. the creation, in its fullest sense, of a positive framework for social and economic development" (1994).
Belgium	Human rights, democracy; environment, North/South unemployment; technology transfer and capacity building (1994).
Canada	Poverty alleviation, structural adjustment, increasing the participation of women, environmentally sound development, food security and energy availability (1994). ".. to support sustainable development in developing countries in order to reduce poverty to a contribute to a more secure, equitable and prosperous world" (1995).
Denmark	Economic growth and a more equitable distribution of economic growth and social justice, development of human resources, pluralist society and respect for the individual, protection for the global environment and sustainable use of natural resources, global and regional cooperation, cultural cooperation and international understanding (1995).
Finland	".. reducing poverty, combating global environmental threats and promoting equality, democracy and human rights in developing countries" (1995).
France	To reduce poverty and help development (but diluted by non-developmental preoccupations) (1996).
Germany	Poverty alleviation, food security and rural development, protection of the environment, population, refugees, improvement of energy supplies, and education and professional training (1994).
Ireland	Poverty and basic needs (1996).
Italy	Support for global environment and population problems, combat drugs and organised crime, support for basic education, support for women in development projects, combat AIDS, promote regional integration between LLDCs (1995).
Japan	Simultaneous pursuit of environment and development, avoid use of ODA for military purposes, full attention to military expenditure, and full attention to democratization, human rights and market-oriented economies (1994, 1995 and 1996).
The Netherlands	Structural poverty alleviation, economic self-reliance, environmental sustainability and women's emancipation.
New Zealand	".. sustainable economic and social progress and justice in developing countries", including emphasis on poverty reduction, gender and environment (1995).
Portugal	Supporting developing countries' transition process to democracy, the implementation of new political structures, the transformation of economic systems and the protection of the environment (1994).
Spain	Sustained growth, bolster Spanish foreign relations and favour hispanic culture, and develop the relationship between the Spanish economy and developing countries (1994).

Donor	Objectives
Sweden	Economic growth, social and economic equality, political and economic independence, democratic development and human rights, and ecologically sustainable development (1994). Poverty reduction, gender, environment and sustainable development, and democracy and human rights (1996).
Switzerland	Economic and political self-reliance, support to the poor, overcoming environmental problems, improving conditions of production, and health and education (1994).
United Kingdom	Promote economic liberalisation, enhance productive capacity, promote good government, help developing countries define and carry out poverty reduction strategies, promote human development, promote the status of women in developing countries, help developing countries tackle national environmental problems (1994 and 1995).
United States	Broad-based economic growth, democratisation and stabilizing population growth (1996).

Notes and Sources: The source is German and Randell (1994, 1995 and 1996), the year in the table indicating which of these has been used. Policies given in quotation marks are direct quotations from official policy statements.

be possible to examine the objectives of the recipients of aid. However, our analysis has implications for the aid management policy of donors, so that it seems preferable to use their objectives. In practice, the *stated* objectives of donor and recipient will not vary much, although there may well be a difference of emphasis. There is more likely to be conflict over non-development objectives: arising from the non-developmental objectives of both donor and recipient and also the clash between developmental and non-developmental objectives.

From the table we can summarise the following common themes:[3]

- self-sustaining growth
- poverty reduction
- environmental sustainability
- improving the position of women
- good governance (democratisation etc.).

Aid dependence can be defined in relation to each of these developmental objectives. For example, a country may not require foreign aid to achieve growth, but this growth may not be associated with poverty reduction without outside assistance.

[3] We have focused here only on the developmental objectives of development aid. Some donors (e.g. Spain) explicitly include their own interests in the stated objectives of development aid, and other donors are known to pursue these anyway.

This discussion also indicates that there is potentially a time element to the notion of aid dependence. A country may not be aid dependent if the objective is "poverty reduction", but is so if the objective is "poverty reduction by the year 2000". We prefer *not* to allow this time dimension to enter our definition, since the selection of the target year is arbitrary and so adds an arbitrary element to the identification of aid dependence. We prefer to say that the country will never attain the objective, or will not do so "in the foreseeable future", in the absence of aid.

Aid as necessary and sufficient

The definition we have adopted is that aid is necessary to achieve objective X. A first question must be to ask if aid ever is necessary at all. Second we consider if aid is sufficient; and, if not, what else is required?

Is aid necessary?

Critics of aid such as Peter Bauer have argued that aid is never necessary. For example:

> "Foreign aid is a central component of world development." So in 1981 said Professor Hollis Chenery, then Vice President of the World Bank in charge of economic research. How can he have been right? Large-scale development occurs in many places without foreign aid, and did so long before aid was invented. (Bauer, 1984: 38)

In fact an examination of the economic history of the now developed nations shows that imports of foreign capital have been a significant factor in their development. For example, in the late 1800s Europe was a substantial exporter of capital to countries such as Argentina, Canada and the United States which used foreign borrowing to finance the development of their economic infrastructure. The relative importance of these inflows varied, being around only 1 per cent of GNP (and never more than 6) for the United States, but averaging 7.5 per cent for Canada (and so financing between one third and one half of total investment) with similar values for Australia and the Scandinavian countries (World Bank, 1985: 12).

Of course, the difference between the late 1800s and the current situation in many developing countries is that in the 19th century countries received *private* capital at market rates, whereas aid is public capital at concessional rates. Aid's critics (again Bauer is an example) argue that the capital will flow so long as there is genuine potential. The rationale for aid rests on two arguments: (1) promoting developmental activities which will not yield a financial return (or not do so sufficiently quickly) to attract commercial finance (this argument thus incorporates emergency aid); and (2) there is market

failure in international capital markets so that even attractive investments cannot obtain funds.

The first of these arguments may be sustained on humanitarian grounds. The fact that in nearly all countries the majority of social indicators have continued to improve, even in the face of economic crisis, contrasts strongly with the experience of the now developed countries, such as the United Kingdom, in which indicators such as life expectancy *worsened* in the early stages of modern development. (In the north of England, for example, infant mortality in the country side is estimated to have risen from 115 to 156 from 1841 to 1871, and from 174 to 212 in cities over the same period; Polak and Williamson, 1993: 228). The improvements in developing countries have been achieved in part by interventions supported by aid donors, which could not have been financed by governments alone.

The market failure argument may be justified for a number of reasons. One such reason is the riskier nature of investments in developing countries, which will deter risk averse private investors even though average returns may be higher – though this argument is undermined as a case for aid if government itself is responsible for the risk. Concessional aid is one way around this problem, but so is risk spreading by underwriting loans to these countries (which is indeed the rationale for the structure of the World Bank[4]). Investment may also not be forthcoming as a result of asymmetric information: investors simply do not know (or trust) information as to which are the best opportunities. An economist's answer would be that intervention should seek to redress these asymmetries (which is what the "IMF seal of approval" seeks to do), but direct finance by aid also tackles this problem.

The arguments advanced here provide a rationale for aid. However they do not provide a justification for just any aid: bad aid is to be avoided. Nor do these arguments suggest that aid is all that is required.

Aid is not sufficient

Our definition of aid dependence contains an implicit assumption of aid effectiveness. We will come back to the issue of aid effectiveness below, but one conclusion we wish to draw here from that literature is that aid is never a sufficient condition for the achievement of any of the objectives listed above. That is, aid alone will never ensure attainment of the objectives of development cooperation.

As economists we might like to express this idea in the form of a production function (with finite substitutability). Outcomes are expressed as a function of aid and some other factors – and inputs of all factors are required for

[4] The Bank's IBRD window is structured in this way, but not IDA funds. See Killick (1997) for a proposal to restructure IDA funding more along these lines.

the outcome to be achieved. What are the other factors apart from aid? The critical ones are domestic institutional capacity and commitment to the activity, without which no objective will be achieved and sustained. A recent World Bank review of aid effectiveness listed these two items as the top two requirements for successful aid (of which there were five in total: (1) ownership by the government and participation by the affected people; (2) strong administrative and institutional capacity; (3) sound policies and good public sector management; (4) close coordination by donors; and (5) improvements in aid agencies' own business practices; World Bank, 1995b).[5]

To apply our definition of aid dependence as an aid allocation rule we require indicators both that aid is necessary, but also that the other factors (domestic capacity) are present for the aid to work. This framework is developed explicitly below in section 2.3.

Institutional capacity appears as an important aspect of the aid dependence literature, but not in the way we discuss it here. It is normally applied to cases either where (1) the country is aid dependent so that donors also have to supply "domestic institutional capacity" through the aid programme, or (2) aid has destructive effects on domestic capacity. With regard to the first instance, aid may legitimately attempt to develop domestic capacity; but attempts to circumvent or supplant it in the interests of another objective have most usually turned out to be bad aid. A period of capacity building may be required before injecting aid for the achievement of some objectives. However donors must be wary of mistaking cases of conflicting objectives for "weak recipient capacity".[6] As is commonly acknowledged, recipient commitment, and the consequent ownership, are vital to the success of aid-financed activities, though this recognition still has too little impact on donor policy.

Another concern in the literature is that aid itself is responsible for the undermining of domestic capacity. See for example quote 5 from World Bank (1995a) above, and this issue is a major preoccupation of Sobhan (1996). This concern is in fact a specific case of the more general debate as to whether aid itself can cause aid dependence.

Can aid create aid dependence?

A concern in the literature is that aid itself can create aid dependence. We can distinguish two cases here. The first is when aid has detrimental effects which cause the recipient to depend on further aid (i.e. Hydén's "dependency trap"). The second is when a country gets "too much aid".

[5] See also the ODC report *Strengthening Aid to Africa* (van der Walle and Johnston, 1996: 54).
[6] See, for example, Ferguson's (1990) discussion of the Thaba Tseka Rural Development Project in Lesotho.

Aid dependence generated by adverse effects of aid

Aid can create aid dependence if it contributes to the conditions for objective X not being met. In economic terms, if aid leads to lower savings or lower export growth then it may lead to the appearance of aid dependence. Such countries may become "aid junkies" as they need ever more aid just to maintain their living standards (White, 1996b).

There is a conceptual point here – if the country *could* achieve X without aid, but now it has aid it appears to need aid, is the country aid dependent? The answer to this question is "no". But it need not unduly concern us, since the empirical findings of aid's negative impacts rests mostly on cross-country studies suffering methodological shortcomings (see White and Luttik, 1994), whereas more detailed analysis of specific countries finds also beneficial effects at the macro level in most cases (see e.g. Jansen and Vos, 1997; and White, 1998). The main area of legitimate concern appears to be aid's impact on fiscal policy, by which aid can reduce government's reliance on the domestic tax base and so (1) weaken tax effort; (2) discourage policy reform necessary to get growth in revenues; and (3) undermine accountability (to the recipient population rather than the donors). The first of the concerns is captured in the fiscal response literature, and an alternative formulation is given by Pedersen (1997).

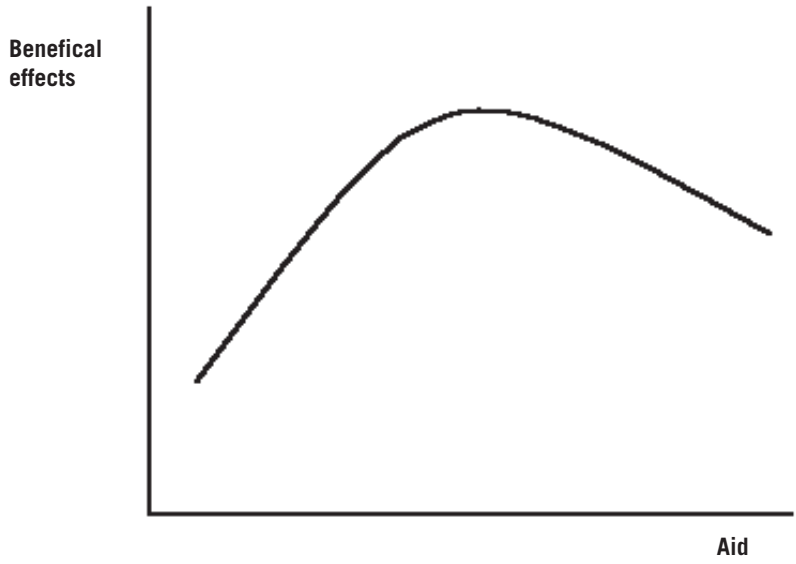
Related to the fiscal reaction of government is the link between aid and government policy more generally. This point may encompass both macro policy stance, and sectoral and micro issues of policy and programme implementation. At the macro level there is the concern that, rather than supporting reform, aid has actually undermined it. This possibility appears a very real one, which has occurred in some, but by no means all cases; and is a fact which supports current donor thinking about selectivity or the need for *ex post*, rather than *ex ante*, conditionality.

Whatever government intentions, it is further possible that aid generates aid dependence by undermining domestic institutional capacity or by eliminating the need for policies to move the country to self-reliance. These problems are of course most likely to occur in countries receiving substantial aid inflows. One immediate effect is the deflection of the civil service away from a direct role in their country's development toward managing aid donors: as documented by, *inter alia*, Morss (1984), a single recipient can expect hundreds of donor missions in a single year.

Countries that get "too much" aid

The idea of "too much aid" can be shown by an aid Laffer curve, which captures the idea that there are first diminishing and eventually negative returns to aid. The curve is shown in Figure 2.1. The horizontal axis measures aid (say A/Y) and the vertical "beneficial effects". The curve is an inverted U; that is, after a certain threshold A/Y more aid is detrimental rather

Figure 2.1 An aid Laffer curve



than beneficial. Is there any evidence that an aid Laffer curve may exist in practice?

A number of authors have claimed that there is. For example:

* Lavy and Sheffer (1991) examine the cases of Egypt, Syria and Jordan which are now worse off, after years of very high aid inflows, than they were in the early 1970s. The story of why they are worse of is as follow. High aid inflows exceed those which can feasibly be used in profitable investment and so some aid must be consumed. This consumption usually takes the form of consumer subsidies (and perhaps highly subsidised government services). When aid slackens these policies are not readily reversible (a notion economists call hysteresis). If possible, the government will borrow to maintain consumption – which postpones, but exacerbates, the eventual fiscal adjustment. Alternatively, government may print money. These problems are intensified by the fact that aid-financed investments may not have been particularly profitable, and may have discouraged private sector activity.
* Zejan and Kokko's analysis of aid to Guinea-Bissau finds that aid has financed investment, but that "the total investment volume reflects too high levels of investment with respect to the country's management capability" (1994: 148).
* Morton draws a similar conclusion from his analysis of Sudan, arguing that donors are unwilling to accept that the poorest developing countries only have the capacity to successfully implement an exceedingly limited

number of development projects; hence, he says, "the volume of aid just grows and grows without regard for its chances of being put to productive use" (1994: 16).

* Sobhan (e.g. 1996) argues that aid is too high as the recipient government is swamped by donors and so unable to direct its own development effort, to the long run detriment of that development.
* A review by ODC of *Strengthening Aid in Africa* argues that aid has been allocated without regard for absorptive capacity:

> The absorptive capacity of the recipient state, not some arbitrary proportion of GNP of donor countries should determine the level of aid a country receives... Given the low levels of development in most African countries, low domestic savings, low government capacity, and the levels of aid already often well above 10 per cent of GNP, such estimates suggest that many African countries could not absorb much more aid without further drops in long-term effectiveness. (van de Walle and Johnston, 1996: 98).

To sum these stories up, high aid inflows can be a problem since (1) they simply cannot be productively utilised; and (2) they not only allow an economy *not* to adjust but rather encourage it to move to an even less sustainable policy path. If we pick a high number, say A/Y=40 per cent, then values over this level are undoubtedly "too much aid" in the sense discussed here, and van der Walle and Johnston cite a study by Cline proposing an upper limit of only 10 per cent. (We have undertaken some preliminary estimates of growth regressed on *inter alia* the aid ratio and the aid ratio squared. These results suggest that the turning point for the aid Laffer curve is when aid is between 40 and 60 per cent of GDP.) However even this statement need be qualified by looking at the type of aid. A country can readily absorb larger amounts of debt relief which have no expenditure implications for the recipient government. Proposed ceilings on aid ratios should consider project aid, and perhaps funding for investment and recurrent expenditures, separately.

The majority of economies with A/Y over 40 per cent are small island economies.[7] And they are indeed cases of avoiding adjustment. The only viable adjustment for many such countries is mass migration, but the need for that global adjustment is obviated by aid transfers. Donors may be willing to do that, but then should be clear that such is their purpose.

Aid dependence versus bad aid

The above discussion should make clear that our definition of aid dependence does *not* carry the connotation that aid is bad. There are several

[7] More generally, there is a small-country bias in aid allocations, by which smaller countries get more aid (per capita or as a per cent of GNP) than larger ones at a comparable level of income. There is no developmental rationale for this state of affairs.

related problems that should be of concern to aid donors: (1) when aid creates disincentives to good policies; (2) aid which undermines domestic capacity; and (3) aid which is ineffective or even harmful. These three points are linked by the fact that all three are more likely when aid flows are high. The fact that "aid dependence" has often been equated with high aid has meant that it has also been equated with these three undesirable states of affairs.

We have stressed so far that a country can be aid dependent and none of these three situations need be the case. It is also so that countries suffering from the above problems may not be aid dependent. Indeed, the aid Laffer curve suggests that the country would be *better off* from reducing aid rather than worse off. There would undoubtedly be some adjustment required in countries receiving large aid inflows. But these adjustments would be by those living off the aid inflows, by official or unofficial salary supplementation etc., it is unlikely that it would be either the poor or the economy's growth which would suffer. Clearly aid that can be withdrawn with no important adverse effects is bad aid.

2.3 A conceptual framwork for the analysis of aid dependence

Some donors apply the logical framework (log frame) to the design and evaluation of their aid projects. That is, for each objective, there must be outputs, activities, and inputs related to the achievement of that objective. Moreover, there should be measurable indicators at each stage of the process. However, no donor applies the log frame to the overall design of their aid programme, though there is no reason why such an exercise could not be carried out for planning purposes.

The first stage in applying a log frame approach to the design of the aid programme must be definitions of objectives which are amenable to measurement. Hence a set of indicators may be defined with reference to each objective to measure progress. The application of our definition of aid dependence requires the identification of such indicators and the setting of thresholds to determine if an objective has been achieved. Clearly if a country has achieved objective X then it is not dependent on aid to reach it.

The ideal way of applying our concept of aid dependence would be to conduct with versus without modelling for each objective in turn. That is we need a model of each indicator of each objective and to analyse its time path with and without aid. This approach is that applied by Mutasa and White (1994) to the case of growth, and in this report we present a more sophisticated model along those lines (see Appendix). However, there are problems in the calibration of such a model, and these problems are currently insurmountable in the case of other objectives. (A partial exception being that growth is necessary for sustained poverty reduction, and this relationship can be measured though the elasticity of a poverty measure with respect to

income, which thus allows us to identify the lower limits of necessary growth; see the chapter 4 for further details). Hence we propose here an alternative way of identifying aid dependent countries.

Our concern is thus with countries which have not achieved objective X, and the different cases maybe tabulated as shown in Table 2.2. A first distinction we make (in rows) is between countries which are moving toward meeting the objective and those which are not. Those which are moving in the right direction and are not receiving high aid inflows are clearly not aid dependent. We also designate as not aid dependent those countries which could have access to international capital. We are left with a category of countries which are moving to the objective but reliant on high aid inflows (i.e. do not have access to international capital); these countries are potentially aid dependent. We term them as potentially aid dependent as for them to actually be so it must be the case that the counterfactual is that without aid they would not be moving toward meeting the objective. (A further problem is that if policy variables are an important determinant of access to capital then this access is not exogenously determined, a problem which is more complicated still if aid itself is in part responsible for the poor policy environment. These issues indicate a need for careful analysis and judgement to be used in the application of our framework to specific cases).

We then come to those countries which appear not to be meeting the

Table 2.2 Conceptual framework

		High aid	
		Access to international capital	**Restricted access to international capital**
Trend toward meeting objective		Not aid dependent	Potentially aid dependent
Trend away from meeting objective	Domestic capacity	Unrealised potential	Ineffective aid
	Limited domestic capacity	Other constraint	Other constraint

		Low aid	
		Access to international capital	**Restricted access to international capital**
Trend toward meeting objective		Not aid dependent	Not aid dependent
Trend away from meeting objective	Domestic capacity	Not aid dependent	Potentially aid dependent
	Limited domestic capacity	Other constraint	Other constraint

objective. Here we divide into two rows, to distinguish those constrained by lack of capacity (for which we also need indicators) and those which apparently have the capacity (but are nonetheless not reaching the target). Countries which are possibly aid dependent are those which cannot access international capital but are not constrained by inadequate domestic capacity. There thus may be a case for such countries to receive higher aid than at present. However, what we cannot know is, if these countries were to receive high aid, they would move to the top row, or sideways to the ineffective aid category (discussed in the next paragraph). Further work on the common characteristics of countries in which aid is ineffective may help distinguish such countries from one another.

There is also the case of countries not meeting the objective, yet which receive high aid inflows. This category we designate as "ineffective aid". Since we do not have the counterfactual, we are not able to say that these countries are no better off with aid than they would be without it (i.e. where they lie on the aid Laffer curve). However, the values we set for "high aid" mean that these countries are in receipt of a substantial volume of foreign assistance (normalised by GNP and per capita), so that their failure to reach the objective should be a cause for concern – and must necessarily raise questions as to the effectiveness of the aid.

The application of this framework thus requires indicators of the following:

- development objectives
- past and current aid levels
- access to international capital
- domestic capacity.

In addition to these indicators, we also believe some indication of external debt burden is important. Chapter 3 discusses the indicators we may use for each of these categories.

2.4 Summary

We define aid dependence as the case of country needing aid to obtain an objective in the foreseeable future. The main objectives identified from a review of donor policies are: growth, poverty reduction, female emancipation, environmental sustainability and good governance. Our definition of aid dependence implies that aid is necessary to achieve the objective, but we would stress that aid will never be sufficient.

Aid dependence has usually be defined as bad thing. But we argue this definition has confused aid dependence with "bad aid". Bad aid may simply be ineffective aid, or more perniciously, aid with harmful effects so that the recipient would be better off with less aid (an idea we encapsulate in the aid Laffer curve).

3. Indicators of aid dependence

3.1 Introduction

The last chapter identified the areas in which indicators are required to apply our framework for the analysis of aid dependence. Each of these areas are discussed in sections 3.2 to 3.5, with a summary table presented in section 3.6. Indicators should preferably be readily available, so that we try to use those available from international sources as far as possible[8], and easy to interpret (simply put, we know which way is up). Two previous compilations of indicators are of particular relevance for our own work: the list compiled by Cassen and Fitzgerald (1994) during OECD's revision of the DAC-list, and Riddell's (1996b) set of indicators proposed in his own study of aid dependence. These indicators are given in Tables 3.6 and 3.4.

3.2 Objective-related indicators

In Chapter 2 we identified five major development objectives of aid in the 1990s. Here we discuss each in turn and possible indicators of that objective. We re-emphasize here our earlier point that ideally our notion of aid dependence is determined by analysing a country's performance with respect to a particular objective with and without aid. However, even in the case of growth, we do not have sufficiently detailed models to allow us to do this.[9]

The growth objective

Growth has been a traditional objective of aid, although other objectives have since been added, it retains a central importance. In fact the objective is to reach a satisfactory level of income per capita, but the concern is rightly to assist the recipient onto a self-sustaining growth path toward that level. The relationship between aid and growth is usually made through a two gap model in which aid facilitates higher investment by relieving the savings and trade gaps.

Mutasa and White (1994) used this model to derive conditions under which a country was aid dependent, meaning that it would require aid indefinitely to achieve the target growth rate. The limitation of this analysis is that the two gap model is an inadequate description of how economies

[8] International sources means regularly published works of comparative statistics, such as the World Bank's *World Tables*.

[9] There is surprisingly little full-scale macro modelling of aid. In the most comprehensive CGE models (e.g. Radelet, 1993), aid only enters the economy through the identities, with none of the behavioral relationships mentioned in the literature on the macroeconomics of aid.

work because, for example, of the exclusion of price effects. The appendix contains an economic model which incorporates a larger range of potential effects of aid. In fact, this model comes to similar conclusions to those from Mutasa and White. That is, domestic savings, export growth and the productivity of investment are key factors in whether or not an economy can grow independently of aid.

As a part of SPA 3 the World Bank (1994b) proposed indicators to monitor "the sustainability of enhanced growth rates emerging from policy reforms and external financing" (1994: 53). Five indicators were suggested to be reported for all recipients on an annual basis, namely:

- agricultural growth
- growth of traditional and non-traditional exports
- growth of the domestic savings rate
- changes in government revenue as a per cent of GDP
- changes in private investment.

Two of these indicators (savings and exports) are also suggested directly by our model analysis. We would agree that the separate measurement of non-traditional exports, to give some idea of export diversification, is desirable – though the measure takes one away from those readily available from international sources. However, the annual UNCTAD yearbooks *International Trade and Development Statistics* provides data on both a diversification index and a concentration index, where the latter gives the finest distinction between countries with the most concentrated export structures. We use this concentration ratio, which is theoretically bounded between 0 and 1. Developed countries typically have values below 0.2 (e.g 0.110 for Sweden and 0.063 for the United Kingdom in 1992), whereas many developing countries have ratios in excess of 0.7. We consider also the change in the ratio between 1980 and 1992.

Similarly, real private investment is only available from national sources and so has to be excluded from our analysis.

Further support for some of the indicators come from the recent empirical literature on economic growth. In this literature numerous variables are identified which are correlated with economic growth. It is beyond the scope of this report to give an overall critical survey of this literature, but Tables 3.1(a) and Table 3.1(b) report the main results of some important cross-country regressions. Table 3.1(a) refers to cross-country studies in which a broad range of developed and developing countries is considered, whereas Table 3.1(b) shows cross-country growth regressions with respect to Sub-Saharan African countries.

Before drawing conclusions from these two tables, some remarks are necessary. First, most studies take country dummies into account. It appears that often dummies for Sub-Saharan African, Latin American, tropical or landlocked countries are robustly significant with a negative sign. Second, due to

Table 3.1(a) Recent regression results for determinants of growth of GDP per capita

	Barro and Sala-i-Martin (1995)	Levine and Renelt (1992)	King and Levine (1993)	Sala-i-Martin (1997a)	Sachs and Warner (1997)
Lagged GDP (per capita)	–ve	–ve	–ve	–ve	–ve
Human capital[1]	+ve	+ve	+ve	+ve	+ve
Political variables[2]	sign	–	..	sign	sign
Openness[3]	..	–	–	+ve	+ve
Investment[4]	–	+ve	..	+ve	..
Market distortions[5]	–ve	–	..	–ve	..
Primary products as % total exports	..	..	..	–ve	..
Mining (% of GDP)	..	..	..	+ve	..
Fiscal policy and budget balance	–ve	–	–	–	+ve
Population growth	–	–	..	..	+ve
Variance of inflation	..	–	–	–	..
Financial development	+ve	..	+ve	–	..
Natural resource abundance	..	..	..	..	–ve

Notes: Sign = significant (positive or negative dependent on the definition); see also Key of the next table.

1. Several definitions are used in the literature. Among others: enrolment rates and life expectancies. In Sachs and Warner (1997) also a quadratic term, with a negative, coefficient is found. This implies that above some level an improvement of human capital may be negative for economic growth.
2. In many studies political variables and institutional quality variables are included. These refer to: rule of law, political rights, civil liberties and degree of capitalism (positive effect on growth) or number of revolutions, military coups and war dummies (negative effect on growth).
3. Openness is defined in different ways. Some authors use the trade GDP ratio, others use variables like the number of years an economy has been open in a certain period.
4. With respect to investments, usually the investment to GDP ratio is used. Sometimes also different types of investments is considered (see Sala-i-Martin, 1997a). In Sala-i-Martin 1997b also the investment GDP ratio is tested.
5. Proxied by real exchange rate distortions or the (standard deviation of) the black market premium.

differences in estimation techniques (some use OLS, others use SUR etc) the results of the different studies are difficult to compare. Finally, the main reason why results differ per study has to do with the stability checks the authors have used. Some authors have not done any stability check and found most variables included in the regression to be significant. Others, however, have done stability cheques by adding different sub-groups of variables in the basic regression equation. The most extreme method is used by Levine and Renelt (1992). They applied extreme bounds analysis, which is an extremely thorough way of examining the robustness of the coefficients. They concluded that very few variables pass the robustness checks. Sala-i-Martin (1997a and 1997b) also did a large scale stability test. However, his test was less extreme

Table 3.1(b) Recent regression results for determinants of growth of GDP per capita in sub-Saharan Africa

	World Bank	Mosley et al.	White	Savvides	Ojo and Oshikoya
Lagged growth/GDP	-ve	-ve	-ve	-ve	-ve
Investment	..	..	..	+ve	+ve
Population growth	..	..	..	-ve	-ve
Human capital[1]	..	..	+ve	-	+ve
Inflation	-	-	-	-	-ve
Growth of exports/trade ratio	..	..	..	+ve	..
Growth in government consumption	..	..	..	-	..
Fiscal policy[2]	+ve	-	+ve	..	..
Financial development[3]	..	..	..	-	..
Real exchange rate	+ve	+ve	-	..	+ve
External debt	..	..	..	..	-ve
External transfers	-	-	+ve	..	..
Terms of trade	-	-	-ve	..	..
Political freedom	..	..	..	+ve	..

Key: +ve significant positive effect; –ve significant negative effect; – insignificant; .. not included in regression.
Notes: dependent variable is growth turnaround for first three studies and growth for the other two; (1) see papers for definitions of variables; (2) measure of fiscal balance and revenue collection; (3) Ratio of quasi liquid liabilities of the financial system to GDP.
Sources: Ojo and Oshikoya (1995), Savvides (1995), White (1996b) Mosley *et al.* (1995) and World Bank (1994).

and hence he found more variables which are robustly correlated with economic growth.

Although results differ considerably per study, some conclusions can be drawn. The lagged GDP per capita is significant in all studies. It has a negative sign in accordance with the convergence hypothesis (poorer countries grow faster). Human capital also seems to be robustly significant, which underlines the importance of better education. The same holds for investment. With the exception of Barro and Sala-i-Martin (1995), investment is robustly significant in all studies taking this variable into account. Several studies point at the importance of openness or export growth. We observe also the negative effect of external debt in the studies with respect to Sub-Saharan Africa.

Based on this discussion we select the following indicators of self-sustaining growth:

– growth of total and agricultural GDP per capita
– the savings rate[10]

[10] There is an issue here of whether domestic or national savings should be used. To the extent that there are substantial transfers which are partly consumed, then domestic savings will appear artificially low. On the other hand, unless the transfers are expected to be sustained, then domestic savings is perhaps the more relevant indicator of the prospects for sustainable growth.

– growth in the capacity to import (exports deflated by the import price index)
– an index of export diversification
– the ICOR.[11]

It will be observed that the ICOR is often unstable. Although values in the range two to five are usually assumed in development analysis, actual calculations can reveal extremely high or negative values. These cases occur when growth is negligible or negative despite positive investment. Countries in such a situation are not headed toward self-sustaining growth, so that this instability does not undermine the usefulness of the measure for our purposes.

Poverty reduction

Poverty should be broadly conceived and not restricted solely to notions of income (or consumption) poverty. Moreover, we do not have reliable data on the level of income poverty for a great many countries.[12] It is better to use a social measure, which is both a poverty indicator in its own right, and highly correlated with income poverty. We have chosen two such indicators: the infant mortality rate and female illiteracy rate.[13] In addition we report the Human Development Index.

Problems of infant mortality are most severe amongst the poorest sections of the community; hence changes in the indicator pick up changes in their welfare. The determinants of infant mortality mean that changes can occur though changes in income, access to health, water or sanitation facilities, increased education or improved housing – all of which are important aspects of living standards. Female illiteracy is an important measure both as an input to higher living standards and as an end in itself.

One problem with these measures should be noted. There is an observed strong relationship between each of these measures and income – both at the cross-country level and between households within a specific country. However, the curves describing this relationship is shifting over time (i.e. a given level of income is associated with, for example, lower infant mortality, today than was the case twenty years ago). These shifts may be ascribed to "techni-

[11] The ICOR is calculated from the Harrod-Domar equation as lagged investment divided by the change in real output.
[12] Despite work at the World Bank (e.g. Ravallion and Chen, 1997) attempts to use income poverty data which are comparable between countries will sharply restrict the available sample.
[13] Many commentators argue that the child mortality rate (probably of death between first and fifth birthdays) is a better indicator of social development than the infant mortality rate (probability of death between birth and first birthday). However, the two are highly correlated, so that the distinction is not so important for our purposes.

cal progress". In so far as the measures are direct indicators of poverty then there is no problem here: the indicators *are* improving. But to the extent that we interpret them as proxies for income poverty then they over-state the extent of improvement.

Gender

Bryceson (1995) points out that donors are often unclear as to the gender objective of their aid. Is it to empower women, or is it to target income-raising activities toward women? If it is the former then the measure we need is one of gender equality in the social, economic and political spheres. In the latter case some absolute measure of female welfare will suffice. In either case we are in fact constrained by data availability.

For the last two years UNDP (1995 and 1996) have reported a Gender Development Index (GDI), which is a modified form of the Human Development Index (HDI). The HDI is calculated from four variables: life expectancy (LE), adult literacy (LIT), the enrolment rate for six to 23 year olds (ENR), and an adjusted income variable (AY).[14] The first step is to calculate an index for each of these variables which is done by scaling over the range from zero to one.[15] For example, in the case of life expectancy, the indexed value (I_1) for country j is:

$$I_{1,j} = \frac{LE_j - LE_{\min}}{LE_{\max} - LE_{\min}} \qquad 1$$

Hence a country with LE equal to LE_{min} would have an indexed value of 0 and a country with LE equal to LE_{max} would have I_1=1. Prior to 1994 UNDP adopted the actual minima and maxima for each variable, so each index ran from zero to one. The disadvantage of that approach is that a country's HDI will change from year to year even if all its indicators remain unchanged as the denominator in equation (1) will change. Hence a procedure has been adopted of defining minima and maxima which are not actually attained by any country (for LE, for example, the values of 25 and 85 years respectively).

Step 2 in calculating the HDI is to calculate an index of educational attainment, which is a weighted average of indexed values of LIT (2/3) and ENR (1/3). Finally, step 3 is to take a simple average of the indices for LE (I_1), educational attainment (I_2) and AY (I_3):

$$HDI_j = \frac{1}{3}\sum_{i=1}^{3} I^{i,j} \qquad 2$$

[14] Adjusted income is calculated by applying a formula to PPP GDP which severely caps income above a certain threshold, where this threshold is defined with reference to the average poverty line for developed countries.

[15] The indices of the variables are used to ensure scale equivalence prior to averaging.

where HDI_j is the HDI for country j and the $I_{i,j}$ is indicator i for country j; i = 1, 2 and 3.

The GDI is defined from the same four variables as the HDI, but combined in a way so as to reflect the degree of disparity in each indicator between men and women (though the treatment of the income variable is rather more complicated). The first step is to calculate the scaled indices for LE, LIT and ENR for men and women separately, using the formula given in equation 1. The second step is to calculate the indexed value (I^*):[16]

$$I_i^* = 2\left(\frac{1}{I_{i,m,j}} + \frac{1}{I_{i,f,j}}\right)^{-1} \qquad 3$$

where $I_{i,m,j}$ is the indexed value of variable i for men for country j (and similarly with f for female). Equation (3) is applied in the case of LE (=I), LIT and ENR, and the I^*s for LIT and ENR used to calculate the gender-adjusted index for educational attainment (=I).

It can be seen from equation (3) that $I^*=I$ if $I_m=I_f$. However, this fact does *not* mean that $I^*=I$ if the level of the indicators used to construct the index are the same. The latter statement would be true if the same scaling procedure were applied to the indicators for men and women. But in the case of life expectancy the minima and maxima are 22.5 and 82.5 for men and 27.5 and 87.5 for women. Hence, in the case of life expectancy, $I^* < I$ if $LE_m > LE_f - 5$.

The treatment of income is different. An adjustment factor is calculated to reflect womens' share of income. This share is based on the ratio of female to male wages, from which the total income of men and women in the labour force is calculated. Income shares for the population as a whole are then calculated by dividing these figures for earned income by shares of the total population. The resulting adjustment factor is applied to the transformed level of PPP GDP used to calculate the HDI. Hence the indexed value of income used to calculate the HDI and GDI will be the same if (1) men and women earn the same wages; *and* (2) male and female shares of the labour force are the same of their shares of the total population.

In summary, we may say that if there is no gender inequality then the GDI and HDIs will be equal. This statement is not exactly so given the different scalings applied to life expectancy and, the admittedly difficult to surmount, problems in the treatment of income. But what this discussion should make clear is that the GDI is *not* a measure of gender equality. As the GDI is the HDI adjusted for the degree of inequality the measure conflates the level of development (HDI) with gender inequality. Rather the ratio of the two, that

[16] This formula is a slightly simplified version of that used by UNDP, which includes population shares.

is GDI/HDI, is an indicator of gender inequality, with this ratio approaching one the less the inequality.[17] This ratio thus incorporates gender disparities in health (life expectancy), education (literacy and enrolments) and income to the extent that this last is adequately captured by the methodology. There are of course many other aspects to gender inequality, which is one reason the UNDP also proposed the Gender Empowerment Measure (GEM).

The GEM is calculated on the basis of (1) womens' share in parliamentary representation, (2) their share in senior positions; and (3) income shares. Aside from conceptual and data problems with the income measure (which also affect the GDI), the other variables are of limited relevance for may developing countries, so we do not adopt the GEM for our analysis.

If our concern is with the level of female welfare, rather than with gender equality, then we may use the GDI, or any of its components, as the relevant indicator. We choose to use the GDI and female illiteracy.

However, we have not found it useful to apply our conceptual framework to the gender objective, as the link between aid and the measures we report is quite tenuous. We have chosen to report them to stimulate discussion as to the role of gender in the aid programme and what usefulness these indicators may have.

Environment

As with gender, there is some ambiguity as to donors' position with respect to the environment. Is the intention that aid should (1) promote avenues for development which do not adversely affect the physical environment; (2) seek to minimise adverse impacts; or (3) promote policies which will monitor and maintain adverse impacts, though not according environmental concerns a priority position? Which of these is in fact the case will determine if the environmental policy will affect the aid allocation decision or only project design at the margin.

So far as indicators are concerned, the World Bank report *Monitoring Environmental Progress* presented indicators developed by the OECD, and these are summarised in Table 3.2. These indicators are divided into driving force indicators (measures of human activities which affect environmental standards), state indicators (the state of the environment) and response indicators (measures of socio-economic response to environmental quality). As can be seen from the table, the development of environmental indicators is at a relatively early stage. For this reason, and the ambiguity of the environmental objective, we do not report any indicators in relation to this objective. We

[17] Of course figures of greater than one are possible if women are more advantaged by the indicators used to construct the index; given the orders of magnitude involved, figures of one or greater can also occur through rounding errors (while still indicative of approximate equality by these indicators).

Table 3.2 Sustainability matrix (environmental indicators)

Issue	Driving force indicator	State indicator	Response indicator
Environmental			
Sources	[1] Resource depletion index[3]	.....	.....
Water (excluding oceans)	Withdrawal/availability	Water use/population Biological oxygen demand and chemical oxygen demand in water	Water charges/cost of provision .....
Fisheries	[1] Catches of marine species	.....	.....
Forests	Roundwood production Deforestation rate	Forest area/total area Standing timber[2] [1] Quality of forest cover [4]	Reforestation rate Stumpage fees/price of timber[2] .....
Land			
Land management	[1] Land use changes	[1] Human-induced soil degradation [1] Soil erosion risk index [2]	[1] Land management techniques[2] .....
Agriculture and rural development	Arable land per capita [1] Use of fertilizers and pesticides [3]	Cropland/natural capital [2] Area with salinization or waterlogging	Rural to urban terms of trade Expenditures on extension services [4]
Deserts and droughts	Fuelwood consumed per capita	[1] Desertification index [4]	.....
Subsoil assets	Material inputs/GNP [2] [1] Extraction rates Energy consumption per capita	Subsoil assets/wealth [2] Years of proven reserves	[1] Prices of inputs to outputs [2] Energy taxes and subsidies Renewable/nonrenewable resources[4]
Sinks	[1] Pollution index [3]		
Solid waste	Industrial and municipal waste [3]	Waste disposable/waste generation [3]	Expenditures on waste collection [2]
Toxics	[1] Generation of toxics [2]	[1] Area of contaminated land [4]	..... [4]
Greenhouse gases	[1] Carbon dioxide and methane emissions	[1] Carbon dioxide and methane in atmosphere	Expenditures on abatement [2]
Stratospheric ozone	Production of CFCs	CFCs in atmosphere	Programmes to phase out ozone-depleting substances
Life support	[1] Ecosystem risk index [3]		
Biodiversity	[1] Rate of habitat loss [3] [1] Rate of species extinction [4]	[1] Natural capital/wealth [2] [1] Number of threatened species	Protected area/total land area Protected areas/sensitive areas [2]
Oceans and coastal zones			
Human health impact	[1] Index of environmental impact [2]		
Water quality and access	Household water use per capita	Access to safe water	Percentage of population with sanitary services

	.....	Fecal coliform	.....
	.....	[1] Lead in water [4]	.....
Air quality	[1] Pollution load [2]	[1] Ambient concentrations [2]	
Other		[1] Environmental-related diseases [4]	
Social			
Demographics	Rate of population growth	Population density	Fertility rate
Health	Burden of disease[2]	Life expectancy	Health expenditures/GNP
	Calorie intake per capita	Infant mortality rate	.....
Education	School enrolment	Adult literacy rate	Education expenditures per capita
	.....	Educational attainment [2]	.....
Human settlements	Rate of urban population growth	Percentage of total population in urban areas	.....[4]
Housing	.....	[1] Shelter index [4]	Housing expenditures/GNP
	.....	Marginal settlements [4]	.....
Infrastructure	Motor vehicles per capita	.....	Infrastructure expenditures/GNP
Economic			
Poverty	GNP/population growth rate	Headcounts and poverty gap indices	Labour intensive growth [4]
	Distribution of wealth	Genuine saving/GNP [2]	
	[1] Production-consumption patterns [4]	Net primary school enrolment rate by poverty status and gender	Targeted interventions
	Total fertility rate	Infant mortality rate	Expenditures for basic social services/total public expenditures
		Percentage of population using family planning	
Financial resources	Per capita wealth	Environmental protection expenditures per capita [4]	Investment/GNP
	.....	.....	Environmental taxes+subsidies/GNP [4]
	.....	.....	New environmentally sustainable development funding
Transfer of technology			
Productivity	NNP/wealth [2]	NNP/GNP [2]	Intermediate inputs/GNP [2]
	Unemployment rate	Manufacturing GNP	Capital/output ratio [2]
Institutional	.....	[1] Mandated environmental assessments [4]	[1] Ratification of international conventions[4]

Note: [1] = composite index; [2] = no internationally agreed compilation procedure exists but some work has been done; [3] = sources and methods suggested but no compilation done; [4] = unsure how to do compilation; ..... = basic indicator research needed.

report these possible indicators to prompt discussion on sensible monitoring of environmental impact and progress at the national level.

Good governance

Good governance has been added to the aid agenda in the 1990s, though double standards are prevalent in the application of this criterion (see, for example, Stokke, 1995 and Raffer and Singer, 1996). Measures are available of good governance, such as Humana's Human Freedom Index (HFI) and indices more specifically focused on corruption (such as that of Mauro, 1995). These measures have been subject to critiques for reasons such as undue subjectivity and the weighting of different factors (e.g. Barsh, 1993; and Bouandel, 1993 on the HFI). The HFI received a lot of publicity after being used in the UNDP's 1991 *Human Development Report*, and the *HDR*s continue to publish tables of which governments have signed various conventions which may be used to give an updated quantitative picture. A more qualitative picture may be constructed through the annual reports of Amnesty International.

Although it is perhaps early to say, analysts have been sceptical of aid's ability to achieve much in this area. Stokke (1995) argues that political conditionality is not likely to succeed partly as there is no agreed agenda for good governance (in the way that there is for economic reform), except for the narrow area of gross human rights violations. Moreover, though political conditionality may be compatible with development objectives, it is less so with donor vested interests; the latter can sometimes dominate, thus resulting in double standards which can only undermine the good governance agenda: China is a case in point for most donors. As another example, the Dutch have linked aid to human rights since 1970. This policy resulted in discontinuing most aid to Surinam in 1982, in reaction to the murder of 15 members of the opposition, whereas aid to Indonesia was continued, despite knowledge of at least comparable human rights' violations. Other donors back calls for reduced military expenditure on the part of recipients whilst simultaneously promoting arms exports (even using aid to do so, as in the notorious case of the Pergau dam). More generally, it is something of a paradox (not to say contradiction) to have a democratisation movement in which a prime mover is external forces (and in the African case at least in the absence of the political groups normally associated with the move to democracy, see Widner 1994). [18]

Given both measurement difficulties and the ambiguous position and effectiveness of the good governance objective we have decided not to pursue this objective as a part of this study. We would offer the opinion, however,

[18] This contradiction is nicely, if unintentionally, captured by the EU's declared intention to "enforce" democratization (cited in German and Randell, 1995: 101).

that a country can never be aid dependent with respect to the good governance objective. That is aid is never necessary to achieve democratic rule. However, we would emphasize that monitoring of governance *is* essential for good aid management. Aid disbursed to a non democratic or even despotic regime will do more harm than good (see Box 3.1).

Box 3.1 Aid to Rwanda

Uvin (1996) analyses the role of the development community in the pre-genocide period in Rwanda. He argues that donors either ignored, or were ignorant, of the political context of their aid. They saw Rwanda as a "model recipient", whereas in fact aid reinforced the regime that was planning the genocide:

... during the 1990s, a time when torture, violence, corruption, racist discourse, and genocidal preparations were becoming state policy and civil war waged, international aid to the Rwandan regime more than doubled... Rwanda's genocide.. was also the failure of a practice of development cooperations based on ethnic amnesia, technocracy and political blindness. (Uvin, 1996: 1 and 34)

3.3 International capital flows

Aid flows

Our conceptual framework requires data on past and current aid flows. The level of aid is measured by disbursements normalised by recipient GNP and population.[19]

Access to international capital

A country need not be aid dependent if it can access other sources of international capital. Indeed, during discussions of the revision of the DAC list Cassen and Fitzgerald (1994) proposed that access to international capital be an important factor in determining eligibility for aid.[20] One measure of access is the actual situation, i.e. to look at the share of gross aid in gross receipts of foreign exchange (net receipts should not be used as the denominator may be small or negative). But of course a country may receive aid it does not need and so in consequence not resort to international markets.

[19] Of course, there is a wide range of candidates for the denominator (e.g. government revenue or expenditures, total imports, investment and total inflows). There are arguments for each of these, but we restrict ourselves to the two most frequently used.

[20] Of course, donors can give money to whoever they wish. "Eligibility" in this context means that the funds are counted as ODA by the purposes of reporting to the DAC.

There are two ways around this problem. One is to use an international credit rating, such as Moody's, the Euromoney rating or from *Institutional Investor*. A second is to model econometrically the determinants of access to international capital and so give proxy indicators. The last of these is the most satisfactory and the one adopted here.

3.4 Measures of capacity and commitment

The objective-related measures discussed in section 3.2 indicate only if there is a shortfall in the objective which may be made up if aid is received. But in order for the aid to be effective there must also be domestic capacity for effective utilisation of the aid and commitment to the objective for which the aid is intended. We discuss each of these in turn.

Domestic capacity

Absorptive capacity has long been recognised as a problem in the aid literature. Chenery and Strout (1966) proposed an investment constraint (which was binding at low levels of development) which set a limit on the growth rate of real investment. It is probably the case, as their analysis suggested, that an economy can only profitably absorb a certain level of investment and that large increases in investment over a short period (as occurred in the 1970s) are likely to be used in marginal activities. The investment rate, or real investment, compared to recent actual levels may thus be one indicator of capacity to productively use further investible resources.

An alternative approach to the problem of absorptive capacity is to look how much aid is used out of commitments. A possible measure is the ratio of gross disbursements to commitments, but a problem here is that a country with low commitments will have a high ratio even if it could not absorb much more aid. Hence we normalise the disbursement to commitment ratio by dividing it by the aid to GNP ratio.

More generally domestic capacity may be measured by human capital variables, for which we propose to use the secondary school enrolment rate. In the draft report we also used the share of technical assistance in total aid, but these proved to be a poor measure, with high values for countries for which one would *a priori* expect to have high administrative capacity. A qualitative measure is the role the government takes in preparing the public expenditure review (PER) and policy framework paper (PFP), which donors could readily monitor through their embassies.

Ownership and commitment

It is well recognised that recipient ownership is important for successful aid-financed activities. A study for OED by Jayarajah and Branson (1995) exam-

Table 3.3 Measures of ownership of adjustment programmes

	Locus of initiative	Intellectual commitment among key policy makers	Political will of leadership	Efforts toward consensus building
1	Borrower	Observable and detailed consensus	Specific and up-front actions	Government launched broad campaign
2	Collaborative	Common approach became entrenched	Strong and detailed statement of support	Major efforts to obtain cooperation
3	Bank-designed but with borrower commitment	Some disagreement over reforms	Lukewarm commitment	Centralised approval with some cooperation from executing agencies
4	Bank designed and some borrower reluctance	Very little agreement	No clear cut commitment to overcome obstacles	Executing agencies not involved in design or implementation

Source: Jayarajah and Branson (1995: 234)

ined ownership of adjustment programmes using four criteria as listed in Table 3.3. These were combined to a composite score in a way that is not entirely clear. Although not possible for this report, it would be useful for donors to develop similar criteria for annual assessment of recipient performance for management of the aid programme as a whole (similar issues are raised by Riddell, see the summary of his proposals in Table 3.4).

In addition to each of the specific objectives, some measures may be identified of government's overall commitment to the development effort. Military expenditure is one such possible item (though there may be cases in which higher than "normal" levels are deemed to be warranted); the IFIs have in recent years finally turned their attention to this issue. In addition, government should be wedded to open and transparent government. These processes are monitored in part by the public expenditure reviews undertaken by recipients and/or donors, and the measures of corruption mentioned above (Mauro, 1995) may also be applied.[21] Despite these various possibility, there are currently no readily available or systematically collected indicators for government commitment. We return to this point in Chapter 5.

Commitment to the growth objective may also be measured by indicators of policy stance. In *Adjustment in Africa*, the World Bank (1994a) proposed a composite index of performance which was based on exchange rate policy,

[21] Mauro presents econometric evidence that corruption reduces growth, although a rather more nuanced picture can emerge from country case studies (e.g. Ward, 1989). Girling (1997) distinguishes corruption which is functional to development (e.g. Thailand, Indonesia and the Philippines) from that which is dysfunctional (e.g. nineteenth century France).

Table 3.4 Riddell's aid dependence indicators

		Possible indicators
	Aid-related	Trends in aid; development versus emergency aid; trends in domestic savings; trends in imports and exports; budgetary performance
Development (objective) related indicators		
	Development performance	Investment rate; savings rate; tax effort; capacity utilisation and ICOR; trends in real exchange rate; trends in quantity and quality of human resources; trends in foreign investment
	Structural change	Development of physical infrastructure; trends in structure of the economy; development of power and telecommunications; access to basic services; external debt position; poverty, employment and inequality; sectoral shares of government expenditure
	Pre-conditions	Political stability; legal and institutional framework; minimum institutional structure
Indicators of domestic commitment, capacity and capability		
	Commitment	Government statements; consistency statements and actions; openness and transparency; government participation in aid planning, implementation and monitoring
	Donor-recipient relationships	Donor planning framework and time horizon, response to problems in aid effectiveness; nature and extent of recipient involvement in aid planning; nature and extent of conditionality

Note: Riddell calls these the two categories given above "quantitative" and "non-quantitative". We have given the alternative labels which more closely corresponds to our framework.
Source: Riddell (1996b: 42–53)

monetary policy and the fiscal deficit. In the draft report we proposed a composite measure constructed (1) a score based on the exchange rate regime as listed in the IMF's *International Finance Statistics* (see Table 3.5); (2) real growth in M2; and (3) the budget deficit. However, we have dropped this composite for the following reasons. In the case of the exchange rate

Table 3.5 Scoring and classification of exchange rate regimes

Score	Exchange rate regime
0	Pegged currency
1	Limited flexibility in terms of a single currency
2	Limited flexibility in terms of a group of currencies (currently only ERM countries)
3	Adjusted according to a set of indicators and other managed float
4	Independently floating

measure it is not clear "which way is up". There is no clear consensus amongst economists on the best exchange rate regime. It probably makes little sense to reward countries for moving to a fully floating mechanism at a time at which the major European economies are moving toward limited or no flexibility with respect to their main trading partners. In the case of monetary growth and the budget deficit we found that some of the strongest performers fell outside the thresholds we chose; we still use these indicators, but they are thus hedged with a considerable degree of caution. We have also adopted the tax ratio of an indicator of commitment, and this indicator may also be important for sustainability.

Different measures may be used for the other objectives, which should also be based on policy stance. For poverty reduction the share of spending to priority sectors may be used (*Government Finance Statistics* allows us to identify spending on health clinics and primary and secondary education). For environment we have a one-off index from a paper by Dietz and Kalof (1992), which constructs an index based on which international conventions government's are signatories to. In the index we adopt, the authors have weighted the different components using weights from a principal components analysis. For gender our gender equality measure (GDI/HDI) may also be taken as a measure of commitment; or more simply one might also use the ratio of female to male literacy (or enrolments; or Cassen and Fitzgerald propose the ratio of years of schooling, see Table 3.6). These indicators are suggested here for further work if the approach proves fruitful. In this report we restrict ourselves to a narrower range of more readily available indicators.

3.5 External debt and debt sustainability

We have so far avoided the issue of debt burden, but it is clearly of importance. Simply put, a country which is devoting a large part of its foreign exchange and savings to repaying debt does not have resources to invest in growth or poverty reduction. We can distinguish three groups of countries: (1) those with an unsustainable debt burden; (2) those with a potentially sustainable debt burden, but one which remains a considerable tax on the

Table 3.6 Cassen and Fitzgerald's eligibility criteria

Indicator	Threshold
Income per capita	World Bank IBRD eligibility threshold
Agricultural share in output	15 per cent
Life expectancy at birth	70 years
Mean years of schooling	5 years
Female:male education	75 per cent
Total fertility rate	3
Reliance on aid (net ODA in total net receipts)	10 per cent
Financial intermediation (quasi money and bonds as per cent of GDP)	30 per cent
Debt burden (total external debt to GDP)	60 per cent
Sovereign risk rating (Moody's Global Rating)	Ba

Note: The threshold is that above which the country may be considered eligible for graduation from the DAC list.
Source: Cassen and Fitzgerald (1994).

development effort; and (3) countries with manageable debt, i.e. that does not impose an undue burden.

The preferred indicator to use to measure debt burden is the discounted present value of future debt service obligations, usually normalised by GNP. However, this figure is not readily available[22] (unless there is a secondary market, or the price of debt if such a market were to exist may be estimated), so we use instead the debt service ratio (debt service divided by exports), which is the measure adopted by the World Bank for the HIPC initiative.[23] (An alternative is the debt stock to GNP ratio). Table 3.7 shows the cut-off values we adopt.[24]

We argue that, conditional upon good policy stance as discussed in the last section, countries in category (1) should be given immediate debt relief to bring them into category (2). Category (2) countries should embarked on programme of debt rescheduling and debt reduction to bring them into category (3) over a period of up to five years. A country is classified in the higher category (1 is highest) if the two measures give a different classification.

This approach differs from that of the World Bank. Whilst the World Bank also identifies three groups amongst the HIPCs (sustainable debt, possibly stressed and unsustainable debt) it only proposes relief for the third category.

[22] The 1997 *World Development Report*, released after the empirical analysis for this report was completed, reports this statistic.
[23] Data are from *World Debt Tables* which report actual flows, which can of course be substantially below the actual obligation.
[24] Empirical analysis of the debt Laffer curve using the debt to GDP ratio suggests that debt becomes a burden (in the sense that the Laffer curve turns downward) at 90 per cent (Ndulu, personal communication).

Table 3.7 Indicators of debt burden

	Debt service ratio
1. Unsustainable debt	Equal to or over 20 per cent
2. Serious debt burden	Equal to or over 10 per cent
3. Manageable debt burden	Under 10 per cent

As Addison (1996) points out, this decision is made with reference solely to their indebtedness and takes no account of their general development problems – yet, as he points out, the Bank's own possibly stressed countries includes some at the lowest levels of development in the world (such as Ethiopia and Niger). Giving relief to the two categories, rather than only those with the most severe debt burden, is one way to cater for this problem.

3.6 Summary

A summary table of the indicators proposed in this chapter appears as Table 3.8.

Table 3.8 Summary of proposed indicators

Indicator	Source(s)
Objective-related indicators	
Self-sustaining growth	
Growth of real total and agricultural GDP	WTA
Growth of real exports (or $ exports)	WTA
Measure of export diversification	ITDS
Real savings rate (GDS/GDP)	WTA
Incremental capital output ratio (ICOR)	WTA
Poverty reduction	
Infant mortality rate	WTA, HDR
Female illiteracy rate	WTA, HDR
Human Development Index	HDI
Gender issues	
Ratio of GDI/HDI	HDR
Female illiteracy rate	WTA, HDR
Aid-related indicators	
Aid per capita	OECD
Aid as a per cent of GDP	OECD
Indicators of access to international capital	
Gross aid as a per cent of gross inflows	OECD, WDT
Debt burden (debt service ratio)	WDT
Domestic institutional capacity indicators	
Quantitative	
Investment levels compared to historical norms*	WTA
Secondary school enrolment rate	WTA, HDR
Disbursement to commitment ratio (normalised)*	OECD
Aid to investment ratio	WTA, WDT
Number of expatriates (normalised)*	?
Qualitative	
Does government prepare PER/PFP?	Survey[2]
Commitment related indicators	
Share of military expenditure in total*	GFS, WDI
Macro-policy stance index (supply, government deficit, and development expenditure)	WTA, IFS
Share of GDP to basic health and education expenditure	WTA, GFS
Tax ratio	WDR, GFS
Environmental policy stance	Dietz and Kalof (1992)

Note on sources: 1. A team headed by Martin Ravallion at the World Bank makes periodic comparable poverty estimates using the "dollar a day" poverty line. 2. This information is not published but could be collected from field offices.
Key to abbreviations: WTA World Bank *World Tables*; OECD *Geographical Distribution of Financial Flows*; HDR UNDP *Human Development Report*; GFS IMF *Government Finance Statistics*; WDI World Development Indicators from *World Development Report*; ITDS UNCTAD *International Trade and Development Statistics*

4. Empirical application and analysis of indicators

4.1 Introduction

We can now apply the framework developed in the preceding two chapters. That is, we can set thresholds for the indicators we have identified in Chapter 3 and put them into the matrix to analyse aid dependence which was presented in Chapter 2.

Data for this report were taken from the World Bank *World Tables* and *World Debt Tables*, from the UNDP *Human Development Report* and from UNCTAD's *Handbook of International Trade and Development Statistics*. Data were collected for all developing countries on the DAC list, so for each variable the sample size varies depending on data availability.

Section 4.2 introduces this data set with some data analysis and resulting discussion of threshold values. Section 4.3 applies the conceptual framework to our data set. Section 4.4 summarises.

4.2 Data analysis and thresholds

The median growth rate was around 5 per cent in the 1970s and then fell thereafter to around 3 per cent. In the 1980s there has been a heavier lower tail, indicating a number of poor performers. From this analysis we want to pick a growth level to distinguish good from bad performance. 5 per cent is often used as a sensible level for a realistic growth target. This figure would yield modest but positive growth per capita in African countries which have population growth of around 3 per cent. Clearly only a handful of countries have met this target during the 1980s and fewer still sustained such a performance level. The 5 per cent level is the growth rate we select for the growth objective. [25]

Note, however, 5 per cent growth is *not* sufficient to reduce the absolute number of poor in most countries. It can be shown that the growth required for the number of poor to fall (g^*) is given by the formula:

$$g^* = \left(1 - \frac{1}{\varepsilon}\right) p$$

where ε is the elasticity of the poverty headcount measure with respect to real income and p is the rate of population growth.

Table 4.1 shows the growth rates given by this formula for different levels of population growth and poverty elasticity. Given the typical population growth for African nations of 3 per cent, the required rate of growth varies between 5 and 8 per cent depending on the poverty elasticity.

[25] It can be observed that the developed countries are not now growing, and never have grown, at this rate. Moreover, the convergence hypothesis would suggest that growth will slow down as a country's income rises.

Table 4.1 Required growth rate for the number of poor to decrease

		Population growth				
		1.5%	2.0%	2.5%	3.0%	3.5%
Poverty elasticity	–0.60	4.0%	5.3%	6.7%	8.0%	9.3%
	–0.80	3.4%	4.5%	5.6%	6.8%	7.9%
	–1.00	3.0%	4.0%	5.0%	6.0%	7.0%
	–1.20	2.8%	3.7%	4.6%	5.5%	6.4%
	–1.40	2.6%	3.4%	4.3%	5.1%	6.0%

Ideally estimates of poverty elasticities may be made by the log regression of the poverty measure on real GDP (and other relevant variables). But this calculation is not in general possible on a country-specific basis as the data are simply not available. An alternative is to use cross-country regressions, although this procedure requires that the poverty lines be comparable between countries. Whilst this is in general not the case, a team at the World Bank, headed by Martin Ravallion does produce such estimates. Using these data Hanmer *et al.* (1997: Table 4.4) found that the poverty elasticity varied according to the degree of inequality. Countries with a Gini coefficient of greater than 0.5 (which includes Kenya. Lesotho, Senegal, Tanzania and Zimbabwe) have an estimated elasticity of –0.5 – implying that growth in excess of 8 per cent is needed for the number of poor people to decrease. Even with a Gini below 0.4 (e.g. Uganda) the poverty elasticity only reaches –1.5.

This range of elasticity estimates corresponds quite closely to the country estimates reported by OED for African countries and reproduced in Table

Table 4.2 Poverty elasticities and required growth for selected African countries

	Poverty elasticity	Population growth	Required growth	Actual growth (1992–95)
Cote d'Ivoire	–2.3	3.5	5.0	1.4
Ghana	–1.7	2.7	4.3	4.1
Kenya	–0.9	2.7	5.7	1.7
Malawi	–0.8	2.5	5.6	1.4
Mauritania	–1.3	2.5	4.4	4.2
Nigeria	–1.5	3.0	5.0	2.2
Rwanda	–1.5	2.6	4.3	–6.7
Senegal	–0.8	2.7	6.1	3.3
Tanzania	–0.6	3.2	8.5	3.2
Uganda	–0.8	3.2	7.2	7.2
Zimbabwe	–0.9	2.4	5.1	0.5

Source: World Bank (1997: 67).

Table 4.3 Change in number of poor by country classified by compliance status

	Decreasing	Stable	Increasing
Good compliers	Mauritius, Mozambique	Benin, Ghana, Mauritania	Gambia, Malawi, Mali, Sierra Leone, Tanzania
Weak compliers	Uganda	Guinea, Guinea-Bissau	Burkina Faso, Cote d'Ivoire, Madagascar, Niger, Senegal, Togo, Zambia, Zimbabwe
Poor compliers	Equatorial Guinea, Sudan	None	Burundi, Cameroon, CAR, Chad, Congo, Gabon, Kenya, Nigeria, Rwanda, Sao Tome, Somalia, Zaire

Source: World Bank (1997: 22-23).

4.2.[26] Of the countries shown there only Uganda has a growth rate sufficient to stop the number of poor from rising. Using these estimates, together with data from household surveys and data on per capita growth of GDP, the OED estimates countries in which the number of poor has fallen. These results, shown in Table 4.3, find the number of poor to have been stable or fallen in 10 of the 35 countries. Estimated elasticities for Latin America and the Caribbean also fall in the range –0.8 to –1.6, so that, given the lower rate of population growth, poverty has begun to fall there as growth has resumed in the 1990s (although this finding is sensitive to the poverty line used; see Mejía and Vos, 1997).

We selected a number of other indicators for the growth objective. We shall not pursue them all in such detail here but pick out the main points.

Export performance declined in the 1970s, the median reaching a minimum of 1.2 per cent in 1980–82 (though there was the largest variation in performance in that year). But since that time export growth has been restored, reaching a median of over 5 per cent by 1990–92 (although many countries still have zero or negative real export growth). The majority of countries now manage export growth in excess of GDP growth so that we adopt a level of six per cent as an indicator of good performance. We will also look at the concentration ratio. As discussed below, we found that virtually all countries with good GDP and export growth have low (and usually reducing) concentration (export concentration fell in general).

A rather different story emerges for agricultural growth. Since the mid-1970s, the median has remained remarkably constant at just over 2 per cent, i.e. always less than GDP growth. There have been less good performers, and more poor ones, in the 1980s and 1990s. These figures underline a crucial weakness in the adjustment response: although market-based reforms were

[26] Ravallion's own analysis of earlier data (Ravallion, 1995) suggested higher elasticities of 2 to 3 per cent. The difference may be explained by the different data set, though it may also result from the fact that he did not test for pooling of the data (which in effect controls for inequality).

intended to reverse perceived urban bias, the agricultural supply response remains weak in many countries. In adjusting economies in which there has been high growth much of this growth has in fact been in the service sector. We select a threshold range of 3 to 4 per cent for this variable (which thus rules out over half the countries).

The median savings rate has experienced a steady reduction since the mid-70s (from 16 per cent in 1975–77 to 12 per cent in 1990–92), with a deteriorating distribution with a longer lower tail. Proponents of the growth-led development strategies of the 1960s argued that a critical level of the investment rate was between 10 and 15 per cent, which would yield growth of between 3 and 5 per cent with an ICOR of 3. So even if investment were fully domestically-financed, the majority of countries would seem capable of such a performance. They do not achieve such a performance as the ICOR is not generally around 3 as assumed in the above simple calculation; we analyse actual ICORs in the next paragraph. We take a domestic savings rate of 15 per cent (i.e. above the median in the 1980s and 1990s) as that necessary to support self-sustaining growth.[27]

Although the median of the ICOR values (between 1.2 and 3) agree with the "assumed" value of three, the ICORs vary over a great range, with several values well above 10 or negative. The distribution of the ICOR was at its worst in 1980–82, which is consistent with the view that international borrowing at that time financed investment which was not particularly productive. We select an ICOR of between zero and five as indicating an ability to productively use investible resources, though once again emphasising that the value should be stable over several years.

Welfare indicators

For indicators of welfare levels IMR shows a clear improvement over time.[28] There has been a small *rise* in the median levels of female illiteracy, but with falls at the upper end of the scale. Therefore, with respect to IMR, we also considered the change in the indicator: countries with a reduction in IMR of less than 10 per cent were taken as having poor welfare performance.[29] In

[27] An additional complication in calculating the savings required to finance an adequate level of investment is the rate of depreciation, which may vary between countries and appears high in Africa.

[28] Infant mortality has *risen* in three countries (Mozambique, Uganda and Zambia) and there is some evidence that such a deterioration in social indicators may be spreading to both other indicators and other countries in the region.

[29] There is a potential problem with this measure since the rate of decline of infant mortality varies inversely with the level. An alternative, used by the UNDP (1996), is to calculated the "reduction in the shortfall" of a social indicator with respect to some benchmark; a method which imposes quite a strong "penalty" on countries with low social welfare. But the problem does not, anyhow, apply in our case since we combine a threshold level with a change criterion.

Table 4.4 Threshold values of welfare indicators

Indicator	Threshold value
Infant mortality rate	130 per 1 000
Fall in infant mortality	10 per cent
Female illiteracy	80 per cent
Gender Development Index	0.300
Gender equality	0.800

Sources: *World Development Report 1994*, *Human Development Report 1994* and *1995*, and project database.

terms of levels, an IMR of 130, female illiteracy of 80 and an HDI of 0.300 were taken as thresholds. The same level of the GDI was taken as the HDI and the threshold for the ratio of the two was taken as 0.800. These values, chosen in each case to select the worst dozen or so performers, are summarised in Table 4.4.

The 20–20 initiative from the Copenhagen Social Summit might suggest that health and education expenditures should each be around 10 per cent of total expenditures. However, data are rather scarce. There are also problems related to (1) the treatment of aid financed activities and (2) central versus local government expenditures (for example, in India social expenditures appear low, but these are catered for at the level of the state rather than the nation). If government expenditure is to be in the range 20 to 30 per cent of GDP, then social expenditures should, by the 20–20 target, be in the range 4 to 6 per cent. Most countries appear to meet these levels (the median values for both health and education are 3 to 4 per cent), though this result says nothing about quality and distribution.

Aid-related indicators

Both of the aid measures, aid to GNP and aid per capita, have risen over time, though more modestly in the case of aid to GNP. The median value of the latter rose from two per cent in 1970–72 to seven to eight per cent in the late eighties and early nineties. There has been larger rise in the mean (from 4 per cent to 14 per cent in 1990–92) which is symptomatic of the emergence of countries with very high aid ratios: in 1970–72 the maximum was 30, whereas by 1990–92 twelve countries exceeded this level, with a maximum of 141 (Sao Tome and Principe, followed by Mozambique at just under 100 per cent). A similar divergence between mean and median can be observed in the aid per capita data: the maximum here has risen from $119 per person in 1970–72 to $530 in 1990–92. The median level of aid per capita has increased seven-fold, from $7 per person in 1970–72, to $49 in 1990–92.

Table 4.5 Countries receiving very high aid, 1990–92

Belize, Botswana, Cape Verde, Comoros, Djibouti, Dominica, Equatorial Guinea, Gabon, Gambia, Grenada, Guinea-Bissau, Guyana, Honduras, Jamaica, Jordan, Maldives, Mauritania, Mozambique, Nicaragua, Papua New Guinea, Sao Tome and Principe, Senegal, Seychelles, Solomon Islands, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Tanzania, Tonga, Vanuatu, Western Samoa, Zambia

Note: These countries are those having either aid per capita of more than US$100 or aid ratios of greater than 30 per cent.

Using the historical perspective provided by these data we define the following categories with reference to the 1990–92 period:[30]

High aid:	(1) A/Y > 5% and A/P > $25; or
	(2) A/Y > 10%; or
	(3) A/P > $100
Medium aid	A/P > $ 15
Low aid	Countries not meeting above criteria

These categories mean that the majority of developing countries are designated as high aid recipients, a result we believe reflects the actual situation. Nonetheless, we felt it useful to make a further category of "very high aid" in which either aid per person exceeds $100 per person or the aid ratio is greater than 30 per cent: these are levels at which we would argue countries are very likely "over the brow" of the aid Laffer curve.[31] By these criteria 32 countries are very high aid recipients, and these are summarised in Table 4.5.

We next need to identify which countries have access to international capital. One measure is simply to look at some direct measure such as the share of aid in total inflows. The problem with this approach is that a country receiving a lot of aid will not recourse to international capital markets although it could do so. To get around this problem we developed and estimated a model of the determinants of access to international capital and used the results to classify countries as having little or no access, some access and ready access.[32] The results of combining the measures of access to capital and levels of aid are summarised in Table 4.6.

We should expect countries to cluster in the bottom left and top right

[30] Our methodological framework requires just two categories. From looking at the range of values we felt that two categories was too sharp a division. However, in practice, few countries lie in the medium aid range.

[31] In fact our preliminary empirical analysis suggests a slightly high aid to GDP ratio as the peak of the aid Latter curve.

[32] The appendix presenting the model is available from the EGDI secretariat. Where model estimates were not available we have used the share of aid in total inflows instead, with threshold values of 70 and 40 per cent corresponding to little and some access respectively.

cells of this table: countries with ready access to international capital should receive little aid, and those with limited access should receive high aid (subject to that aid being effective, which we come to below). In general, this pattern is observed. However, some countries lie in the "wrong cells". Some countries have limited access to international capital but nonetheless receive little aid, although in some cases, such as Zaire, one can easily imagine why this is the case. Four countries (three of which clearly receive high aid for political reasons) receive high aid despite having ready access to international capital, and rather more get high aid despite having some access. We do not pursue the issue further here, but would hang a question mark over the level of aid received by countries such as Botswana, Mauritius and Seychelles (aid per capita of $117, $94 and $408 respectively) given that none of them is a low income country and all can borrow to meet their need for external finance.

Debt burden indicators

The median debt service ratio shows a steady rise until the late 1980s, by which time the median for a sample of 112 developing countries was above the 20 per cent level taken as the indicator of debt sustainability. The median has come down in the early 1990s, although *forty-four* countries still suffer an unsustainable debt burden, with four countries having ratios in excess of 50 per cent (Algeria, Uganda, Nicaragua and Guyana). Well over half of developing countries suffer from a serious debt burden, which we have defined as a debt service ratio in excess of 10 per cent.

Indicators of capacity and commitment

As mentioned above, we have adopted macro policy stance indicators of monetary growth and the budget deficit. We find however, that *all* countries have very high levels of monetary growth. With respect to the budget deficit some of the most strongly growing economies (such as Pakistan and Sri Lanka) have had large deficits, thus casting doubt on the measure. We also use the tax rate, which is typically 30 to 40 per cent for developed economies but 10 to 30 for low income ones: values of less than 15 per cent are seen to be inconsistent with a sustained development effort.

4.3 Application of the conceptual framework

Table 2.2 presented a framework for the analysis of aid dependence, which we are now in a position to apply to our data for developing countries. The outcome is summarised in Tables 4.6 and 4.7, which summarises our analysis for growth and poverty.

Table 4.6 Classification by aid and access to international capital

	Limited access	Medium access	High access
Low aid	Colombia, Dominican Republic, India, Myanmar, Pakistan, Philippines, Zaire	China, Mexico, Venzuela	Argentina, Brazil, Bulgaria, Chile, Croatia, Czech Republic, Ecuador, Hungary, Indonesia, Iran, Korea, Nigeria, Oman, Romania, Russian Federation, Thailand, Trinidad and Tobago, Uruguay
Medium aid	Cambodia,	Morocco, Paraguay, Peru, Poland	Algeria, Barbados, Malaysia
High aid	Albania, Angola, Bangladesh, Belize, Benin, Bhutan, Bolivia, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Cote d'Ivoire, Djibouti, Dominica, Equatorial Guinea, Fiji, Gambia, Ghana, Guinea-Bissau, Guyana, Haiti, Honduras, Kenya, Laos, Madagascar, Malawi, Maldives, Mali, Malta, Mauritania, Mozambique, Nepal, Nicaragua, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sudan, Swaziland, Syria, Tanzania, Togo, Turkey, Uganda, Vanuatu, Vietnam, Yemen, Zambia, Zimbabwe	Botswana, Costa Rica, Egypt, El Salvador, Gabon, Grenada, Jamaica, Lesotho, Papua New Guinea, Seychelles, Tunisia	Israel, Jordan, Mauritius, Panama

Growth

By definition, none of our countries have yet attained the income objective. But which appear to be on a sustained growth path toward this income target? We have combined six indicators to make an assessment of this issue: growth, agricultural growth, export growth, export diversification, the savings rate and the ICOR.

The analysis was carried out by first identifying countries which had had sustained high growth (i.e. above 5 per cent) since 1980–82 (Botswana, China, Dominica, Indonesia, Korea, Pakistan, St. Vincent, Singapore, Thailand and

Table 4.7 Application of conceptual framework to growth objective

		High aid		Low aid	
		Access to international capital	**Restricted access to international capital**	**Access to international capital**	**Restricted access to international capital**
Sustainable growth		Botswana, Panama	Bangladesh, Cape Verde, Dominica, Turkey, Viet Nam	Korea, Malaysia, Oman, Singapore, Thailand	India, Pakistan
	Domestic capacity/ commitment	Israel	Bhutan, Cameroon, Congo, Cote d'Ivoire, Fiji, Gambia, Ghana, Guinea-Bissau, Haiti, Kenya, Laos, Madagascar, Nepal, Sierra Leone, Solomon Islands, Somalia, St. Kitts and Nevis, Sudan, Swaziland, Syria, Vanuatu, Zimbabwe	Brazil, Chile, Ecuador, Hungary, Nigeria, Romania, Russian Federation, Trinidad and Tobago, Uruguay	Cambodia, Colombia, Dominican Republic, Myanmar, Philippines
Not on sustainable growth path	Poor macro policy	None	Sudan, Nicaragua, Sri Lanka, Maldives, Yemen	Argentia, Bulgaria, Peru	Zaire
	Absorptive capacity constraint	Egypt, Lesotho	Benin, Bolivia, Central African Republic, Equatorial Guinea, Guyana, Honduras, Nicaragua, St Tome and Principe, St Vincent, Togo, Uganda, Zambia	None	None
	Weak institutional capacity	Papua New Guinea	Benin, Burkina Faso, Burundi, Chad, Djibouti, Ethiopia, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Tanzania, Uganda	None	None

Viet Nam[33]), though we listed countries with very high growth in two of the periods, or with growth sustained near to the five per cent level (Bangladesh, Cape Verde, India, Malaysia, Nepal, Oman, Panama, St Kitts and Nevis, Sri Lanka and Turkey). The preponderance of Asian countries in this list is readily apparent, as is the virtual absence of African ones.

Countries were then excluded if they did badly on more than two of the other criteria or exceptionally poorly on one of them. In fact, only China, Indonesia, Pakistan and Malaysia satisfied all the conditions identified for sustainable growth. The weakest aspect of growth performance in these high-growth countries has been low agricultural growth (in addition to the countries just listed, only Bangladesh, Cape Verde, Dominica, Oman, Panama, Turkey and Viet Nam satisfied this condition, though in the case of Korea, Singapore and Thailand relatively weak agricultural growth may be expected at their level of development). All of the high growth countries have had good ICORs, and all, except Cape Verde and Panama, have reduced their export concentration. However, a number had weak export performance (Cape Verde, St Vincent and Turkey).

Based on these considerations, the following countries are removed from our list of sustainable growth economies: Nepal (poor agricultural growth and increased export concentration), St. Vincent (poor export growth and weak savings), Sri Lanka (low agricultural growth and weak savings) and St. Kitts (low agricultural growth and savings). The remaining countries are shown in the top row of Table 4.7, classified according to their aid level.

Five countries are therefore identified as achieving sustainable growth, which have high aid and little access to international capital: these are the potentially aid dependent countries. However two countries (India and Pakistan) manage high growth with low aid and restricted access. (This finding casts doubt on the necessity of aid for growth, though an argument can be made that these two countries are special cases, not least on account of their size – a review of aid to India nonetheless finds that it had played a useful role).[34]

We come now to the bulk of countries with a low growth performance. We first identified those with poor macro policy (high budget deficits or monetary growth), low absorptive capacity (high aid to investment rates) and weak capacity (low secondary school enrolment); a country may appear under more than one of these categories. Each of these indicators is somewhat problematic; further work on developing good indicators of capacity and commitment is a matter of some priority. The remaining countries are shown in the domestic capacity row, i.e. in theory they have the capacity to use aid to achieve the growth objective.

[33] Viet Nam is included even though there are no data for the earlier period.

[34] "Although aid flows have always been small, measured per head of population and as a share of national income, they have made clear positive contributions to India's economy and society" (Lipton and Toye, 1990: 252).

Table 4.8 Performance on social indicators

Social deprivation	Afghanistan, Angola, Armenia, Benin, Burkina Faso, Burundi, Chad, Colombia, Congo, Ethiopia, Gambia, Guinea, Guinea-Bissau, Liberia, Malawi, Mali, Mozambique, Nepal, Niger, Papua New Guinea, Sierra Leone, Somalia, Sudan, Uganda, Zambia
Low GDI	Afghanistan, Angola, Burkina Faso, Burundi, Chad, Ethiopia, Gambia, Guinea, Guinea-Bissau, Mali, Mozambique, Niger, Sierra Leone
Low gender equality	Afghanistan, Algeria, Argentina, Chile, Ecuador, Egypt, Fiji, Guatemala, Iran, Iraq, Libya, Mauritius, Mexico, Pakistan, Sierra Leone, Syria, Tunisia, Yemen

Of the countries with domestic capacity, six which have restricted access to international capital (Cambodia, Colombia, Dominican Republic, Myanmar and Philippines) receive low aid. These countries are potentially aid dependent in the sense that if they got more aid they may be put on the path to sustainable growth (though, as we warned above) they may also become cases of ineffective aid.

The picture is a rather bleak one. Many countries apparently do not have the requisite commitment, whilst others do not have the capacity. Several others appear to have these but are not achieving sustainable growth despite receiving high aid. Only five countries are identified as being possibly aid dependent, as they receive only low aid but have restricted access to international capital.

Poverty reduction

Table 4.8 shows three groups of countries: those with poor social performance, as defined above, as well as those with a low level of the GDI and low levels of gender equality.

With the exception of Colombia, all the countries identified as having a high level of social deprivation are high aid/low access to international capital. The fact of high aid means that aid is either ineffective, or that capacity or commitment are absent. Table 4.9 shows measures of capacity and commitment. We have shown those governments spending less than 2 per cent of GDP on either health or education; these data are for either the late 1980s or early 1990s, though data are not available for all countries. We also show those with low (less than 10 per cent secondary enrolment).

Although some countries with social deprivation have low health and education expenditure – Chad, Congo and Mali – two others – Bangladesh and Pakistan – perform satisfactorily despite these low expenditure levels (and both have good growth performance). These contrasting results may reflect

Table 4.9 Measures of capacity and commitment for social development

Secondary enrolment less than 10 per cent	Education expenditure less than 2 per cent of GDP	Health expenditure less than 2 per cent of GDP
Afghanistan, Bhutan, Burkina Faso, Burundi, Chad, Guinea-Bissau, Malawi, Mali, Mozambique, Niger,Rwanda, Tanzania	Bangladesh, Chad, Congo, La People's Democratic Republic, Liberia, Madagascar, Mali, Mongolia, Pakistan, Philippines, Saudi Arabia, Senegal, Sierra Leone, Somalia, Sri Lanka, Zaire	Algeria, Bangladesh, Congo, Ethiopia, Lao People's Democratic Republic, Nepal,Nigeria, Pakistan, Saudi Arabia, Somalia, Turkey, Zaire

data deficiencies or the imperfect nature of the measure. The conclusion we would like to draw from this part of the analysis is simply that there are many countries with poor social indicators, despite the high levels of aid they receive. This fact alone seems to be some critique of programme effectiveness, but we need to better understand the conditions under which the aid can work well in this regard, and to develop indicators of those conditions.

4.4 Summary

This section has presented the indicators discussed in the previous chapter, starting with a discussion of data and moving to an application of the conceptual framework. Data are strongest in relation to the growth objective, poor for social indicators and very sketchy for measures of capacity and commitment.

One finding is that normalised measures of aid – such as aid per person and aid as a per centage of GDP – have risen markedly in the last twenty years. By the early 1990s over thirty countries received very high aid (defined as over $100 per person or 30 per cent of GDP). Sustaining inflows at this level over any period (except for purposes of debt relief) is of questionable value for the country's development effort.

Another main finding is how few countries are doing well in terms of growth, despite the fact that many of them receive high aid. We are not saying that these countries would be better off without aid – for which counterfactual analysis is required – but that such high aid levels should be able to deliver more in terms of growth. Hence we identify many countries in which aid is ineffective. In others we are able to identify constraints of capacity or commitment, although the indicators here are somewhat imperfect.

Despite poor economic performance, most countries continue to enjoy improvements in social indicators, although the rate of improvement may have slackened. Hence social deprivation is defined in relative terms of poor performance. Even then, some countries perform well despite low levels of

expenditure in social services. These findings point to the need for a better understanding of the link between aid and social indicators, which is an underdeveloped area compared to economic analysis.

5. Studies on aid effectiveness

5.1 Introduction

While most studies confuse aid dependency with aid effectiveness, we argue that it is very important to clearly distinguish between these two concepts. Obviously, this does not mean that we consider aid effectiveness as an unimportant issue. Indeed the data presented in Chapter 4 suggest that a large number of the countries in our data set receive aid which is ineffective, and that only a few countries are aid dependent. Countries should aim for aid independency. According to our econometric analysis on the determinants of access to external private capital, this can for example, be reached when a country has a well developed financial sector or follows an outward oriented economic policy. However, the econometric analysis also shows that "poor" countries have lower probabilities of access to external private capital, suggesting the existence of a low-income trap. This may imply that for some countries foreign support is needed for a certain period of time, even when domestic policies are supportive for economic growth. However, this assumes that foreign aid is effective, which is obviously not always the case. For the group of countries where aid is ineffective, it is important to know why aid is not working and what kind of policies are needed to make aid effective (in our terminology, to become aid dependent), or to even become aid independent. Here we consider the existing aid effectiveness studies to obtain some insights into the factors which make aid effective or ineffective.

In the literature on the effectiveness of aid, three types of studies can be distinguished (Gupta and Lensink, 1996). These are: (1) macroeconomic studies, dealing with effects of aid on macroeconomic aggregates, like savings, investment and GDP growth; (2) studies on the microeconomic effects of aid, for example, the project analyses (see Cassen, 1986 and 1994 for extensive surveys) and (3) the fiscal response literature. We briefly summarize the macroeconomic studies, as well as the fiscal response literature, since these studies are relevant for the subject matter of this (aid dependency) study.

5.1 Macroeconomic effects of aid

Many studies have assessed the macroeconomic impact of development aid. For extensive summaries see Jepma (1995), Obstfeld (1995), White (1992a, 1992b) and White and Luttik (1994). Traditionally, gap models are applied to examine the macroeconomic impact of aid, especially by the advocates of development aid. They argue that the availability of capital goods is the constraining factor in increasing the rate of economic growth in many developing countries. It is shown that an increase in development aid is required to

reach a minimum growth rate in developing countries, especially in Sub-Saharan Africa. Four basic variants of the gap models can be distinguished. The *savings gap* models (see Lensink and van Bergeijk, 1991; Rosenstein-Rodan, 1969; Fei and Paauw, 1965, and World Bank, 1989) treat foreign aid as a supplement to domestic savings so as to finance planned investment. First, a fixed capital-output ratio is estimated and planned investment is derived from a specified target growth rate, using a Harrod-Domar production function. Next, domestic savings are estimated. The needed capital inflow equals the difference between required investment and expected domestic savings. The *trade gap* models (Balassa, 1964; Fishlow, 1987 and Culagovski *et al.*, 1991) consider foreign aid only as a source of foreign exchange which can be used to expand the capacity to import. The required amount of development aid is estimated as the difference between expected exports and the necessary imports to achieve a particular target growth rate. The *two gap* models (Chenery and Strout, 1966 and Lensink, 1993b) take both the trade and the savings gap into account to reach a target growth rate. The dominant gap determines the outcome. Bacha (1990) developed a new kind of a gap model. Besides the savings gap and the trade gap, he also considers a *fiscal gap*. The *fiscal gap* is binding when the government budget restricts economic growth. Government investment, for example, in infrastructure determines the upper limit of profitable private investment. Taylor (1990) uses the theoretical *three gap* model of Bacha to assess the aid requirements of a group of developing countries.

The gap studies have in common that development aid is considered to have an important role in accelerating economic growth in developing countries. The idea is that, in the early stage of development, domestic savings in many developing countries are too low to mount an adequate investment effort. Development aid is considered to be of major importance since it raises investment and absorptive capacity, assuming that development aid is efficiently used and that it stimulates developing countries to make the necessary economic adjustments. After some time a process of self-sustaining growth is achieved and aid is no longer needed.

However, the gap studies in general, and the advocates of foreign aid in particular, are extensively criticized. A first branch of literature points to the possible negative effects of development aid on total domestic savings. Griffin (1970) and Griffin and Enos (1970) were among the first authors who pointed at the possibility that aid may displace domestic savings. The early studies in this field were generally based on a single-equation model estimation for savings and growth rates (see Gupta and Islam, 1983 and Riddel, 1987, for a survey). However, savings and growth are simultaneously determined and so the simultaneity should be taken into account. More recent studies like Gupta and Islam (1983), Husain and Jun (1992), Lensink (1993a) and Rana and Dowling (1988 and 1990) estimated models in which the simultaneity between savings and growth is considered. Although results differ

Table 5.1 Effects of aid on domestic savings

	Data	Coefficient
Griffin (1970)	Cross-section: 32 LDCs	–0.73
Weiskopf (1972)	Pooled: 44 LDCs	–0.84
Gupta and Islam (1983)	Cross-section: 52 LDCs	–0.47
Lensink (1993a)	Pooled: 21 African Countries	–0.52

Sources: White and Luttik (1994) and Lensink (1993a).

per study, most studies point at a negative relation between development aid and domestic savings. Table 5.1 presents a selection of studies on the impact of aid on domestic savings.

Other authors argue that foreign aid may stimulate capital flight since aid enables developing countries to hold an overvalued currency and because it will result in a higher external debt, if it is not a gift. The literature considers both factors as important causes of capital flight (for example, Cuddington, 1986; Diwan, 1989; Dooley, 1988; Eaton, 1987; Hermes and Lensink, 1992; Khan and Ul Haque, 1985; Ketkar and Ketkar, 1989; and Pastor, 1990). An overvalued currency may cause capital flight since the expected future depreciation stimulates residents to hold their assets abroad. An increase in foreign debt stimulates capital flight since residents fear that the government will pass the costs of the repayment obligations on to them in the form of for example, an inflation tax. Other authors argue that aid causes capital flight since it encourages "inward-looking" policies, resulting in nationalizations of foreign companies (Bauer, 1976 and 1981). There are several empirical studies which confirm that foreign capital inflows do stimulate capital flight (for a survey, see Hermes and Lensink, 1992). However, in general these studies have not made a distinction between various forms of capital flows. There is virtually no empirical analysis to specifically assess the impact of development aid on capital flight. One of the exceptions is Hermes and Lensink (1992). They, however, do not find an indication that capital flight for a group of African countries is stimulated by foreign aid. The main reason is that development aid, in contrast to other foreign capital inflows, contributes only marginally to an increase in debt obligations. These results are in line with Boone (1994 and 1996) who found no evidence that aid was correlated with other capital inflows, that is, aid does not, among other things, lead to capital flight.

Some studies (Rana and Dowling, 1988 and 1990; Levy, 1985 and 1988) estimate a direct relationship between investment and aid. While aid may have a negative effect on domestic savings, or a positive effect on capital flight, these studies argue that aid may still stimulate investment. Most studies in this field indeed conclude that aid has a positive effect on total investment, although the increase in investment is lower than the additional amount

of foreign aid. This implies a partial crowding out due to a decrease in domestic savings or an increase in capital flight. Levy (1988) even finds that foreign aid leads to a more than proportional increase in investment for Sub-Saharan countries during the 1968–82 period.

Boone (1994 and 1996) did some unique studies in this field. He derives an empirical model for examining the effects of aid on saving and investment by explicitly using an intertemporal optimizing framework. Moreover, he uses instruments instead of actual data on foreign aid, so that the simultaneity problem (*i.e.* aid causes growth and growth causes aid) is addressed. His main conclusion is that for the group of countries where the aid/GNP ratio is below 15 per cent, aid does not have a significant effect on investment. His studies suggest that aid mainly finances consumption. While Boone's studies are provoking and an incentive for new theoretical and empirical work on the effectiveness of aid, they also suffer from some important methodological shortcomings which make his results irrelevant for most developing countries (for a detailed discussion, see Obstfeld, 1995). A major point of critique is that Boone assumes that all countries are in a steady state long run equilibrium. Of course, in reality this will not be the case. Therefore, in his empirical analysis the effect of not being in the steady state will be picked up by the error term. Boone uses instrumental variables which are uncorrelated with the error term so that the effects of aid in his analysis only refer to the steady state effects of aid. The much more important transitional effects of aid are ignored due to his choice of instruments. This assumption makes Boone's results of little value since most developing countries will still be on a transition path towards the steady state.

Another branch of literature criticizes the advocates of aid by pointing at the possible negative effects of foreign aid on the productivity of capital so that, despite the possible positive effects on the quantity of investment, economic growth may be negatively affected. The reason behind this argument is that aid may be used to finance too capital intensive projects. Griffin (1970) argues that investments financed by domestic sources are more productive than investment financed by foreign aid. Rana and Dowling (1988 and 1990) find some empirical support for the negative impact of foreign aid on the productivity of capital for a group of Asian countries. However, the discussion about this has not yet been crystallized since there is a complete lack of empirical studies and one may even argue that foreign aid may lead to an increase in the productivity of capital, especially when it is conditioned to economic reforms.

Other authors point to the fact that development aid may negatively affect competitiveness of a country. According to Van Wijnbergen (1985), aid transfers lead to a real appreciation of the currency since aid increases the level of real income, and hence stimulates demand for traded and nontraded goods. The resulting excess demand for nontraded goods raises the relative price of nontraded to traded goods, that is, the real exchange rate. Beenstock

(1987) and Lensink (1995) also point at the possibility that aid transfers may lead to a real appreciation of the currency, although via other channels. However, there are only a few empirical studies on the effects of aid transfers on the real exchange rate, so that it is hard to draw any general conclusions (an exception is White and Wignaraja, 1992).

A common feature of most of the studies mentioned above is that they do not distinguish between the private and the government sector: is the negative effect of aid a result of a decrease in private savings or investment, or a decrease in government savings or investment? To properly assess the impact of aid it seems to be highly important to explicitly consider the effects of aid on government behaviour, especially since aid is mainly channelled through the government. This is exactly what the fiscal response literature, which we will briefly summarize below, does.

5.2 The fiscal response to foreign aid

The fiscal response literature also deals with macroeconomic effects of aid, but explicitly considers the impact of aid on government behaviour. It is often stated that aid inflows may influence tax efforts of the government negatively or might stimulate governments to divert their expenditures on productive purposes towards unproductive uses as a result of aid inflows (the "fungibility" problem). Landau (1990) shows that an increase in development aid may stimulate a government of a developing country to reallocate its resources from the general welfare-enhancing type to activities which increase their support from voters and/or the military in order to stay in power. This reallocation of resources might negatively affect economic growth. More generally, aid may stimulate unproductive government consumption so that the direct positive impact of aid on the micro level is negated by government reactions, leading to a modest impact of aid at the macro level. Thus, by altering the overall expenditure patterns, recipient governments may circumvent the intentions of aid donors (See also Bauer, 1976).

The so-called "fiscal response literature of foreign aid" already started some time ago with the seminal article by Heller (1975). He empirically assessed fiscal response to an inflow of foreign aid for a group of African countries. In his theoretical model he specified a loss function for the government, which has to be minimized subject to two budget constraints. The two constraints allow us to examine whether foreign aid is being used to finance consumption expenditure or whether aid is being used precisely for the purpose it is being provided for, namely, to finance investment. If the latter is the case, aid is said to be not fungible. Heller solves the optimization problem to obtain structural equations for government consumption, taxes and government investment. The derived structural equations are then estimated. Khan and Hoshino (1992) follow Heller's procedure by borrowing his theoretical model and then estimate the resulting structural equations for a group of Asian de-

veloping countries. Gang and Khan (1991) and Gupta (1993) took a similar approach for India.

Heller's study shows that the effects of aid depend strongly on the group of countries and the definition of aid (total or official) used. However, if the differences in the absolute magnitude of the coefficients are taken for granted, the results clearly confirm the "fungibility" hypothesis: aid leads to a decline in taxes and government borrowing and aid does not lead to a equiproportional increase in government investment. Most other studies in this field confirm the existence of fungibility. White (1992b) gives a survey of these studies. It appears that many studies find that almost 60 per cent of aid was used for investment, the remaining 40 per cent was mainly used to reduce taxes or to reduce domestic borrowing. However, there are considerable differences. Boone (1996) concludes that almost 75 per cent of total aid goes to government consumption and 25 per cent to private consumption. Government investment and government taxes are not affected. On the other hand, Gang and Kahn (1991) conclude that foreign aid grants and loans do not have a significant effect on government consumption. Khan and Hoshino (1992) conclude that not all aid is going to investment. However, their results differ considerably for loans and grants. With respect to loans, 85 per cent goes to investment, whereas for grants it is only 32 per cent. Concerning taxes they conclude that an inflow of grants reduce the tax burden, whereas loans increase it. Pack and Pack (1993) conclude that foreign aid in the Dominican Republic has led to major shifts in government expenditures away from government investments, whereas Pack and Pack (1990) found no evidence for "fungibility" of aid in the case of Indonesia. In a recent study, Feyzioglu, Swaroop and Zhu (undated) found that development aid does not affect tax efforts, has a small positive effect on government investment and mainly leads to an increase in government consumption (roughly three quarter of a dollar).

However, the fiscal response literature suffers from important methodological problems, which makes it quite difficult to conclude anything from it. First, the Heller type of utility function, in which both additive and quadratic terms are included, implies that the maximum utility for the government is not achieved in the case where government consumption, government investment, taxes and borrowing are set at the target values, which were the basic justification for the utility function (see Binh and McGillivray, 1993 and McGillivray, 1994). As a solution to this problem, Binh and McGillivray (1993) propose to delete the additive terms in the public authorities utility function. This type of utility function is used in studies of Mosley *et al* (1987) and Mosley (1987). However, this utility function implies that overshooting and undershooting of the target variables are equally weighted, which is often unrealistic (see Gang, 1993). Secondly, White and Luttik (1994) and White (1994) state that the usual procedure to minimize government's utility function subject to two budget constraints is overly restrictive. They deny that governments in developing countries do not bor-

row for current expenditures, so that the rationale for the separate budget constraints does not hold. Moreover, and more importantly for the fungibility discussion, the separate budget constraints for government consumption and government investment imply that the allocation of taxes, government borrowing, and foreign aid are predetermined. White and Luttik (1994: 42) argue that "such an allocation should be the outcome of the utility maximization problem." White (1994) shows that the separate budget constraints imply that the optimal solutions for the decision variables do not correspond to their target values. Clearly, the optimal solution, is only found when aid, taxes and government borrowing are allocated optimally. However, this is not the case since the distribution is determined in advance, and not as a result of the optimization process. Therefore, White (1994) proposes to use a single budget constraint. White (1993) shows that with one budget constraint "fungibility" of aid can be assessed. Using one budget constraint, however, is not without costs: it precludes distinguishing between different types of aid. Third, the fiscal response literature in general ignores feedback effects between different sectors in the economy. This obviously is a too limited approach to assess the effects of foreign aid. Especially feedback effects between government and private investment should be taken into account (see for example, White and Luttik, 1994 and Gupta and Lensink, 1996). Gupta and Lensink (1997) assess the effects of aid on macroeconomic aggregates by using a structural model in which feedback effects between different sectors are taken into account. However, the parameters they use in their model are not based on econometric estimates, so that their analysis is of little empirical value. The simple models we derive and estimate in the Appendix may be a starting point for more work in this area. Finally, the fiscal response literature almost always assumes that all aid is provided for government investment. If the estimates show that part of the aid is used for government consumption, it is concluded that "fungibility" exists. This is then seen as a confirmation that aid is not working or that the behaviour of recipient country governments counter the possible positive effects of aid. However, in reality, aid is often given for consumption purposes, and in principle there is nothing wrong with that, especially when it is used for example, for the education sector.

Overall, the strict macroeconomic studies as well as the fiscal response studies seem to be inconclusive with respect to the effectiveness of aid. A few authors (Papanek, 1973 and Levy, 1988) found a strong positive relation between foreign aid and economic growth. Others concluded that foreign aid had a negative impact on economic growth (Mosley *et al.*, 1987), or that aid was only effective in a few regions (Gupta and Islam, 1983). Most authors (Boone, 1994 and 1996 and Mosley, 1987), however, argue that the macroeconomic impact of aid was modest or that aid did not have any effect on economic growth. Mosley for instance, points out that

> ...there appears to be no statistically significant correlation in any post-war period, either positive or negative, between inflows of development aid and the growth rate of GNP in developing countries when other causal influences on growth are taken into account (1987: 139).

Is it correct to conclude on the basis of these studies that foreign aid did not increase economic growth? In our opinion the answer to this question cannot yet be given since, as one of the authors of this report already stated some years ago "we know surprisingly little about aid's macroeconomic impact" and "the combination of weak theory with poor econometric methodology makes it difficult to conclude anything about the relationship between aid and savings [...] and aid and growth" White (1992: 121). This implies that only very general statements can be made, such as: aid may have a negative effect on savings; the government of a recipient country may counteract the positive effects of aid and finally, aid probably works better when a sound domestic policy is followed. However, the most important conclusion seems to be that much more work is needed before clear-cut conclusions regarding the working of aid can be drawn. This implies that much more detailed studies (probably country specific studies) are needed to explain why in some countries aid is ineffective, while in other countries who are unable to achieve objective X without foreign assistance aid is working (the aid dependent countries). Such studies will be an obvious follow-up to the present aid dependency study.

6. Conclusions and recommendations

6.1 Introduction

Aid dependence has become an increasing concern in the donor community. As demonstrated in Chapter 2, there are a variety of uses of the term, such as countries which are receiving high volumes of aid with no apparent result. We reject negative connotations of aid dependence for a more positive interpretation of the term: the case of a country needing aid to achieve development objectives.

Our definition thus distinguishes aid dependence from simply bad or ineffective aid. There is much bad aid, some of which results from countries getting too much aid. One result of too much aid can be the emergence of a "let the donors do it" mentality, a danger which is increased if donors allow aid proliferation to undermine indigenous institutions.

In this concluding chapter we first outline twelve propositions arising out of our framework and findings. We finally make some comments on possible follow up.

6.2 Twelve propositions on aid dependence and aid policy

1. There should be consistency between stated donor objectives and the design of the aid programme.
2. An important part of this consistency is to allocate aid in a manner consistent with donor objectives. This position can imply ceasing aid to countries without either capacity or commitment to use aid effectively to meet the donor's objectives.
3. Hence, the development objectives of aid should be defined sufficiently clearly so that progress toward meeting them may be monitored.
4. Explicit attention should be paid to possible trade-offs and conflicts between objectives, so as to achieve policy statements which are consistent, coherent and realistic.
5. Indicators of capacity and commitment also need to be developed, including, we suggest, independent assessments of governance. These indicators should be used in the allocation and design of aid.
6. The arguments advanced here rest on a notion of *ex post* conditionality and development contracts, rather than existing IFI-style macro-oriented *ex ante* conditionality. This position is the same as advocating "selectivity".
7. Very few countries appear to be making progress toward sustained growth, and many have a poor record on social development. The application of our framework identifies a majority of countries as having either ineffective aid, or lacking the capacity or commitment to use that aid well.
8. One reason for ineffective aid is that donors continue to give aid where

it clearly will not be well used (which may result from either naive optimism, or the pursuit of non-developmental objectives).

9. There are a substantial number of countries receiving very high aid. With the exception of a period of intensive debt relief, to reduce debt to a sustainable level (a use of aid we can support, though regard still need to be paid to the effectiveness of that aid), we question whether any country should receive aid at such a level (which will almost certainly result in "living off the aid").
10. High aid, and of course very high aid, can have a number of deleterious effects. These include a distortion of prices and policy away from sustainable growth and undermining recipient capacity.
11. Bad aid may also result if the aid programme is contaminated by (1) an undue emphasis on donor commercial interests; (2) excesses of profligacy in the use of aid funds approved by the donor; (3) aid to corrupt or uncommitted governments; and (4) aid which undermines government accountability.
12. The fact of bad aid does not undermine the fact that aid has a legitimate role to play in the achievement of development objectives.

6.3 Further work

This report suggests a number of areas for possible follow up. A first activity is for donors to attempt to put their whole aid programme in to a log frame, to identify how different parts of the programme support the objectives, and which bits are apparently redundant. The exercise should also concentrate thought toward possible inconsistencies in either the statement or practice of different policies.

One area of activity is the development of indicators to monitor progress. A contribution of this report has been to suggest monitorable indicators relating to four of the five major donor objective: (1) self-sustaining growth, (2) poverty reduction, (3) gender, and (4) environment. We have deliberately excluded the fifth area of good governance.

However, governance is important – not necessarily as an objective of aid – but as an input to judging capacity and commitment. We suggest independent monitoring of governance, for which precedents are Amnesty International reports and UN monitoring of elections, or, domestically, Auditor General reports. Governments that do not accept such monitoring or "fail" should not receive aid.

We make some other suggestions with regard to measures of capacity and commitment, but the measures we use are imperfect ones. The role and number of experts is a possible measure, but the failure to manage technical assistance programmes means that such data are not available. The role of government in the public expenditure review, and the design of aid-supported expenditures more generally, is an important qualitative

measure. We would propose that systems be developed for monitoring this aspect of capacity.

Donors should review their aid programmes to all countries receiving very high aid. What are the reasons for such high aid and what measures are being taken to diversify the economy away from aid? High aid to move countries to a sustainable debt position is, however, to be supported.

In other high aid countries in which objectives are not being met a review of the aid programme is also called for. Where the constraint is lack of capacity then, probably quite limited, aid may be used on easing that constraint. Where it is lack of commitment it is doubtful that an aid programme of any magnitude should be in place.

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Appendix

A structural model to determine aid dependence

1. Introduction

The main analysis presented in the report distinguishes between two groups of countries: countries which are aid independent and countries which are *potentially* aid dependent. It is not clear whether a country characterized as *potentially* aid dependent, is *actually* aid dependent. For instance, a country not able to attract international private capital, and hence in the main analysis defined as *potentially* aid dependent, may be able to achieve its objectives in the absence of foreign capital, so that it is not aid dependent. Moreover, when foreign aid is ineffective, a country may not be able to achieve its objectives in the foreseeable future, even when aid donations rise substantially. Also in this case, a country should not be characterized as aid dependent. Hence, further analysis is needed to characterize a country which is *potentially* aid dependent as an aid dependent country.

This appendix moves beyond the main analysis presented in the report by developing a simple model which can be used to determine whether a *potentially* aid dependent country is *actually* aid dependent. In principle, it is possible to develop a model that can be used to determine directly whether a country is aid dependent or not. The advantage of applying the model only to *potentially* aid dependent countries is that the model can be kept relatively simple. For instance, if it was not yet clear which countries have free access to international private capital, the model should also take into account an equation determining a country's possible access to private capital. This, of course, is not necessary when the model is only applied to countries not having access to international private capital.

An analysis comparable to the one presented in this appendix was previously carried out by Mutasa and White. They derived conditions from a two gap model and applied them to Tanzania. However, this appendix uses a more fully specified model of the various channels for aid's macroeconomic impact. Part 2 sets out the model, which is parameterised for Guatemala, Kenya and Pakistan in Part 3. Guatemala, Kenya and Pakistan are, according to our estimates with respect to access to international private capital, *potentially* aid dependent. In other words, it is not expected that these three countries can rely on international private capital in the near future to finance their expenditures. Model simulations showing whether these *potentially* aid dependent countries are *actually* aid dependent are presented in Part 4. Part 5 concludes.

Ideally, the analysis should be applied to all potentially aid dependent countries. However, this would be a tremendous task, and probably, given

the poor data availability, not possible without making rather heroic assumptions. Related to this problem, it should be noted at the outset that, due to a lack of data and hence the reliability of the econometric estimates, the analysis should only be considered as indicative. Finally, the analysis is related to aid (in)dependency with respect to economic objectives. This does not mean that we consider other objectives as less relevant. Quite the contrary.

2. The Model

The model consists of four sectors: a consolidated private sector, a banking sector, a government sector and a foreign sector.

Private sector

The private sector balance sheet is assumed to be as follows:

$$\Delta MON_d = DISPY - P\ pcons - P\ pinv \tag{1}$$

where (ΔMON_d) is the change in the nominal demand for money, (pcons) is private sector real demand for consumer goods, (pinv) is private sector real demand for investment goods, P is a composite goods price (consumer price) and (DISPY) equals nominal disposable income. This equation shows that private sector savings (domestic savings – disposable income minus consumption), are held in the form of money and capital goods.

Disposable income equals total income minus taxes

$$DISPY = P_{dp}\ inc - P\ tax \tag{2}$$

where (inc) is real income (production), tax is real taxes and P_{dp} is a composite goods price (producer price). Real private consumption and real private investment are modelled as simple as possible. Both real consumption and real investment are assumed to be determined by real disposable income. With respect to private investment, private investment lagged one period is also taken into account. Hence,

$$pcons = \alpha_1 \frac{DISPY}{P} + \alpha_2 \tag{3}$$

Nominal money demand is assumed to be implicitly determined via the budget constraint of the consolidated private sector.

$$pinv = \alpha_3 \frac{DISPY}{P} + \alpha_4\ pinv_{-1} + \alpha_5 \tag{4}$$

Government

The budget constraint of the government is

$$\Delta CBL = P\,gcons + P\,ginv - Ptax - e\,AID \tag{5}$$

where (ginv) is real government investments; (gcons) is real government consumption, (ΔCBL) is the (change) nominal demand for loans from the central bank (money financing), AID is the amount of foreign aid denominated in foreign currency and e is the exchange rate. This specification shows that we assume that foreign aid is channelled through the economy via the government. Ideally, the model should distinguish between foreign aid going directly to the private sector and foreign aid going directly to the government, However, the data do not allow estimation of such a model.

Government consumption, investment, taxes and demand for loans from the banking sector are derived using the approach now commonly used in the fiscal-response literature. Hence, they are derived from an optimizing framework, originally developed in the celebrated article of Heller (1975), and subsequently applicated and refined by many others (*e.g.* Khan and Hoshino, 1992; Binh and McGillivray, 1993; White, 1993 and Gupta and Lensink, 1996). Assuming a quadratic government loss function and specifying equations for the desired taxes, government consumption, government investment and loans from the central bank, the following equations can be derived (see Gupta and Lensink, 1996):

$$gcons = \theta_0 + \theta_1\, gcons_{-1} + \theta_2\, inc_{-1} + \theta_3\, pinv + \theta_4 \frac{e\,AID}{P} \tag{6}$$

$$ginv = \theta_5 + \theta_6\, gcons_{-1} + \theta_7\, inc_{-1} + \theta_8\, pinv + \theta_9 \frac{e\,AID}{P} \tag{7}$$

$$tax = \theta_{10} + \theta_{11}\, gcons_{-1} + \theta_{12}\, inc_{-1} + \theta_{13}\, pinv + \theta_{14} \frac{e\,AID}{P} \tag{8}$$

The real demand for central bank loans can be determined similarly. Since we have not explicitly specified the adding-up restrictions, however, we use the government budget constraint to determine (nominal) demand for central bank loans.

External sector

The balance of payments, denominated in foreign currency is given by

$$\Delta FRES = P_w\ \text{exp} - P_w\, imp + AID \tag{9}$$

where imp is real imports, exp is real exports, P_w is the(exogenous) world price, assumed to be equal for export and import goods. The balance of pay-

ments, in the fixed exchange rate version of the model, determines the change in foreign reserves.

The modelling of imports (and exports) is based on the so-called Armington approach (Armington; 1969), now commonly used in general equilibrium models. This means that imports and domestically produced goods are assumed to be imperfect substitutes and that domestic agents demand a composite good of imports and domestically produced goods, which are combined according to a CES aggregation function. This approach implies that import ratios adjust in response to a change in prices on domestically produced goods bought by the home country, relative to the home currency price of imports (P_m). The specifications we use are:

$$imp = ratio_m \; ddd \tag{10}$$

$$ddd = \left(\frac{1}{1+ratio_m}\right)(pcons + pinv + gcons + ginv) \tag{11}$$

$$ratio_m = \frac{imp}{ddd} = A_m\left(\frac{P_{ds}}{P_m}\right)^{\sigma_m} \tag{12}$$

where ddd is real domestic demand for domestic goods, $ratio_m$ is the ratio of imports with respect to domestic demand for domestic goods and (P_{ds}) is the price on domestically produced goods bought by the home country. (A_m) is the base year ratio between (ddd) and (imp). s is an (exogenous) elasticity of substitution.

Exports are derived similarly. It is assumed that producers produce a composite good of exports and goods supplied on the home market, which are again combined using a CES aggregation function. This implies:

$$\text{exp} = ratio_x \; dsd \tag{13}$$

$$dsd = \left(\frac{1}{1+ratio_x}\right)inc \tag{14}$$

$$ratio_x = A_x\left(\frac{P_x}{P_{ds}}\right)^{\sigma_x} \tag{15}$$

where dsd is real supply of domestically produced goods at the home market, $ratio_x$ is exports over domestic supply of goods, P_x is the export price and (A_x) is the base year ratio between (dsd) and (exp).

Central bank

The central bank sets the exchange rate by changes in foreign reserves, it lends to the government and it issues money. The budget constraint, deter-

mining supply of money as a residual, given the change in foreign reserves and loans to the government which are determined via the balance of payments and the government budget constraint, reads as follows:

$$\Delta CBL + e\Delta FRES = \Delta MON_s \tag{16}$$

where $DMON_s$ is the (change) in nominal money supply.

Prices

The model distinguishes six goods prices. The world price (P_w) is exogenous. The composite goods prices (P and P_{dp}) and the export prices (P_x) and import prices (P_m) are determined via the following equations

$$P_m = e\,P_w \tag{17}$$

$$P = \frac{P_{ds}\,ddd + P_m\,imp}{pcons + pinv + gcons + ginv} \tag{18}$$

$$P_x = e\,P_w \tag{19}$$

$$P_{dp} = \frac{P_{ds}\,dsd + P_x \exp}{inc} \tag{20}$$

One price, the price of domestically produced goods bought by the home country (P_{ds}), is not explicitly modelled. This price is endogenously determined by the goods market equilibrium condition (see below).

Supply side, demand side and equilibrium conditions

Total real investment (totinv) equals real private investment plus real government investment

$$totinv = ginv + pinv \tag{21}$$

Having determined investments, and abstracting from depreciation, the real aggregate stock of capital is:

$$k = k_{-1} + totinv \tag{22}$$

Real production (inc) is determined by a Harrod-Domar production function

$$inc = mpc\,k \tag{23}$$

where (mpc) is the marginal productivity of capital (the inverse of the ICOR).

Using the above production function, the growth in real production is determined as

$$growth = \frac{inc - inc_{-1}}{inc_{-1}} = \frac{mpc\ totinv}{inc_{-1}} \tag{24}$$

Having determined total supply of goods and the different demand components, the goods market equilibrium condition can now be specified. We use the following condition, which will be fulfilled by changes in P_{ds}

$$dsd = ddd \tag{25}$$

Given the definition for the composite prices, it can simply be seen that the above condition also implies that the usual condition "real income (production) equals private plus government investment and consumption, plus exports, minus imports" holds. It can now also be easily derived (Walras Law) that, given goods market equilibrium, the demand for money automatically equals the supply of money, and hence the money market equilibrium condition is not explicitly taken into account.

The model is now complete. How do we use this model for determining aid dependence? We first look at the situation in the absence of aid. In the model this can be done by exogenously setting the amount of foreign aid at zero, and using equation 24 to determine the growth rate of production. Two situations are possible: the GDP growth rate is above or below the growth objective in the foreseeable future. If the GDP growth rate is above the target level, the analysis stops since the country is able to achieve a growth objective without aid, and hence is not aid dependent. On the other hand, if the GDP growth rate is below the objective, additional information is needed to determine whether the country is aid dependent. In this case, we run the model again by exogenously setting the growth rate at the target level, while endogenizing foreign aid. Now again two situations are possible. First, it appears that only for negative values of foreign aid the growth objective can be achieved. This reflects a situation of an extreme form of aid ineffectiveness. A country experiencing this kind of behaviour cannot be characterized as aid dependent. Second, the growth objective can be achieved with positive values of foreign aid. In this case, the country is said to be aid dependent.

3. Parameterization of the model

The above model is applied to the case of Guatemala, Kenya and Pakistan. We have used actual data for the period 1971–1994 to estimate the coefficients in the equations for (real) private consumption, private investment, government consumption, government investment and taxes. The estimation results for the private sector and the government sector are given in Table A.1 and Table A.2, respectively.

Table A.1 Estimation results for private sector

pcons	dispy		Constant	adj. R^2	DW
Guatemala	0.90	–	–	0.99	0.9
	(260.66)				
Kenya	0.77	–	–	0.93	1.1
	(74.03)				
Pakistan	0.73	–	3.714E+09	0.97	0.67
	(23.78)		(5.21)		

pinv	dispy	pinv(-1)	Constant	R^2	DW
Guatemala	0.034	0.73	–	0.37	1.8
	(1.55)	(3.95)			
Kenya	0.06	–	76652332	0.15	1.8
	(2.06)		(4.28)		
Pakistan	0.07	0.53	–512076708	0.97	2.6
	(4.08)	(3.54)	(–3.66)		

Table A.2 Estimation results for the government sector

tax	gcons(–1)	inc(–1)	pinv	eAID/P	Constant	adj. R^2	DW
Guatemala	–0.938	0.149	0.274	3.347	–301225430	0.76	1.5
	(–2.22)	(3.16)	(2.59)	(2.67)	(–2.04)		
Keny	–	0.246	0.153	–	–500116715	0.97	1.5
		(22.43)	(1.55)		(–4.99)		
Pakistan	–	0.144	–	–0.469	–	0.98	1.6
		(59.36)		(–4.11)			

gcons	gcons(–1)	inc(–1)	pinv	eAID/P	Constant	adj. R^2	DW
Guatemala	0.853	0.019	–	–	–39463128	0.98	1.5
	(9.39)	(1.89)			(–1.32)		
Kenya	0.790	0.060	–	–0.494	–	0.98	1.2
	(6.36)	(2.39)		(–2.77)			
Pakistan		0.144	–	–0.696	662941473	0.97	1.6
		(59.36)		(–2.28)	(2.61)		

ginvs	gcons(–1)	inc(–1)	pinv	eAID/P	Constant	adj. R^2	DW
Guatemala	–2.500	0.296	–	–	–499232029	0.58	1.7
	(–5.28)	(5.61)			(–3.19)		
Kenya	–	–	0.631	0.619	–	0.55	1.1
			(15.97)	(2.49)			
Pakistan	–0.474	0.262	–1.025	–0.255	–	0.96	1.8
	(–3.72)	(16.42)	(–6.24)	(–1.97)			

All equations have been estimated using OLS. The data, except for private and government investments, are obtained from the World Bank's *Debt Tables*. The marginal productivity of capital (mpc) is also derived from actual data. It is the average mpc for the 1971–1992 period (obtained by a simple OLS regression between change in real gdp and real total investment). The mpc turned out to be 0.20 for Guatemala, 0.17 for Kenya and 0.31 for Pakistan. Some parameter values, such as the negative coefficient for aid in the equations for government consumption for Kenya and Pakistan, may seem to be counterintuitive. However, it has to be taken into account that the equations are reduced from equations derived from a structural model. This implies that the "signs" of the coefficients can not be determined at forehand since they are composite coefficients. A reason for the negative effect of aid on government consumption may be that aid negatively affects taxes. Taking into account a positive relationship between taxes and government consumption, a negative reduced-form relationship between aid and government consumption results. In general, the estimates seem to be reasonable. However, it should be noted once again, that given the reliability of the data, the estimates should be taken with caution. Hence, the simulations, which are based on the estimation results, should only be seen as indicative.

The elasticities of substitution in the export and import equations are exogenously set at one. The base year is 1992. In the base year all prices and the exchange rate are normalized to one. This implies that A_m and A_x can be derived from the actual initial values, and are calculated as: (imp/(gcons+ginv+pinv+pcons-imp)) and (exp/(gcons+ginv+pcons+pinv-imp)), respectively. The start value for the capital stock is calculated by using the production function, the ICOR and the start value of GDP.

4. Simulation Results

Using the above specified model and coefficients we examined whether Guatemala, Kenya and Pakistan are aid dependent. For all three countries, we start by running the model for the case where no aid is given. The results are given in figures A.1, A.2 and A.3.

It appears that for Guatemala and Kenya the GDP growth rate in the absence of aid is declining, and declines, after a certain time period, below population growth, which is in these countries about three per cent per year. On the other hand, Pakistan is able to achieve a high GDP growth rate without foreign aid, and hence is not aid dependent. The main reason for this outcome is the much higher marginal productivity of capital (lower ICOR) for Pakistan. The analysis thus suggests that a policy to reduce aid dependence should be directed at improving the marginal productivity of capital.

Next, we examine whether Guatemala and Kenya are able to achieve a target growth rate of four per cent (about one per cent above the population

growth rate) when aid is endogenized. Figures A.4 and A.5 show what this requirement implies for aid donations.

Figure A.4 shows that Guatemala is only able to achieve its growth objective if aid donations are negative. The precise reason why this is the case is not clear, it probably reflects aid ineffectiveness so that Guatemala can not be characterized as aid dependent. Kenya, on the other hand, is able to achieve its growth objective when aid donations steadily grow during the simulation period. Hence, Kenya might be considered as aid dependent.

5. Conclusions

This appendix has developed a model which can be used to determine aid dependence of a country. The model has been applied to Guatamala, Kenya and Pakistan. The simulations for these three countries differ considerably. In the absence of foreign aid, Guatamala and Kenya are not able to achieve a minimum growth objective, whereas Pakistan seems to be able to achieve the growth objective without foreign aid. Thus, Pakistan is not aid dependent. Simulations for which foreign aid is endogenized, and a growth target is exogenously set, show that Guatamala is only able to achieve the growth target when foreign aid is negative, implying that aid is very ineffective in this country. Hence, this country is also not aid dependent, but for a totally different reason than Pakistan. For Kenya it appears that the growth objective can be achieved when aid is steadily growing. Hence, the model simulations suggest that Kenya is aid dependent.

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Figures

Figure A.1

Guatamala: Growth

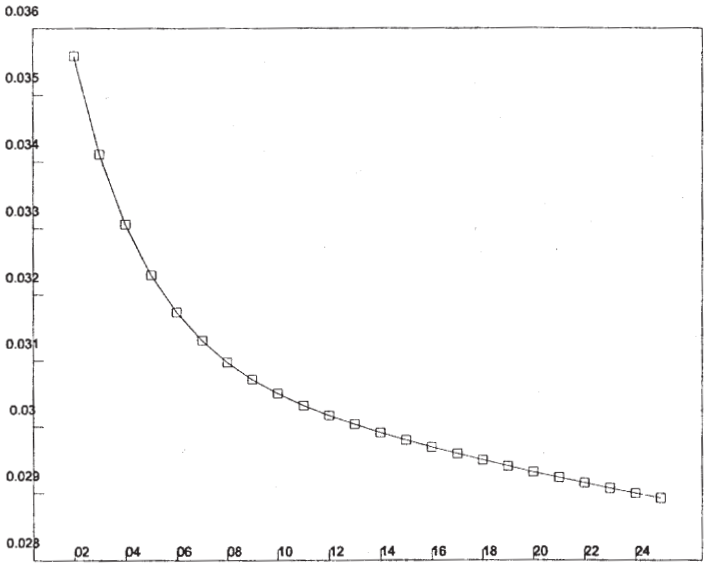

Figure A.2

Kenya: Growth

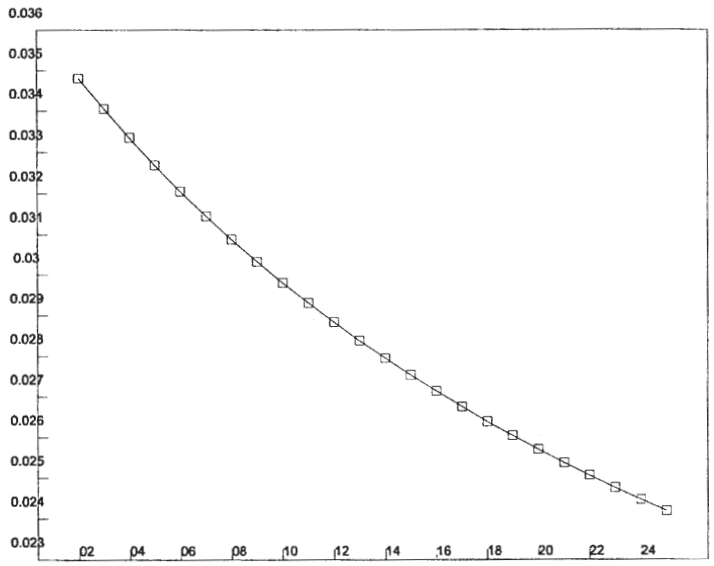

Figure A.3

Pakistan: Growth

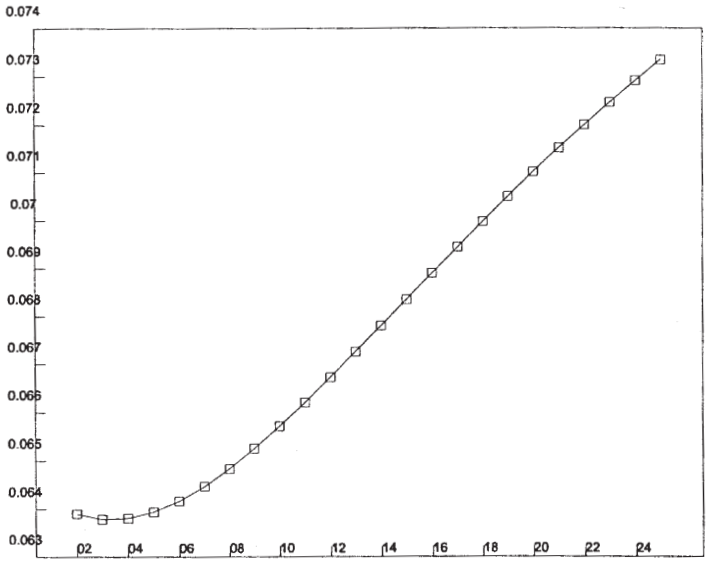

Figure A.4

Guatamala: Aid

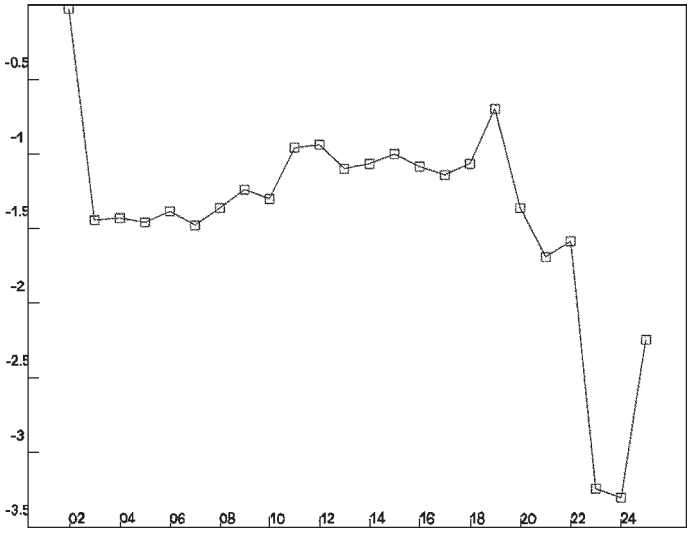

Figure A.5

Kenya: Aid