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Practices and implications of aid allocation

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1 Introduction

This paper examines the allocation of aid by OECD-DAC donors in recent years. Aid allocation as a crucial issue: having a large impact on the effectiveness of aid, in terms of meeting agreed development goals and targets, but also on the level of popular support for aid more generally. The paper focuses on three main issues:

- current aid allocation trends and practices;
- priorities and of different aid allocation models used by different donors;
- trends in and possible implications of the concentration of aid.

It also provides a brief overview of how future aid allocation may be affected by climate change.

The data on aid used in the paper are all obtained from the OECD-DAC online database, International Development Statistics (www.oecd.org/dac/stats/idsonline). They are all based on disbursements of Official Development Assistance (ODA), from all DAC donors. The precise measure of aid used in the paper is designed to measure 'programmable aid'. It is calculated as follows:

$$\text{'Programmable aid'} = \text{ODA grants} + \text{ODA loans (gross)} - \text{debt forgiveness grants} - \text{humanitarian aid.}$$

The total amount of this measure of aid, to all developing countries, grew from \$50.4 billion in 1997 to \$69.3 billion in 2007 (in constant 2005 prices), an average increase of 3.6% per year.

Four main points are worth noting about this measure of programmable aid. First, it also excludes aid which is reported in the OECD-DAC database as being 'unallocated' to any particular recipient country, since this is (by definition) not programmable ODA. Second, it includes ODA loans measured in gross rather than net terms (i.e. it does not net out repayments of ODA loans by recipients). This is justified on the grounds that repayments of ODA loans are not a choice variable for donors, so that a more accurate indication of donors' allocation policies is obtained by excluding them. Third, the above measure is based on actual disbursements as opposed to commitments. Although an argument can be made for focusing on commitments, the focus is on disbursements here since the data are more readily available. Finally, the above measure is not an ideal concept of programmable aid, since it also includes at least some donor administrative costs, in-donor country refugee costs, and imputed student costs. However, it is the most readily available, and simplest to calculate and therefore monitor.

A further issue which requires mentioning at the outset is that for some recipient countries basic demographic and socio-economic data (e.g. population, GDP) are not available in standard international sources (e.g. the World Bank's World Development Indicators database). This raises a problem, in that any given allocation of aid can only be assessed relative to recipient country characteristics, and if the most basic of these are not available, the assessment is not possible. For this reason, the analysis in the paper at times has to exclude aid to recipient countries lacking basic demographic and socio-economic data. These are mainly very small countries and territories, accounting for a small proportion of total programmable aid. However, they also include Iraq and Afghanistan, which have from 2002 onwards accounted for a large and rising share of total programmable aid.¹ This is not to deny that the large increase in aid to Iraq and Afghanistan is an important issue worth analysing, but it is one which would require significant additional analysis and data collection which is beyond the scope of the current paper.

Finally, the data analysed in this paper focus on DAC donors, and do not include growing amounts of aid from non-DAC donors. This important issue is addressed in a separate paper.

¹ The latest population and GDP estimates for Afghanistan and Iraq contained in the World Bank's World Development Indicators database both refer to 1989.

2 Key trends in aid allocation

2.1 Allocation across country groups

The allocation of aid across broad country groups in 2006 is shown in Table 1. The first column shows the percentage of total programmable aid allocated to each group. The second column then shows the equivalent percentage of ‘adjusted’ total programmable aid, which excludes aid to all recipients lacking population data. This second column is therefore directly comparable with the third column, which shows the proportion of the total population of all recipient countries with population data in each country group.

By region, the largest share of total aid was allocated to Sub-Saharan Africa (34%), followed by South and Central Asia (18%) and Far East Asia (15%). By income group, the largest share of total aid was allocated to low-income countries (55%), followed by lower middle-income countries (38%) and upper middle-income countries (6%). The Least Developed Countries (LDCs) received 34% of total aid in 2006. This comfortably exceeds the share, although not the total amount, of aid required to be allocated to LDCs under the UN aid targets.²

The results in the second column show that a smaller share of total ‘adjusted’ aid (i.e. excluding Iraq and Afghanistan) was allocated to the Middle East (now excluding Iraq) and South and Central Asia (now excluding Afghanistan). Corresponding to this, the shares allocated to all other regions are somewhat higher, as expected. The results in the second column also show that a larger share of ‘adjusted’ aid was allocated to low-income countries (58% compared to 55%), and a smaller share was allocated to lower middle-income countries (35% compared to 38%). By contrast however, the share allocated to LDCs is very similar (34% in each case).

The results in the third column show that six out of nine regions received a larger share of total aid than their share of total population, while three regions received a smaller share. The six with larger shares are North Africa, Sub-Saharan Africa, North and Central America, Middle East (not including Iraq), Europe and Oceania, while the three with smaller shares are South America, South and Central Asia (not including Afghanistan) and Far East Asia. In terms of income group, low-income countries received a larger share of aid than population, while lower and upper middle-income countries receive smaller shares. In terms of other groupings, LDCs, Land-locked Developing Countries (LLDCS), Small Island Developing States (SIDS), former colonies, and countries in both conflict and post-conflict status all receive significantly larger shares of aid than their shares of total population.

² The UN target is that donors give 0.7% of their GNI as aid, and 0.15% of their GNI to the Least Developed Countries. The implied proportion of total aid is therefore $0.14/0.70=21\%$.

Table 1 Allocation of programmable aid by broad country group, 2006

	% of total aid	% of total aid, adjusted*	% of total population*
<i>By region</i>			
North Africa	4.8	5.5	3.0
Sub-Saharan Africa	34.3	38.6	14.8
North & Central America	4.7	5.3	3.4
South America	5.1	5.7	7.2
Middle East	11.2	4.6	2.9
South & Central Asia	18.1	16.2	30.4
Far East Asia	14.8	16.7	35.2
Europe	5.5	6.1	3.0
Oceania	1.4	1.4	0.2
<i>By income group</i>			
Low income	55.4	58.2	46.4
Lower middle-income	38.2	34.8	46.1
Upper middle-income	6.4	7.0	7.5
<i>UN country groups</i>			
Small Island Developing States	3.9	4.3	0.9
Land-locked Developing Countries	20.3	18.7	6.6
Least Developed Countries	33.9	34.1	14.1
<i>Historical background</i>			
Former colonies	84.8	87.1	68.3
- British	41.5	38.3	39.0
- French	17.5	19.7	6.9
- Spanish/Portuguese	13.5	15.2	13.0
- Other	12.4	14.0	9.5
<i>Conflict status**</i>			
Conflict affected countries	8.0	8.9	5.7
Post-conflict countries	7.2	3.9	1.9

Notes: *Not including aid allocated to countries lacking population data (these include Afghanistan and Iraq). **As defined by the World Bank (2006).

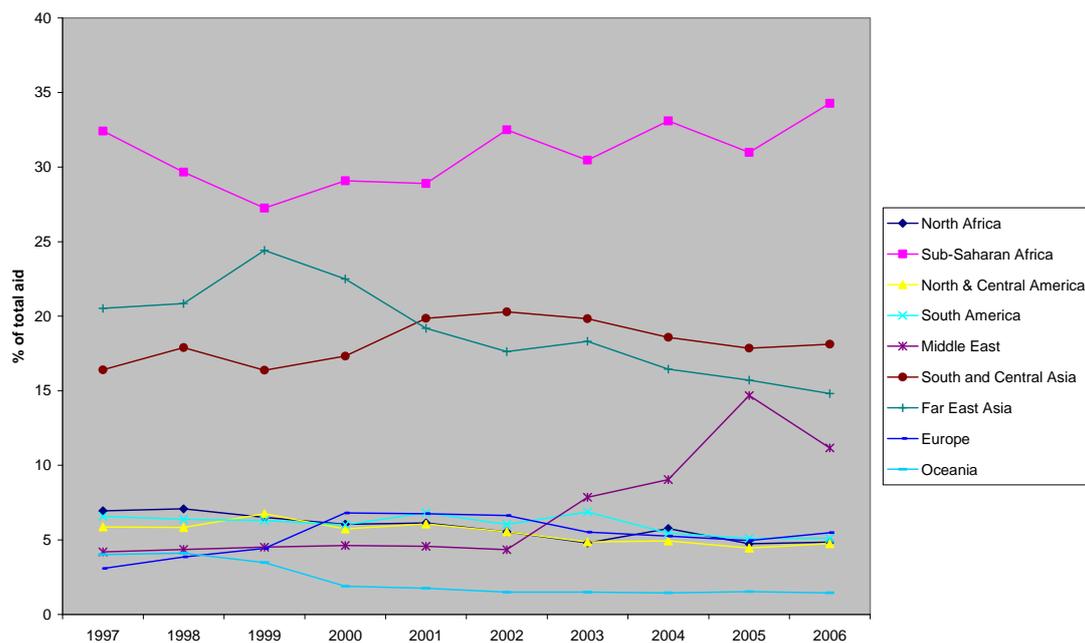
Source: OECD-DAC, International Development Statistics Online.

Trends in the allocation of programmable aid by region between 1997 and 2006 are shown in Figures 1 and 2. As in Table 1, two separate series are shown: one showing the proportion of total aid to all recipients allocated to each region, and the other showing the proportion of the 'adjusted' total, which excludes Iraq and Afghanistan.

One noticeable trend over the period have been a rise, from 1999 onwards, in the share allocated to Sub-Saharan Africa, particularly when considering the adjusted series (Figure 1). Another has been a decline, from 1999 onwards, in the share allocated to Far East Asia, particularly when considering the unadjusted series (Figure 2). For the unadjusted series, there is a clear and large rise in the share allocated to the Middle-East, which almost entirely reflects the Iraq effect, since no such trend is apparent in the adjusted series.

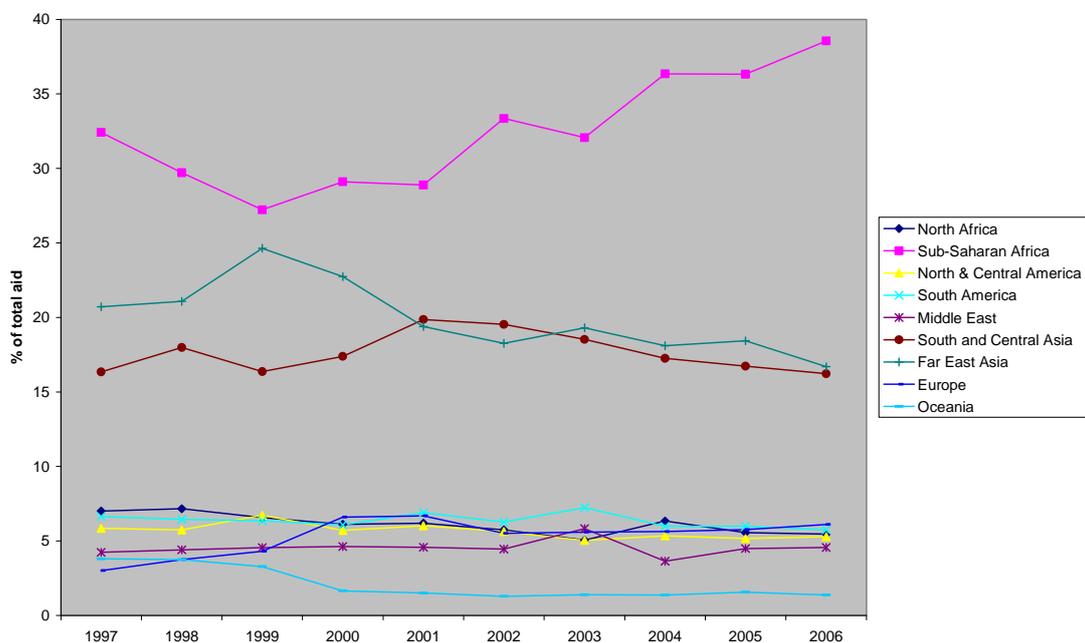
Trends in the allocation of aid by other country categories over the same period are shown in Figure 3. This shows that there has been a rise over the period in the share of aid allocated to the Least Developed Countries, which is the case when considering both the unadjusted and adjusted series. There has also been a rise in the share allocated to land-locked developing countries, which in this case is larger when considering the adjusted series. Finally, there has been a fall in the a fall in the share of aid allocated to the Small-Island Developing States.

Figure 1 Aid allocation by region, 1997-2006 (unadjusted)



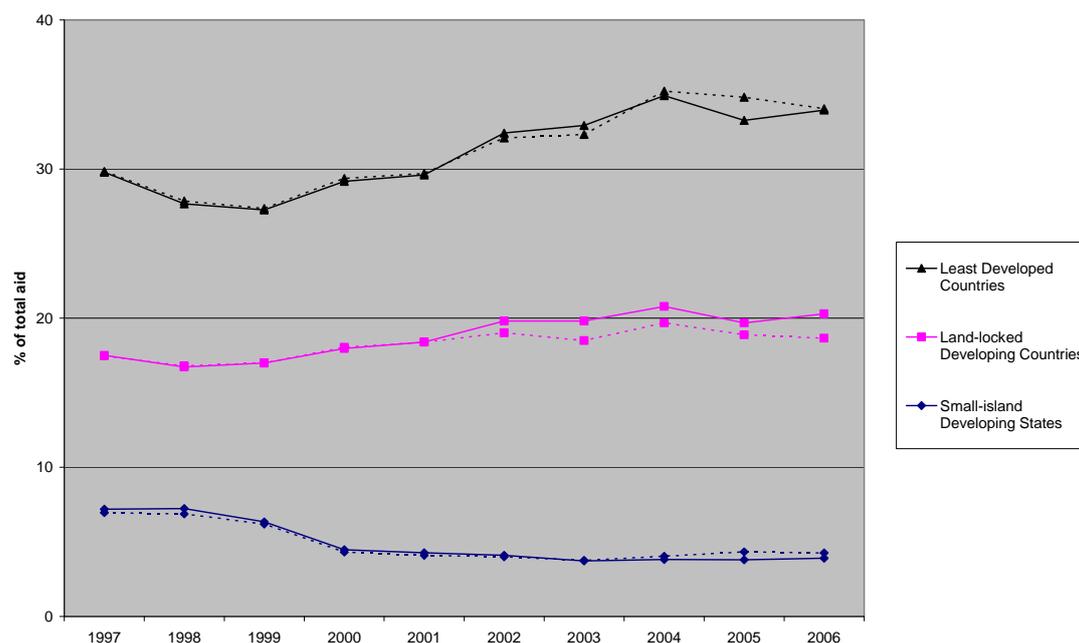
Source: OECD-DAC, International Development Statistics Online.

Figure 2 Aid allocation by region, 1997-2006 (adjusted)



Source: OECD-DAC, International Development Statistics Online.

Figure 3 Aid allocation by UN country category, 1997-2006



Notes: The solid lines indicate the unadjusted series; the dashed lines indicate the adjusted series.
Source: OECD-DAC, International Development Statistics Online.

2.2 Allocation across sectors

The allocation of aid across broad sectors in 2006 is shown in Table 2. The broad sector receiving the largest share of aid was social infrastructure (53%), followed by economic infrastructure (19%) and the productive sectors (10%). Among the social infrastructure sector, the largest share was allocated to government and civil society (30%), followed by education (23%), health (13%) and water and sanitation (12%).

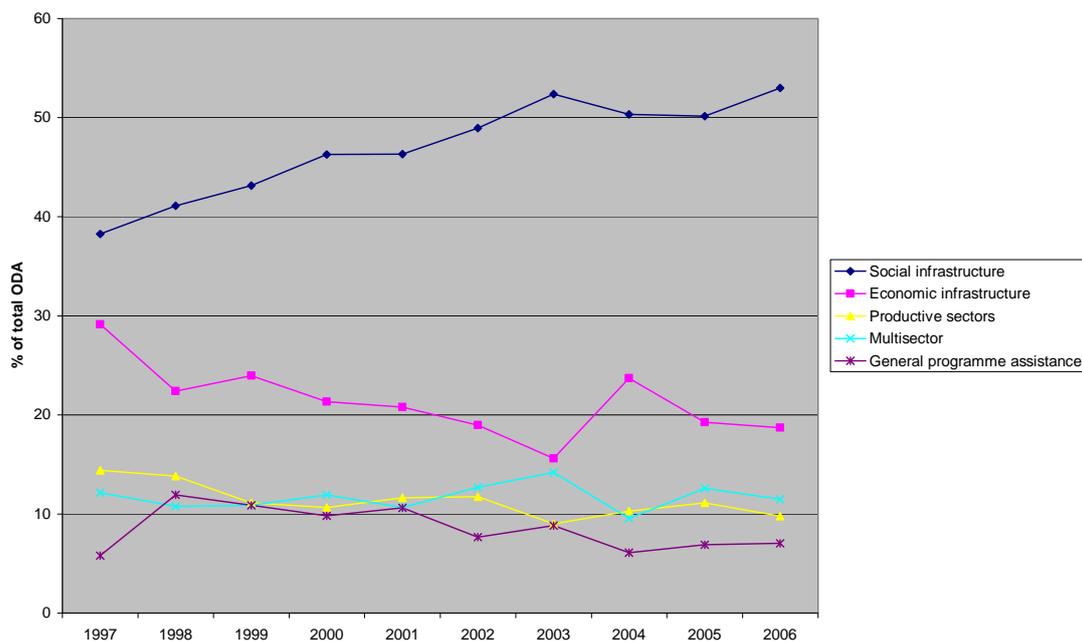
Trends in allocations of aid by broad sector between 1997 and 2006 are shown in Figure 4. There has been a large increase in the proportion of aid allocated to social infrastructure, offset mainly by a reduction in the proportions allocated to economic infrastructure and the productive sectors. Trends in allocation by sub-sector within the social infrastructure sector are shown in Figure 5. There has been a large rise in the share allocated to government and civil society, and a smaller rise in the share allocated to population programmes; these have been offset by a fall in the shares allocated to education and to water and sanitation.

Table 2 Aid allocations by sector, 2006

	Definition	% of total
Social infrastructure	This main category relates essentially to efforts to develop the human resource potential of developing countries Includes general teaching and instruction at all levels; as well as construction specifically to improve or adapt educational establishments. Training in a particular field, such as agriculture, is reported against the sector concerned	53
- Education	Includes primary, basic life skills for youth and adults and early childhood education	12
- Basic education	Includes vocational training.	4
- Secondary education	Includes education sector policy and research, as well as buildings and teacher training when level of education unspecified or unknown.	1
- Education, unspecified level	Covers assistance to hospitals, clinics, other medical and dental services, public health administration and medical insurance programmes.	2
- Health	Basic health care provision, training of basic health personnel and development of basic health infrastructure; nutrition, infectious disease control, public health campaigns.	7
- Basic health	Covers assistance given for water resources policy, protection and administrative management, water supply and use, sanitation and water resources development (including rivers).	4
- Water and sanitation	Includes assistance to strengthen the administrative apparatus and government.	7
- Government and Civil Society		16
Economic infrastructure	This major heading groups assistance for networks, utilities and services that facilitate economic activity.	19
- Transport and communications	Covers road, rail, water and air transport and storage, whether or not related to transportation; all communications (post and telecommunications, radio, television, print media), ICT.	10
Productive sectors	This main heading groups contributions to all directly productive sectors.	10
- Agriculture	Including agricultural sector policy, agricultural development and inputs, management of land and agricultural water resources, crops and livestock production, agrarian reform, agricultural credit, co-operatives and research as well as veterinary services	6
- Industry	Industrial policy, small business and craft development; all types of manufacturing, including agro-processing, chemicals and fertilisers, gas liquefaction and petroleum refining, fuel wood production, textiles and leather.	2
- Trade and Tourism	Trade policy and planning; trade facilitation; regional trade agreements; multilateral trade negotiations; multisector wholesale/retail trade and trade promotion; tourism policy and administrative management.	2
Multi-sector	This main heading includes support for projects which straddle several sectors.	11
- General environment	Covers activities concerned with conservation, protection or amelioration of the physical environment without sector allocation.	2
General programme assistance	This main heading includes contributions for general development purposes without sector allocation, with or without restrictions on the specific use of the funds (and irrespective of any control by the donor of the use of counterpart funds).	7
TOTAL		100

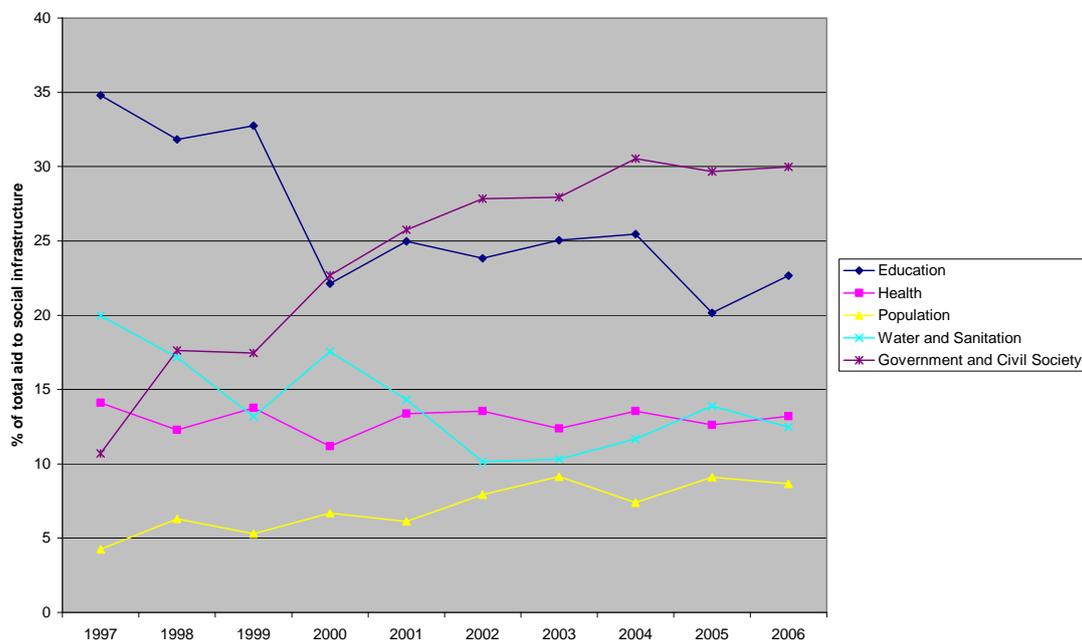
Source: OECD-DAC, International Development Statistics Online.

Figure 4 Aid allocation by broad sector, 1997-2006



Source: OECD-DAC, International Development Statistics Online.

Figure 5 Allocation of aid to social infrastructure, 1997-2006



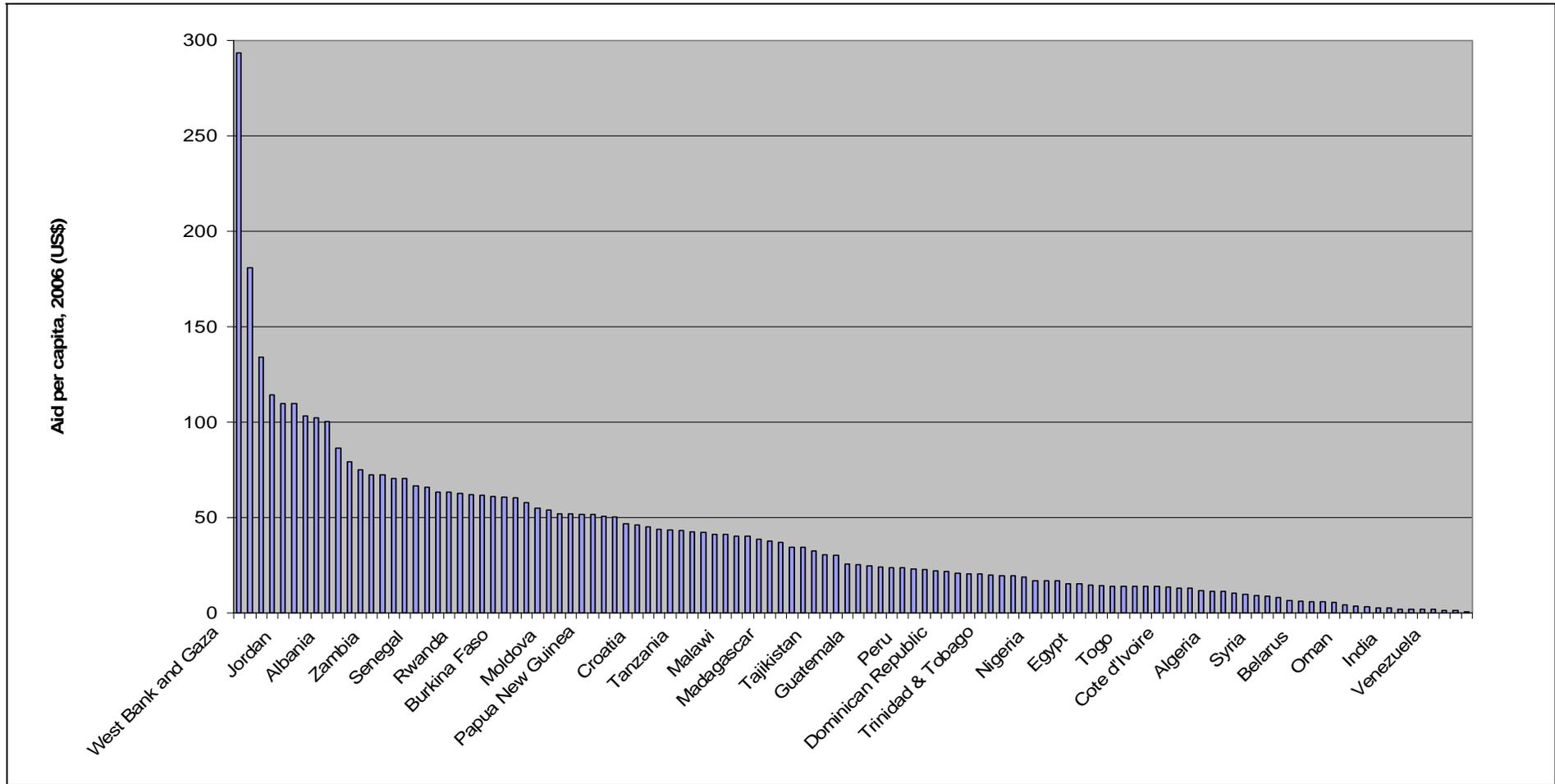
Source: OECD-DAC, International Development Statistics Online.

One important issue is the extent to which the allocation of aid across sectors is appropriate from the point of view of attaining the Millennium Development Goals (MDGs). This is a very difficult question to answer, since there is no clear link between aid to a given sector and any one of the MDGs: for example, aid to agriculture may raise school enrolment indirectly, by boosting household income and ability to afford the opportunity costs of schooling. The share of aid going to sectors which are *directly* relevant in terms of meeting the MDGs – defined here as basic education, basic health, water and sanitation, population programmes, and general environment – accounted for 22% of total aid in 2006, up from 16% in 1997. Unfortunately, it is hard to say whether this increase is sufficient, or even appropriate, from the point of view of attaining the MDGs, without information on the effects of aid to other sectors, such as agriculture or infrastructure, on progress towards the MDGs. This type of information is generally not possible to collect at the cross-country level, meaning that assessments of the allocation of aid across sectors are best made at the recipient country level.

2.3 *Allocation across recipient countries*

As shown in Figure 6, there are large differences across recipient countries in the amount of aid received, on a per capita basis. This section discusses these differences in more detail. The first assesses the extent to which differences in per capita allocations can be explained by differences in recipient country ‘need’ or recipient country ‘performance’. The justification is that there is arguably a consensus that aid should be allocated on the basis of country need and performance, and therefore it is of interest to examine the extent to which this is the case. The second then assesses the potential influence of political and/or strategic factors on per capita allocations, while the third assesses the balance between needs and performance considerations.

Figure 6 Aid allocations per capita, 2006



Notes: Data for 112 DAC recipients with populations exceeding 0.5 million are shown, although due to lack of space the country names have been shown only for a selection.
 Source: OECD-DAC, International Development Statistics Online.

2.3.1 Needs and performance

The approach is to first select a range of widely available measures of recipient country need and recipient country performance. These are shown in Box 1. The technique of multiple regression analysis is then used to determine what proportion of the variation in levels of aid per capita across recipient countries can be ‘explained’ by these indicators. For reasons of data availability, this analysis cannot be done for all years, but it is done here for three years: 1996, 2000 and 2005. Also for reasons of data availability, around 30 recipient countries must be excluded from the analysis in each year.

The full results of the regression analysis are shown in Annex 1. The main finding of relevant here is that, in each of the years considered, between 70 and 80 percent of the observed variation in levels of aid per capita across recipient countries can be explained by the indicators shown in Box 1. This is shown in the first row of Table 3. There is no clear trend over time, but the percentages explained for 2000 and 2005 (79 and 77 percent) are both higher than the percentage explained in 1996 (72 percent). If we distinguish between bilaterals and multilaterals, the percentage explained is somewhat higher for multilaterals (between 74 and 76 percent) than it is for bilaterals (between 64 and 70 percent). In addition, similar percentages apply when considering just low-income recipients, although in this case the difference between the figures for bilaterals and multilaterals largely disappears.

Table 3 Variation in aid per capita explained by needs and performance (%)

	All years	1996	2000	2005	2005, low-income only
All donors	76	72	79	77	72
Multilateral donors	74	74	74	76	64
Bilateral donors	67	64	70	68	65
No. of observations	367	123	123	121	71

Notes: The figures in the table are the adjusted R-squared figures from a regression of the log of aid per capita on the need and performance indicators shown in Box 1. See Annex 1 for the full results.

Source: Author’s calculations based on data from OECD-DAC, World Development Indicators and BP World Energy Review.

The 70-80 percent figure is a high proportion, especially when we consider that the indicators of country need and performance shown in Box 1 are only ‘broad-brush’ indicators. It certainly does not prove that donors *are* (as a group) allocating aid across recipient countries mainly on the basis of needs and performance considerations. But the finding is at least *consistent* with such a view.

Box 1 Measures of country need and performance

There is a widespread consensus that any differences in allocations across recipient countries should reflect either differences in country 'need' or differences in country 'performance'. However, how should need and performance be measured? Potential measures are shown in the table below. Positive (+) signs indicate that higher values of the indicator are associated with higher levels of country need or performance; negative (-) signs indicate the opposite.

Need	Performance
GDP per capita (US\$, PPP) (-)	Growth of GDP per capita, past 5 years (+)
Child mortality rate (+)	Reduction in child mortality, past 5 years (+)
Oil and natural gas reserves (-)	Government effectiveness index* (+)
Least Developed Country (+)	
Land-locked developing country (+)	
Small Island Developing State (+)	
Post-conflict country (+)	
Population (-)	

*as calculated by Kaufmann et al. (2007).

Most of these indicators are self-explanatory. Note, however, that country need can be measured using an income-based measure, such as GDP per capita, or non-income based measures, such as the Human Development Index or the child mortality rate. Note also that country performance can be measured using subjective measures, such as the Kaufmann et al. (2007) government effectiveness index, or the World Bank IDA's country performance rating, or using objective measures, such as recent rates of economic growth or reductions in child mortality. Note also that the measures of need include not only measures of deprivation (e.g. child mortality rate) but also measures of a country's ability to obtain revenue from sources other than aid. Thus oil and gas reserves are included as a measure of need, since countries with such resources are likely to have greater access to international capital markets, as well as higher potential for raising government revenue domestically, in comparison with other developing countries.

It is also worth noting that these indicators are not meant to be exclusive; there are various others that could be added. The list is limited to those above for the purposes of the regression analysis however, in order to ensure sufficient country coverage (the more indicators that are used, the more countries there are lacking data for at least one country).

Finally, note that population is included among the indicators for country need. This is despite the fact that, as is standard, aid allocations are expressed in per capita terms. There are two reasons for using population in this way. The first is one of economies of scale: because there are fixed costs in running an aid programme, less aid is needed on a per capita basis in a larger country than a smaller country. The second is one of resilience to shocks, and states that countries with smaller populations are more vulnerable to adverse economic shocks. (There is a further argument, namely that giving a large share of total aid to one or two single countries would conflict with principles of inter-national equity. This argument goes beyond considerations of need and performance however.)

2.3.2 *Political and strategic factors*

We now consider the potential influence of political and strategic factors on the allocation of aid across recipient countries. One way to investigate this issue is to include measures of strategic and/or geo-political factors, along with the needs and performance indicators, in the regression explaining aid allocations across countries. This is done here using two such measures, namely:

- whether a country was a former European colony, and if so whether the colonial power was Britain, France, Spain or Portugal;
- region of the country, e.g. whether in the Middle East.

The results of the analysis show that the above indicators do have some effect on per capita allocations. In terms of region for example, the results suggest that countries in North Africa tend to receive slightly more aid, while countries in North and Central America tend to receive slightly less aid, than countries in sub-Saharan Africa, controlling for the need and performance indicators. In terms of colonial background, there is a tendency for former British colonies to receive slightly more aid from multilateral donors than other recipients, again controlling for the need and performance indicators.

The main finding, however, is that the effects of these variables on per capita aid allocations are small. In particular, they add little explanatory power (around 2 to 3 percentage points) to the overall regressions explaining differences in per capita aid allocations across recipient countries. Their inclusion also has relatively little effect on the sign or magnitude of the correlation between per capita aid receipts and the needs and performance indicators considered previously.

Of course, the above two indicators are only weak proxies for possible strategic and/or political factors. The study by Alesina and Dollar (2000), for example, include the number of years for which a recipient country was a colony, and a recipient country's voting patterns within the UN. Any further work would need to consider a wider range of possible proxies. For the time being however, there is no *direct* evidence from the regression analysis for the years 1996, 2000 and 2005 to suggest that political and strategic factors have a large effect on per capita allocations.³

³ This contrasts with the major conclusion of this frequently-cited study was that “the direction of foreign aid is dictated as much by political and strategic considerations, as by the economic needs and performance considerations of the recipients” (Alesina and Dollar 2000: 33). It is also worth noting, however, that the regressions in Annex use data for 2000 and 2005, while the Alesina and Dollar study used data for 1970-1994. It is not implausible that the influence of needs and performance considerations on aid allocations have strengthened between these periods, while that of political and strategic factors have weakened.

2.3.3 *The balance between needs and performance*

Given the large overall effect of the need and performance indicators shown in Box 1 on per capita aid allocations, a crucial issue is whether the balance between those indicators (e.g. the weight given to income vs. non-income measures of need, or subjective vs. objective measures of performance) is the right one. To investigate, this section analyses the individual effects of each need and performance indicator on per capita aid allocations. Estimates of these individual effects are obtained from the regression analysis set out in detail in Annex 1. As before, this analysis is done for the years 1996, 2000 and 2005.

An important first consideration is which of the individual effects are statistically significant.⁴ In the regressions reported in Annex 1, the effects of GDP per capita, oil and gas reserves, the child mortality rate, the government effectiveness index, the rate of reduction in child mortality, and population size, are all statistically significant at the 1% level. For these indicators, we can conclude with a high degree of confidence that they have affected per capita aid allocations in the years considered. By contrast, the effects of the rate of economic growth, and the qualitative variables for least-developed countries, land-locked countries, small-island states, and post-conflict countries, are not statistically significant at the 1% level. For these latter indicators, we cannot conclude with a high level of confidence that they have affected per capita aid allocations in the years considered.

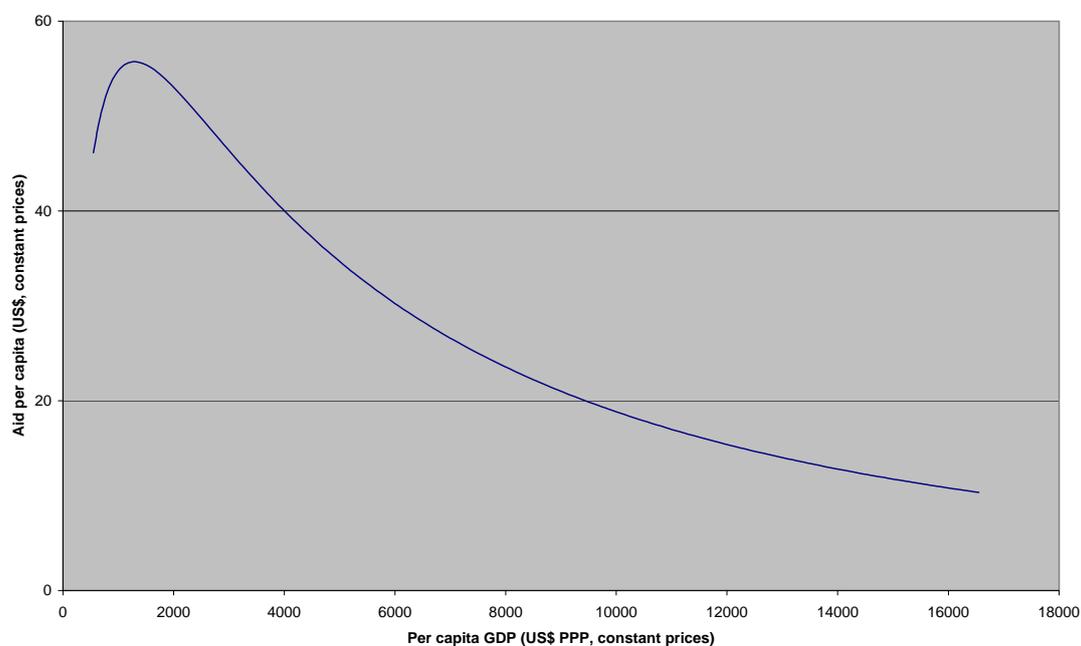
The next question is whether the need and performance indicators affect per capita allocations in the direction one would expect. For all the indicators which have a statistically significant effect on per capita allocations, this is indeed the case. In particular, the government effectiveness index, the child mortality rate, and the rate of reduction in child mortality all have a positive effect on aid allocations. Similarly, population size and oil and gas reserves both have a negative effect on aid allocations.

The effect of income per capita is slightly more complex, since in this case there is an inverse-U shaped relationship (see Figure 7). In particular, at low levels of income per capita, aid allocations rise with income per capita; they only fall with income per capita once a certain level of income per capita has been reached. (The turning point occurs at a level of GDP per capita of US\$1,290; in 2005, around 25 countries had a level of GDP per capita below this amount.) This relationship might seem perverse, but it can be justified in terms of absorptive capacity. In particular, at low levels of per capita income, a given amount of aid tends to account for a larger fraction of overall GDP. This can be a problem, since there is econometric evidence suggesting that once

⁴ By this, we refer to the extent to which we can be sure that a particular need or performance indicator really does affect per capita aid allocations. More formally, it refers to whether we can reject the null hypothesis that the indicator has no effect, at a particular significance level.

aid goes beyond a certain ratio of GDP – referred to as a country’s absorptive capacity – aid may begin to have adverse effects in the recipient country, for example on economic growth (see, for example Lensink and White 2000).

Figure 7 The relationship between aid per capita and GDP per capita



Notes: The graph shows the average level of aid per capita at each level of per capita GDP observed among DAC recipients, given average values of all other need and performance indicators.

Source: Author’s calculations (see Annex 1).

A more difficult question is whether some need and performance indicators have a much larger effect on aid allocations than others. This more difficult to address for two main reasons: first, the effect of each indicator cannot be estimated precisely, and second, each indicator is measured in different units. The generally accepted method for dealing with the latter problem is to focus on the ‘standardised coefficients’. In this context, these show the change in a country’s expected aid allocation, measured in standard deviations, of a one-standard deviation change in each need and performance indicator. Analysis of these results (reported in full in Annex 1) shows that

- GDP per capita typically has a larger impact on allocations than the child mortality rate;
- the Kaufmann et al. government effectiveness index has a larger impact on allocations than rates of reduction in the child mortality rate;⁵

⁵ This conclusion also applies when using the World Bank CPIA score as the subjective performance measure (see Annex 1), although for reasons of data availability the analysis must in this case be restricted to 2005 and to low-income countries only.

- the indicator having the largest effect on per capita allocations is population size.

A further issue is whether any of the effects of the need or performance indicators on per capita allocations have altered significantly over the period considered. Here, the regression results (again reported in full in Annex 1) suggest that there have been some differences: for instance, the negative effect of population size has fallen slightly (i.e. become slightly less negative) over the period, while the effect of the child mortality rate increased slightly. In no case, however, has there been a statistically significant change over time. In other words, we cannot conclude with any degree of certainty that there has been a real change in the effect of any one indicator over the period being considered. This may reflect the short time-period being considered.

Overall, the current balance between needs and performance considerations, and between different sorts of need and performance considerations, may be summarised as follows:

- income-based measures of country need (e.g. GDP per capita) have a greater impact than non-income based measures (e.g. under-5 mortality);
- subjective measures of government performance (e.g. the Kaufmann et al. government effectiveness index) have a greater impact than objective measures (e.g. reductions in under-5 mortality);
- population size has a large negative effect on per capita aid allocations;
- developing countries in ‘special circumstances’ do not receive noticeably larger allocations than other developing countries, when controlling for all other need and performance indicators.

Of course, these existing relationships between average per capita aid allocations and commonly-available need and performance indicators are not necessarily the most appropriate ones, and further research is required to determine the latter. Generally, this sort of analysis is beyond the scope of the current paper, but some simple simulations are carried out and presented in Annex 2. These suggest that:

- a) a plausible range for the elasticity of per capita allocations with respect to population is between -0.3 and -0.4 (the current elasticity, shown in Annex 1, is close to -0.5);

- b) a plausible estimate for the level of GDP per capita below which its effect on aid allocations becomes positive is \$1,000, measured at PPP exchange rates in constant 2000 prices (the current threshold, shown graphically in Figure 7, is around US\$1,300);
- c) the plausible estimate for the rate at which per capita allocations should decline with per capita GDP, beyond the threshold level, is much greater than the existing rate;
- d) the plausible estimate for the rate at which per capita allocations should rise with non-income based measures of country need, such as the under-5 mortality rate, is also greater than the existing rate.

Further research is required however, in terms of extending these simple simulations, as well as extending the approach to other need and performance indicators. This is discussed further in the conclusion; it requires linking estimates of the impacts of aid, derived from econometric analysis, and variations in impacts according to different recipient country circumstances, to appropriate allocations of aid, via the use of optimisation techniques.

2.3.4 *Aid outliers*

The final question we address is which recipient countries receive significantly more or less aid than would be *expected*, given their levels of available need and performance indicators, and the average relationship between these indicators and aid receipts observed in the data. Such countries are referred to here as *aid outliers*. Positive aid outliers receiving more aid than would be expected, and negative aid outliers receiving less than would be expected.

It is important to stress that a negative aid outlier is not necessarily an under-aided country, while a positive aid outlier is not necessarily an over-aided country. For one reason, there may be good reasons for a country's allocation to differ from its expected allocation, since the need and/or performance indicators on which the expected allocation is based are all broad-brush indicators, subject to error. For another reason, there may also be reason to doubt the average relationship between these indicators and aid allocations, as the most appropriate or ideal such relationship.

Instead, the aim is simply to determine whether there are any obvious features of the negative and positive outliers which may plausibly account for their outlier status. This assessment can in turn be used to assess the importance or desirability of narrowing the gap between actual and expected per capita aid allocations. Put differently, should we be trying to reduce the 20-30 percent of 'residual' variation in

per capita aid allocations, or should instead the focus be on trying to change the average way in which aid is currently allocated?

With this in mind, Table 4 lists the countries for which the actual per capita allocations differ most from what would be expected, in 2000 and 2005. (The cut-off used is a difference by a factor of 2, i.e. double or more the expected per capita allocation for positive outliers, and half or less the expected per capita allocation for negative aid outliers. This amount is a rough approximation to the standard deviation of all differences between actual and expected per capita allocations.) For the negative aid outliers, there are some noticeable patterns, for example:

- they are mostly low-income or upper-middle income countries: there are few lower middle-income countries;
- roughly two-thirds are from sub-Saharan Africa or North and Central America (among all other countries, around 40% are from these regions);
- roughly one-third are in conflict situations (among all other countries, around 5% are in conflict situations).

For the positive aid outliers, there are again some noticeable patterns, for example:

- around one half are lower middle-income countries (among all other countries, 25% are lower middle-income);
- the vast majority are former colonies;
- around half are former British colonies (among all other countries, under one-third are former British colonies)
- very few are in conflict situations.

These findings suggest that conflict situations have an additional negative effect on country aid allocations, in addition to the effect they have via their effect on things like government effectiveness and GNP per capita. In addition, there appears to be a donor preference for lower middle-income countries, in comparison with both low-income and upper-middle income countries, which is not captured in the smooth average relationship between GNP per capita and aid allocations assumed in the regression analysis. Finally, there is evidence here that historical factors do play a role in explaining at least some of the residual variation in per capita aid allocations.

Table 4 Negative and positive aid outliers

2000			2005		
<i>Negative outliers</i>	Actual	Expected	<i>Negative outliers</i>	Actual	Expected
Sudan	3.1	16.7	St.Vincent & Grenadines	65.6	286.8
Uruguay	9.6	40.1	Panama	12.1	47.9
Chile	6.7	20.4	Cote d'Ivoire	7.8	28.2
Trinidad & Tobago	11.3	34.1	Trinidad & Tobago	8.9	26.4
Panama	19.0	52.0	Belize	55.7	165.8
Turkmenistan	4.2	10.9	Uruguay	12.4	35.5
St.Vincent & Grenadines	82.0	188.5	Togo	14.4	36.9
Oman	6.4	14.7	Gambia	47.0	108.2
Nigeria	1.9	4.4	St. Kitts-Nevis	119.0	255.6
Antigua & Barbuda	93.0	201.5	Saudi Arabia	0.6	1.4
Congo, Rep.	14.9	32.0	St. Lucia	111.3	231.1
Tajikistan	21.4	46.0	Costa Rica	16.4	33.0
Gambia	53.5	110.0			
Chad	22.5	45.6			
Togo	20.4	41.0			
Congo Dem.Rep. (Zaire)	3.6	7.3			
<i>Positive outliers</i>	Actual	Expected	<i>Positive outliers</i>	Actual	Expected
Micronesia	1059.6	169.0	Micronesia	963.2	249.4
Seychelles	230.2	78.6	Solomon Islands	417.6	134.2
Jordan	148.8	51.5	Equatorial Guinea	76.8	24.9
FYROM-Macedonia	158.4	54.8	Bolivia	78.1	26.0
Zambia	80.0	28.1	Cape Verde	344.1	120.0
Solomon Islands	247.0	94.5	FYROM-Macedonia	117.2	44.5
Bolivia	86.4	33.4	Nicaragua	123.5	49.8
Slovenia	51.7	20.5	Jordan	126.7	52.0
Egypt	24.4	10.2	Congo Dem.Rep. (Zaire)	24.4	10.2
Indonesia	10.5	4.5	Indonesia	9.8	4.4
Nicaragua	145.6	64.1	Egypt	17.7	8.3
Albania	132.5	58.5	Zambia	72.5	34.3
Cape Verde	300.4	133.7	Kazakstan	11.3	5.4
Thailand	17.2	7.9			
Vanuatu	337.9	158.0			
Papua New Guinea	80.0	39.0			

Notes: For all countries in the table, actual aid receipts per capita differed from expected aid receipts per capita, in percentage terms, by more than 100% (which is a rough approximation to the standard deviations of all percentage differences in each year).

Source: Author's calculations.

3 Aid allocation models

Several donors use models to allocate aid. By that, we mean that their decisions are guided at least in part by mathematical formulae linking the amount of aid given to each recipient country and a set of quantitative indicators.

3.1 *Performance Based Allocation models*

So-called ‘Performance Based Allocation’ (PBA) models are used by the World Bank’s International Development Administration, the major Regional Development Banks, and the International Fund for Agricultural Development (IFAD). All PBA models share five main characteristics in common:

- a clear, simple and publicly-available aid allocation formula. For most PBA models, this formula includes just three indicators: GNI per capita, population size and a measure of country performance;
- the use of subjective measures of recipient country performance. These measures are based on the perceptions of the donor’s own staff regarding the effectiveness of its aid in the recipient country, and/or the suitability of the recipient country’s policies and institutions for aid to be effective;
- a much larger weight, within the allocation formula, given to countries’ performance ratings, as opposed to their GNI per capita;
- additional support, for a limited amount of time, to post-conflict countries, either through the ear-marking of funds for such countries, or the use of a post-conflict ‘enhancement factor’ within the allocation formula;
- pre-selection for eligibility, determined by a combination of low GNI per capita and lack of creditworthiness leading to an inability to borrow on market terms.

The best-known PBA model is that used by the World Bank IDA. Eligibility for IDA-funding is currently limited to countries with a GNI per capita of \$1,065 (at market exchange rates) or below. This ensures the vast majority of IDA funding is directed to low-income countries. Among eligible countries, allocations are determined by an exponential formula, in which per capita GNI enters with an exponent of -0.125, while the country performance measure enters with an exponent of 2. This ensures that allocations are determined mainly by country performance, only marginally by country need. However, around 10% of total IDA funds are ear-marked for post-conflict countries, which ensures that they receive higher allocations than they would

otherwise (see IDA 2006). A useful table comparing the different types of PBA models used by different multilateral donors is provided by the Joint-MDB report (2005: 10-12).

3.2 *Other allocation models*

Certain other donors report using models to guide their allocation decisions. These include the UK, the Netherlands, UNICEF, the EC, and the Global Environment Facility (GEF).

i. The UK and the Netherlands

The UK and the Netherlands both report using an allocation model.⁶ Like the PBA models described above, these models use subjective measures of recipient country performance. They also rely on GNI per capita as the main measure of recipient country need. However, they also depart in certain important ways from the PBA models. For example:

- the UK gives much more weight to income per capita (an exponent of -1), and less weight to performance ratings (an exponent of less than 1), than the PBA models;
- the Netherlands corrects a country's allocation according to the amount of aid it is expected to receive from other countries;
- the Netherlands also includes a bonus factor for Least Developed Countries, and for countries in Sub-Saharan Africa.

In addition, the allocation models used by these donors are not clearly set out and made publicly-available.

ii. UNICEF

The United Nations Children's Fund (UNICEF) also reports using an allocation model for its 'regular resources'.⁷ As with the UK and Netherlands, this model is not clearly set out and made publicly-available. However, the latest Annual Report does state that the allocation formula used is based on just three indicators for each

⁶ For the Netherlands, the source is 'Country allocations based on poverty and performance', by Freek Keppels, Netherlands Ministry of Foreign Affairs, available at: oecd.org/dataoecd/62/36/2501600.ppt. For the UK, the source is internal DFID documentation.

⁷ These are resources which are "unrestricted in their use and are utilized to fund country programmes along with programme support, management and administration activities approved by the UNICEF Executive Board." (UNICEF 2007: 35).

country: the under-5 mortality rate, GNI per capita, and the size of the child population (UNICEF 2007: 39). This stands out as being one of the few allocation models used by a donor which is based purely on measures of recipient country need, and not reflecting any measures of recipient country performance.

iii. The EDF

The European Commission uses a model for allocating European Development Fund (EDF) resources.⁸ For the 9th replenishment round (2001-07), two models were used, one for programmable resources, otherwise referred to as the ‘A-envelope’, and the other for other non-programmable resources, otherwise referred to as the ‘B-envelope’.⁹

The model used to allocate the Part-A envelope included measures of each country’s population, GNI per capita, the Human Development Index, objective and subjective measures of country performance, and a country vulnerability index. By contrast, the model used to allocate the Part-B envelope included measures of economic vulnerability (e.g. dependence on export earnings), debt status, and vulnerability to natural disasters and conflict. For the 10th replenishment, certain other variables are to be included in the allocation model for Part-A resources, including the UNDP Human Poverty Index, the HIV prevalence rate, and the dependency ratio.

The EC approach clearly differs from the PBA models, involving many more variables and for that reason being a good deal more complicated. It also uses a slightly different mathematical approach, which is to calculate an initial allocation, based purely on population, and then carry out a series of adjustments to that allocation, rather than relying on one single mathematical formula.

iv. The Global Environment Facility

The Global Environment Facility (GEF) has an explicit resource allocation framework which is set out in publicly-available documentation (GEF 2005). Currently, the framework is applied to the two-thirds of total GEF resources which are ear-marked for the two ‘focal areas’ of biodiversity and climate change. The framework is based on two main indicators, namely:

⁸ The source here is internal EC-EDF documentation.

⁹ More specifically, the Part-A envelope is designed to cover “macroeconomic support, sectoral policies, programmes and projects in support of the focal or non focal areas of Community assistance”, while the Part-B envelope is designed to cover “needs such as emergency assistance where such support cannot be financed from the EC budget, contributions to internationally agreed debt relief initiatives, and support to mitigate adverse effects of instability in export earnings” (EC-DG Dev).

- a) a **benefits index**, which measures the potential for each eligible country to generate global environmental benefits;
- b) a **performance index**, which measures the policies and practices relevant to the successful implementation of GEF programmes in each eligible country.

The benefits index is calculated separately for the two main focal areas of the GEF, bio-diversity and climate change; the latter is discussed further in Section 5. The performance index is based mainly a country's score on the 'Policies and Institutions for Environmental Sustainability' indicator contained in the World Bank's CPIA assessment, but also reflects scores for the five indicators under 'Public Sector Management and Institutions'. In the overall formula determining each country's overall allocation, the two measures are given a roughly equal weight.

3.3 *Other ways of allocating aid*

Most bilateral donors do not report using specific models to guide allocation decisions. A more common trend is for bilateral donors to specify a list of priority or 'focus' countries, to which the majority of assistance is to be channelled. (This is part of a strategy towards greater concentration or specialisation among donors, discussed further in Section 4).

The choice of priority countries is typically made according to a range of criteria, including considerations of country need and performance; in certain cases, this is required under national law (e.g. Denmark). However, the presence of complementary interests and links between donor and recipient (e.g. business ties), is also recognised explicitly as being a possible influence (e.g. Austria, Denmark, Netherlands), even if as only a minor factor. In terms the allocation among the priority countries, donors engaging in this sort of strategy are generally able to make such decisions on the basis of discretion, or country demand (as in the 'calls-for-proposals' approach used by Greece).

A slightly different approach is that used by the US Millennium Challenge Corporation (MCC). This also uses a pre-selection mechanism to identify eligible countries, but one which is based more explicitly on a set of 17 performance indicators. In particular, to be eligible for MCC assistance, a country must lie above the median (for its income group) in at least half of each of three sets of indicators: ruling justly, economic freedom, and investing in people.¹⁰ It must also be above the median in one particular indicator, that of controlling corruption, and must not be

¹⁰ These indicators include objective measures (e.g. immunisation rate) and subjective measures (e.g. the Kaufmann et al. governance indicators) of performance. Unlike the CPIA index, the indicators are all obtained from external sources, as opposed to being calculated in-house.

below the 25th percentile in any one of the 17 indicators. Once eligible, a country may then apply for MCC funds, although with no guarantee of funding success. It is worth noting, however, that despite the formal guidelines, a fair amount of discretion is still used by the MCC in determining country eligibility (see, for example, MCC 2007).

Certain other donors use a more general demand-driven approach, with few criteria for eligibility, and allocations instead being determined by the quality of proposals received. This is the approach used by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). All low and middle-income countries are able to apply for funding from this donor, although the latter have to demonstrate a focus on key affected populations and a certain amount of co-financing. Only in the event that resources are constrained does the GFATM use a specific allocation mechanism, in which proposals from poorer countries and/or regions, or from countries and/or regions currently facing high disease burdens, receiving priority (GFATM 2008: 66).

3.4 Discussion

Clearly, there is a lot of diversity across bilateral and multilateral donors in terms of the way in which allocation decisions are made. Is it possible to say that one method is better than another?

There are three main arguments which have been used in favour of PBA-type models for allocating aid. These are:

- **efficiency:** by allocating a larger share of total aid resources to countries in which aid is more effective in terms of reducing poverty, a greater overall amount of poverty reduction can be achieved. This argument was formalised in work by Collier and Dollar (2001, 2002), and is usually framed in terms of maximising the reduction in \$1-a-day poverty, at the global level;
- **incentives:** a large weight to performance in aid allocation formulae gives recipient countries additional incentives – in other words, provides an important ‘signalling mechanism’ (IDA 2006) – to adopt the sorts of policies and institutions which are conducive to long-run growth and development.
- **transparency:** the allocation formula is publicly-accessible and fairly simple to understand, so that given information on GNI per capita, population and the country’s performance rating, a country’s allocation ‘norm’ can be calculated and monitored (e.g. relative to actual allocations).

Similar arguments have been advanced to justify the approach used by the MCC to select partner countries eligible for assistance. In particular, the eligibility

requirements ensures that the majority of aid is channelled to countries with relatively high levels of attainment in indicators considered (at least by some researchers) to be associated with higher effectiveness of aid in terms of reducing poverty. Similarly, the requirement that a country out-performs other countries in its income peer group seems to raise incentives for reform, while the fact that the indicators used are clearly set out and publicly-available renders a certain amount of transparency to the process.

Of course, these arguments can be and have been questioned and challenged. First, there are several about the econometric evidence indicating that aid effectiveness is significantly higher in countries with higher performance ratings. Second, even though the Collier-Dollar poverty-efficiency approach suggests that aid allocations should vary according to country performance, it does not suggest that the weight given to performance should be as high as it is in PBA-type models. The implication is that countries with relatively low performance scores are under-funded, in relation to the aid they would receive under a poverty-efficient aid allocation. This is demonstrated, using simple numerical simulations, in recent work on the PBA by Anderson et al. (2007).

Thus the large weight attached to country performance can only be justified if one places a lot of emphasis on the ‘incentives’ argument. The problem with this argument, however, is that although perhaps plausible, there is as yet no real evidence for or against it (beyond the anecdotal). For example, while Burnside and Dollar (2004: 18) argue that it is “not unreasonable to think that allocating aid to relatively good governments would have a positive incentive effect”, they also state that this line of reasoning is “speculative”.

Similarly, the transparency argument in favour of PBA models can be challenged. For instance, the links between IDA allocation norms and actual disbursements are not automatic: the former are not considered to be entitlements (IDA 2006: 7). They are instead the financial resources “that each country could expect to receive if its performance stays the same and assuming a pipeline of quality projects” (IDA 2003b: 41). Furthermore, there is much less transparency regarding how the CPIA index, which has such a large bearing on a country’s overall allocation norm, is itself calculated.

It is worth noting that the Millennium Development Goals (MDGs) do not provide a clear or obvious basis for an aid allocation framework. For example, one option would be to allocate aid so as to achieve the largest amount of progress towards the MDGs, at the global level, as possible. This can be called a ‘global MDG-efficiency’ approach to allocation. It would involve allocating relatively more aid to countries in which a dollar of aid is thought to more effective in terms of raising the level of each MDG indicator at the global level. However, such an allocation may well imply a

concentrated distribution of aid across countries, biased towards those which currently account for the largest shortfalls in each MDG indicator at the global level.¹¹

An alternative option would be to allocate aid so as to achieve a certain amount of progress in each MDG indicator in each individual country: for example, a 50% a two-thirds reduction in child mortality in every low-income country between 1990 and 2015. This can be called a ‘country-by-country MDG’ approach to allocation. This would ensure a more egalitarian distribution of aid across countries. However, it would come at the expense of a reduction in efficiency: in particular, less progress towards the MDGs at the global level. This cost can be high: between 20 and 70 million additional people living on less than \$1-a-day, according to one recent estimate (Anderson and Waddington 2007).

There are ways of resolving this dilemma. One is to explicitly incorporate small-country bias, as suggested by Collier and Dollar (2002) and Beynon (2003). Another is to incorporate estimates of future as well as current levels of poverty, as suggested by Wood (2007). Both of these modifications retain the notion of an ‘efficient’ aid allocation, but in a way which does not conflict with other widely held views about what an appropriate aid allocation should look like. These adjustments give rise to what can be called a ‘modified MDG-efficient’ approach to aid allocation.

There may also be a more general implication of the MDGs for aid allocation decisions. In particular, we can retain the consensus that aid allocation should be based on a combination of country need and country performance. The message from the MDGs is that country ‘need’ should reflect levels of attainment in all MDG indicators, not just levels of income poverty (or its common proxy, GNI per capita). Similarly, country ‘performance’ should reflect progress in terms of raising all MDG indicators, and not just progress in reducing \$1-a-day poverty, or in promoting economic growth.

¹¹ For example, Collier and Dollar (2002) calculate that under an unconstrained \$1-a-day poverty-efficient aid allocation, two-thirds of all aid would go to just one country (India). The measure of poverty they used was the \$1-a-day measure, but a similar result would arise if one was to use a non-income poverty measure (e.g. a child mortality efficient aid allocation).

4 Aid concentration

This section discusses the issue of aid concentration. As noted in the previous section, many bilateral donors have in recent years specified a list of priority or ‘focus’ developing countries, to which the majority of their aid will in future be channelled. This raises the prospect of aid becoming more concentrated, both in the sense that each donor gives aid to fewer recipients, and in the sense that each recipient receives aid from fewer donors. The measure of aid used in this section is the same as in Section 2, i.e. ODA grants plus ODA loans (gross), minus debt forgiveness grants and humanitarian aid.

4.1 Concentration among donors

Table 4 presents recent information on levels of concentration of aid among 33 of the largest bilateral and multilateral donors. The first column shows the amount of aid given by each donor in 2006. The remaining columns show four measures of the concentration of each donor’s aid across recipient countries:

- the number of countries in which the donor has aid programmes; the lower this number, the more specialised a donor in terms of its countries of operation;
- the Herfindahl index; higher values indicate that relatively more of a donor’s aid goes to fewer of its recipients, while lower values indicate that a donor’s aid is more evenly spread across its recipients;
- the share (in %) of the donor’s overall aid received by the five largest recipients; here higher values indicating that relatively more of a donor’s aid goes to fewer countries.
- the share (in %) of the donor’s overall aid received by the largest recipient; here higher values indicating that relatively more of a donor’s aid goes to just one country.

None of these measures is, in itself, an ideal measure of concentration; instead, they each provide slightly different sorts of information.

Table 5 shows that some donors stand out as being specialised according to the first measure. Not surprisingly, these include the three Regional Development Funds (AsDF, AfDF and IDB Special Fund), which are required by their nature to specialise at the regional level. They also include certain small, emerging donors (e.g. Greece, New Zealand, Portugal) whose small overall budget makes a certain amount of specialisation something of a necessity. Certain other donors stand out as having a

large share (25-30%) of their total ODA going to one particular country. These include Australia (Indonesia), Italy and the UK (both Nigeria). For the remaining donors however, there is much less evidence of specialisation, particularly among the larger bilateral donors (e.g. Japan, the EC, Germany, France).

Table 5 Levels of concentration among donors, 2006

	Program-mable aid (\$ million)	Recipients	Herfindahl index	Top 5 recipient share (%)	Maximum recipient share (%)
Australia	1,029	41	17	76	29
Austria	207	60	6	46	14
Belgium	579	79	5	34	16
Canada	1,015	100	3	28	9
Denmark	915	68	5	41	10
Finland	249	62	5	44	12
France	4,471	122	4	34	9
Germany	3,615	111	3	30	11
Greece	101	30	17	70	35
Ireland	405	59	7	55	13
Italy	760	71	12	62	29
Japan	8,494	129	7	51	16
Luxembourg	143	39	6	42	10
Netherlands	1,402	72	4	30	8
New Zealand	97	31	8	53	18
Norway	1,039	89	4	34	7
Portugal	177	13	18	84	30
Spain	1,306	88	4	32	7
Sweden	1,116	89	4	32	10
Switzerland	505	84	3	27	10
United Kingdom	3,923	85	10	52	27
United States	7,498	125	3	26	9
AfDF	5,931	35	7	45	12
AsDF	1,419	20	13	73	23
EC	6,881	135	2	22	6
GEF	139	63	4	35	13
Global Fund	1,231	101	3	30	11
IDA	7,879	74	5	39	13
IDB Spec. Fund	474	24	16	85	27
IFAD	348	69	3	31	9
UNDP	420	117	2	18	4
UNFPA	280	109	2	21	5
UNICEF	489	118	3	28	8

Notes: The table excludes all aid flows between donor and recipient of less than \$0.25 million.

Source: OECD-DAC International Development Statistics Online.

There were changes in levels of donor concentration over the period 1997-2006, but there was no clear overall pattern towards greater or lesser concentration. For example, while six donors became significantly more concentrated over the period according to the Herfindahl index (AfDF, Austria, Belgium, Denmark, the IDB and the UK), another four donors became less concentrated (Finland, Norway, Sweden and the US). The only donor to see a significant increase in levels of concentration over the period in all four measures of concentration was the UK. Of course, it is possible that future years will see more pervasive moves toward greater concentration among donors, given that several donors have made recent statements outlining plans to reduce the number of partner countries.

This mixed picture among individual donors between 1997 and 2006 is mirrored in the picture for all donors as a whole. In particular, there is no evidence for this period for a greater concentration of total aid from DAC donors toward a smaller number of recipient countries, despite the debate around greater aid selectivity. Again however, whether future years will see a trend towards greater concentration remains to be seen.

4.2 *Concentration among recipients*

We now turn to the other side of the aid relationship, and examine levels of concentration of the aid received by each DAC recipient. We again calculate four measures of the extent of concentration of each recipient's aid across different donor sources:

- the number of DAC donors (bilateral and multilateral) which have programmes in the recipient country; the higher this number, the more sources of aid there are in the recipient country;
- the Herfindahl index; here, higher values indicate that relatively more of a recipient's aid is obtained from a smaller number of its donors, while lower values indicate that a more equal share is obtained from each donor;
- the share (in %) of the recipient's aid which is received from its five largest donors; here, higher values indicating that relatively more of a recipient's allocation is obtained from a smaller number of donors;
- the share (in %) of the recipient's aid which is received from the largest donor; here, higher values indicating that relatively more of a recipient's allocation is obtained from just one donor.¹²

¹²It was tried calculating the number of 'small' donors in each recipient country, following the approach used in a recent OECD (2007) study. This is the number of donors in each recipient country which account for less than 10% of the overall amount of ODA a country receives. Care is required

Some basic information regarding the average levels of these measures is shown in Table 6. The average number of donors per recipient was 18 in 2006, while the corresponding figure for low-income recipients was slightly higher, at 20. There is however quite a lot of variation around these averages.

In terms of trends over time, there has been a gradual rise in the average number of donors per recipient country, associated with a gradual reduction in the average level of the Herfindahl index, and in the average share of aid accounted for by any one donor or the five largest donors. There is some evidence that the average number of donors per country, having risen quite rapidly between 1997 and 2003, has in more recent years levelled out.

when interpreting this measure however. On the one hand, a high value indicates that a recipient's sources of finance are fragmented, in the sense that a relatively large number of donors provide a small amount of total financing. On the other hand, a high value may well indicate that there are a few donors which account for the majority of financing, so that sources of finance are in fact quite concentrated. In any case, this measure tends to be closely correlated with the total number of donors, so that it adds little additional information. For this reason it is not presented here.

Table 6 Levels of concentration among recipients, 2006

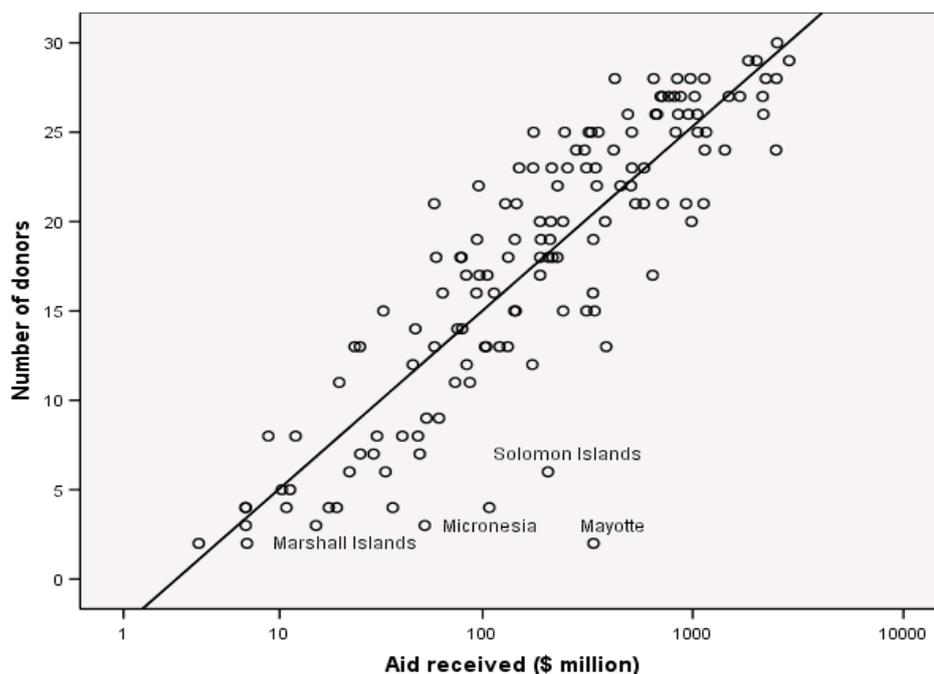
	Average no. of donors	Average Herfindhal index	Average share of largest donor (%)	Average share of top 5 donors (%)
All DAC recipients*	18 (8)	26 (17)	40 (18)	82 (12)
<i>By region</i>				
North Africa	16 (7)	32 (15)	47 (18)	92 (6)
Sub-Saharan Africa	20 (7)	22 (15)	36 (16)	78 (11)
North and Central America	13 (9)	30 (19)	42 (19)	86 (14)
South America	19 (6)	25 (16)	40 (19)	81 (9)
Middle East	15 (8)	30 (10)	45 (13)	88 (10)
South and Central Asia	20 (6)	18 (4)	31 (7)	80 (7)
Far East Asia	24 (6)	26 (20)	41 (22)	79 (11)
Europe	20 (5)	19 (8)	32 (12)	79 (11)
Oceania	7 (4)	48 (25)	61 (23)	97 (4)
<i>By income group</i>				
Low income	20 (6)	20 (10)	34 (14)	77 (11)
Lower middle-income	19 (7)	26 (17)	40 (18)	83 (10)
Upper middle-income	10 (7)	39 (21)	51 (21)	93 (9)
<i>UN country groups</i>				
Small Island Developing States	9 (6)	36 (19)	50 (20)	92 (9)
Land-locked Developing Countries	20 (5)	18 (6)	31 (9)	76 (9)
Least Developed Countries	20 (7)	19 (10)	34 (13)	76 (11)
<i>Historical background</i>				
Former colonies	18 (7)	24 (14)	38 (16)	81 (12)
- British	16 (9)	27 (17)	40 (18)	85 (13)
- French	19 (6)	25 (10)	41 (13)	84 (9)
- Spanish/Portuguese	20 (6)	19 (10)	33 (14)	77 (11)
- Other	19 (6)	23 (15)	36 (17)	79 (10)
<i>Conflict status**</i>				
Conflict affected countries	18 (7)	23 (14)	38 (17)	79 (13)
Post-conflict countries	22 (4)	17 (11)	31 (14)	72 (13)

Notes: Standard deviations shown in brackets. *Not including aid which is unallocated by country, or which is allocated to countries lacking population data (the latter include Afghanistan and Iraq). **As defined by the World Bank (2006).

Source: OECD-DAC, International Development Statistics Online.

A key issue is why some recipient countries have more donors than others. One way to address this issue is to look at the correlation between the number of donors and the amount of aid received. This is shown in Figure 8. There is a fairly close (log-linear) relationship between these two variables, with only a handful of mainly small countries (e.g. Solomon Islands, Micronesia) standing out as countries which have fewer donors than would be expected, given the amount of aid they receive. The close correlation between aid received and number of donors suggests that the issues of whether a country is over- or under-*donored* and whether a country is over or under-*aided* are very closely related.

Figure 8 Aid receipts and number of donors, 2006



Notes: The R-squared value for this linear relationship is 0.74; highlighted countries are those which deviate most from the average relationship.

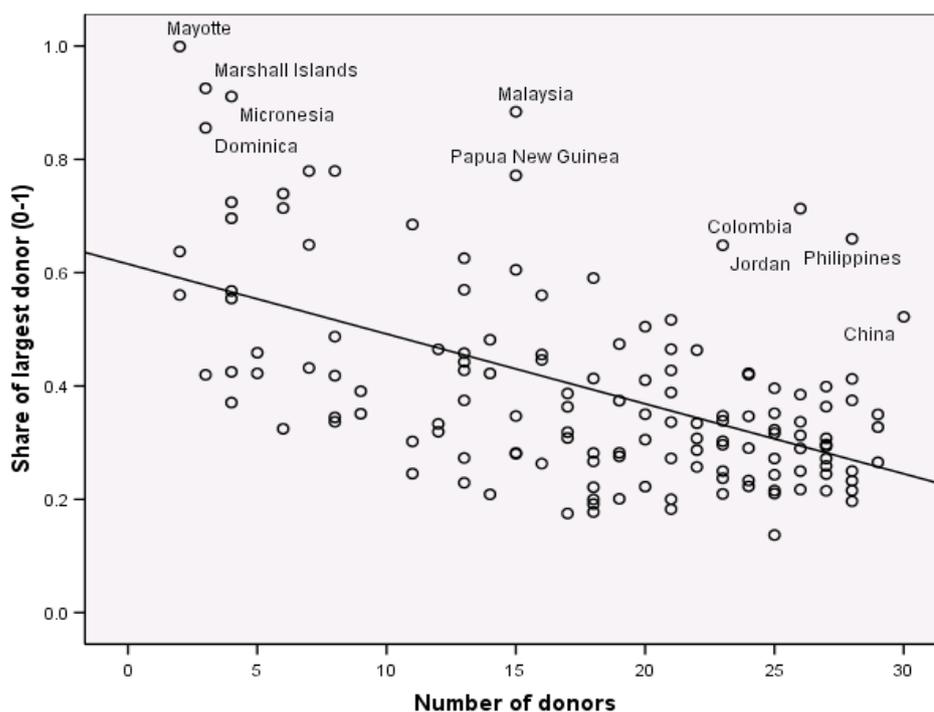
Source: OECD-DAC International Development Statistics Online.

A final point is that there is a negative correlation between the number of donors, and the three other measures of concentration. This is shown graphically in Figures 9-11. In other words, recipient countries which receive their aid from a larger number of donors tend on average to be less dependent on any one donor, or a small number of those donors, for their aid.

There are, however, two important caveats to note here. The first is that the negative correlation between the number of donors and the concentration of aid is not that strong. Instead, there are a number of countries, highlighted in Figures 9-11, for which the concentration of aid is higher than expected, given the number of donors in

operation. These include China, Colombia, Philippines, Jordan, Malaysia and Papua New Guinea, as well as the small countries such as Marshall Islands and Micronesia. The second point is that more diverse sources of aid for a recipient country as a whole may shield a significant degree of specialisation at the sector level. For example, one or two donors may provide all of the aid for health and education, while another one or two donors provide all of the aid for economic infrastructure.

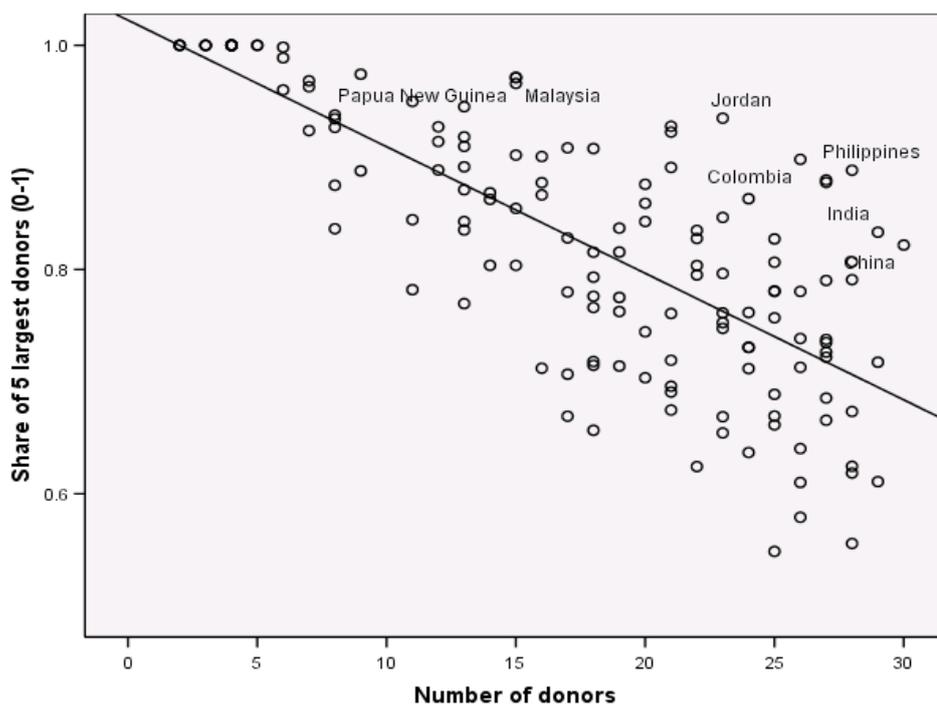
Figure 9 Number of donors and share of largest donor, 2006



Notes: The R-squared value for this linear relationship is 0.30; highlighted countries are those which deviate most from the average relationship.

Source: OECD-DAC International Development Statistics Online.

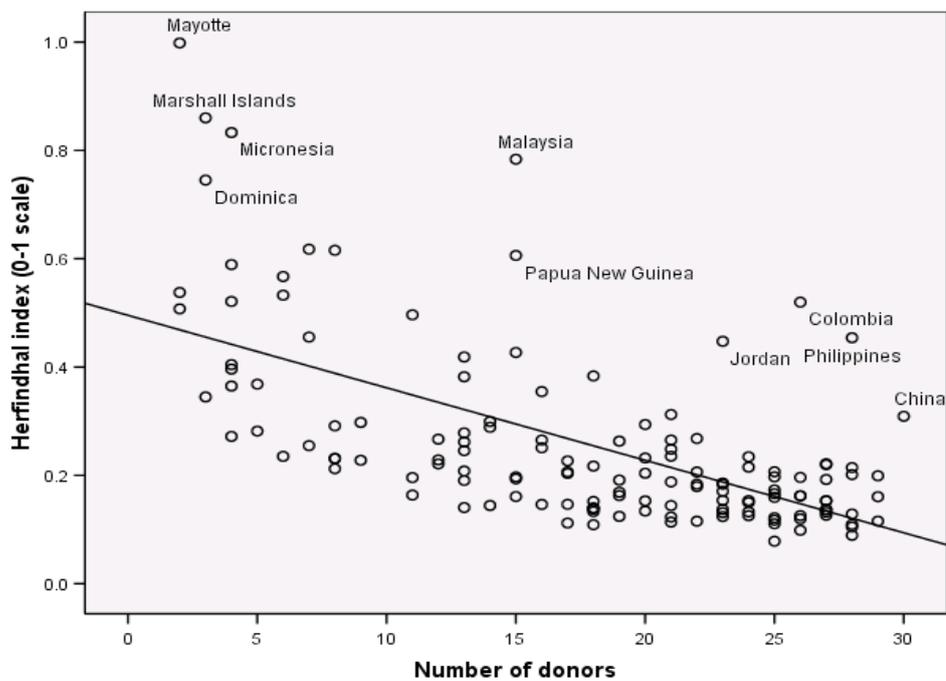
Figure 10 Number of donors and share of five largest donors, 2006



Notes: The R-squared value for this linear relationship is 0.57; highlighted countries are those which lie furthest above the average relationship.

Source: OECD-DAC International Development Statistics Online.

Figure 11 Number of donors and the Herfindahl index, 2006



Notes: The R-squared value for this linear relationship is 0.39; highlighted countries are those which deviate most from the average relationship.

Source: OECD-DAC International Development Statistics Online.

5 Aid allocation and climate change

This section discusses the implications of climate change for aid allocation, now and in the future. It is divided into two sections. The first looks at the issue of climate change mitigation, while the second looks climate change adaptation.

5.1 Aid allocation and climate change mitigation

By climate change mitigation, we refer to attempts to reduce the rate as which greenhouse gasses are accumulating in the atmosphere. This is mainly achieved through reducing emissions.

Under the United Nations Framework Convention on Climate Change (UNFCCC), established in 1994, developed countries pledged to “take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, and access to, environmentally sound technologies” (UNDP 2007: 147). This included an undertaking to “meet the agreed full incremental costs” of mitigation measures undertaken in developing countries (ibid.: 153).

The UNFCCC established the GEF as an instrument for mobilising and allocating resources for climate change mitigation in developing countries. Since its inception in around 1997, its annual disbursements have reached \$200 million per year, and around US\$3 billion in total since its inception. This places it alongside the smallest DAC bilateral donors in terms of overall resources. Although clearly not negligible, it is widely accepted that current amount of resources mobilised, although substantial and backed by co-financing, are a long way below the amounts required, which have been estimated at US\$25-\$50 billion per year for developing countries (ibid.: 154).

Although all developing countries are eligible for GEF resources for climate change mitigation, the resources are allocated using a PBA-type formula. This involves calculating a climate change ‘benefits index’, which is designed to “measure the potential global benefits that can be realized from climate change mitigation activities in a country” (GEF 2005). The index is given by the following formula (ibid., 17):

Climate change benefits index	=	Greenhouse gas emissions, 2000	x	$\frac{\text{Carbon intensity, 1990}}{\text{Carbon intensity, 2000}}$
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Greenhouse gas (GHG) emissions (measured in terms of carbon equivalent) in 2000 are considered to provide a broad measure of the scale of the mitigation potential of a country. By contrast, changes in carbon intensity (measured in terms of carbon equivalent emissions per unit of economic activity) between 1990 and 2000 are

considered to reflect the potential for emission reductions, on the grounds that if the reductions have been achieved in the past there is willingness and capacity for those reduction to continue in future.

It is likely and perhaps desirable that resources for climate change mitigation are channelled through an organisation such as the GEF, since they are likely to be used to finance specific activities. The GEF allocation framework may not be the best solution to the problem of allocating resources however. The problem is that the distribution of GHG emissions is highly skewed: 30 developing countries account for 85% of total GHG emissions; the remaining 140 or so countries account for 15% (GEF 2005: 18). Strict application of the above formula would imply a similarly skewed allocation of resources, which conflicts with most aid donors' to limit the share of resources going to any one recipient country.

This problem is currently addressed in the GEF resource allocation framework in an ad-hoc way, by capping the share of resources received by any one country to 15% of the total. A better way to proceed would be to adjust the formula, so that a more desirable allocation is achieved automatically. One option would be to include GDP per capita in the formula, with a negative sign. This would channel more GEF resources to those developing countries with lower ability to pay for climate change mitigation, and for this reason may be considered more equitable. A better allocation formula may be important in terms of convincing donors to contribute more resources to the GEF.

It is also important to link the issue of aid for mitigation to the international talks began 2007 on a future treaty to succeed the Kyoto Protocol. In particular, a developing country may be willing to agree to a reduction (or slower increase) in its emissions if it knows it will in return receive significant amount of assistance in meeting that target.

5.2 *Aid allocation and climate change adaptation*

By climate change adaptation, we refer to efforts to adjust to current and potential future effects of climate change. Examples include “the adoption of drought resistant crops or increasing water storage capacity in order to reduce the impact of climate variability” (IDA 2007: 1).

It is generally accepted that adapting to climate change is costly. The UNFCCC estimates that the additional flows of investment and finance that may be required through 2030 to enable developing countries to adapt to the impact of climate change is in the range of \$28–67 billion. The World Bank's IDA estimates that between 6 and 20% additional resources will be required just to maintain country benefits from its

projects at their ‘without climate change’ level (IDA 2007). More broadly, climate change raises the cost of meeting the MDGs. There are also strong arguments why developed countries should pay this cost.

Adaptation to climate change could also have a big impact on aid allocation, although in ways which are difficult to predict. On the one hand, the effects will depend on how forward looking donors are in their aid allocation decisions. Consider, for example, the PBA type models. These are all static models, taking into account only current levels of need and performance across countries. In static allocation models such as these, countries receive additional aid to the extent that they are affected by climate change, assuming of course that those effects are reflected in the indicators of country need being used in those models.

It is possible, however, that donors might take a more forward looking approach in their aid allocation models. In such cases, a country which simply becomes more vulnerable to adverse shocks caused by climate change might still receive additional aid – even though its current levels of need have not changed.

There are of course strong arguments for forward-looking aid allocation models. These are outlined, along with practical suggestions on how this might be done, in a recent paper by Wood (2007). At the same time however, it must be recognised that there are difficulties in determining a country’s vulnerability to climate change, when possible effects remain uncertain. The advantage of the static models is that they can be based on indicators which are readily available and calculated using fairly well-established methods.

The allocation model used by the EC for EDF resources probably goes furthest in this area, including various measures of country vulnerability in its allocation model. These measures are essentially backward looking however, based for example on the variation of the GDP around its average, or the proportion of the population directly affected by natural disasters such as flooding, during the last 25 years. It is not obvious that measures such as these provide a useful indicator for a country’s future vulnerability to climate-related shocks. An alternative would be to use geographical variables in the model, such as the proportion of the population living in low-lying coastal areas.

6 Conclusion

6.1 Summary

This paper examines the allocation of aid by OECD-DAC donors in recent years. It focuses on current aid allocation trends and practices, the priorities and allocation models used by different donors, and the trends in and possible implications of the concentration of aid. It also provides a brief overview of how future aid allocation may be affected by climate change.

Section 2 discusses current aid allocation trends and practices. In terms of allocation by broad country group, over the period 1997-2006 there has been a rise in the share of programmable aid allocated to Sub-Saharan Africa, and a decline in the share allocated to Far East Asia. There has also been a rise in the share allocated to the Least Developed Countries, and to Land-locked Developing Countries, but a fall in the share allocated to the Small-Island Developing States.

In terms of allocation by sector, there has been a large increase in the proportion of aid allocated to social infrastructure, defined by the OECD-DAC as encompassing “efforts to develop the human resource potential of developing countries”. This has been offset mainly by a reduction in the proportions allocated to economic infrastructure and the productive sectors (e.g. agriculture, industry). The share of aid going to sectors which are *directly* relevant in terms of meeting the MDGs – defined here as basic education, basic health, water and sanitation, population programmes, and general environment – accounted for 22% of total aid in 2006, up from 16% in 1997.

In terms of allocation across individual countries, a large proportion of the observed differences in levels of aid per capita across recipients can be explained by differences in commonly available indicators of country need and performance. This does not prove that donors *are* (as a group) allocating aid mainly on the basis of needs and performance. But it is at least *consistent* with such a view.

In addition, most commonly available need and performance indicators affect per capita allocations in the directions one would expect. For instance, the Kaufmann et al. government effectiveness index, the child mortality rate, and the rate of reduction in child mortality all have a positive effect on aid allocations, while population size and oil and gas reserves both have negative effects. The relationship between aid per capita and GDP per capita is slightly more complex, in that, at low levels of GDP per capita, aid allocations in fact tend to rise with GDP per capita; they only tend to fall once a certain level of GDP per capita has been reached. This can be justified in terms of absorptive capacity however. In particular, at low levels of per capita GDP, a given

amount of aid tends to account for a larger fraction of overall GDP, making it more likely that absorptive capacity constraints are binding.

However, the magnitude of these average relationships between per capita aid allocations and commonly-available need and performance indicators does not always appear appropriate. This is an area where further research is required, but simple simulations carried out in this paper suggest that the negative effect of population on per capita allocations is too strong, and that the effects of GDP per capita and the under-5 mortality rate is too weak. There is also evidence that the level of GDP per capita below which its effect on aid allocations becomes positive is too high. There are also several countries which receive significantly more or less aid than would be expected, given their levels of available need and performance indicators, which warrant further investigation. These issues are taken up further in Section 6.2.

Section 3 discusses the priorities and aid allocation models used by different donors. Currently, there is currently a lot of diversity across bilateral and multilateral donors in terms of the way in which allocation decisions are made. The approaches used include the Performance Based Allocation (PBA) models used by the World Bank's International Development Administration, which place a large weight on subjective measures of country performance; allocation models with less emphasis on performance and more on country need (e.g. the UK, UNICEF); approaches based on the selection of 'focus' countries (e.g. Austria, Denmark, Netherlands) or pre-selection mechanisms (e.g. the Millennium Challenge Account); and demand-driven approaches (e.g. the Global Fund to Fight AIDS, Tuberculosis and Malaria).

Is it difficult to say whether any one method for making allocation decisions is better than another. Three main arguments which have been used in favour of PBA-type models – efficiency, incentives, and transparency – but each of these can and has been challenged. There is arguably a consensus among donors that aid allocation decisions should be based on a combination of country need and country performance. However, differences between donors in perceptions of recipient country need, and in donor beliefs regarding the impact of performance measures on aid effectiveness, mean that the diversity in approaches is likely to persist.

Section 4 discusses the issue of aid concentration. In terms of concentration by donors, the more specialised donors include the Regional Development Funds, the smaller bilateral donors (e.g. Greece, New Zealand, Portugal), and one or two others (e.g. Australia, Italy and the UK). For the remaining donors, there is much less evidence of specialisation, particularly among the larger bilateral donors (e.g. Japan, the EC, Germany, France). Over the period 1997-2006, the only donor to see a significant increase in levels of concentration was the UK. However, it is possible that future years will see more pervasive moves toward greater concentration among

donors, given that several donors have made recent statements outlining plans to reduce the number of partner countries.

For recipient countries, there has been a gradual rise in fragmentation over the period 1997-2006, as evidence by a rise in the average number of donors per recipient country, associated with a gradual reduction in the average level of the Herfindahl index of concentration, and a gradual reduction the average share of aid accounted for by any one donor, or by the five largest donors. Nevertheless, there remain a number of recipient countries for which the concentration of aid is higher than expected, given the number of donors in operation. These include China, Colombia, Philippines, Jordan, Malaysia and Papua New Guinea, as well as the small countries such as Marshall Islands and Micronesia.

Finally, Section 6 discusses the implications of climate change for aid allocation, distinguishing between climate change mitigation and climate change adaptation. The Global Environment Facility (GEF) is the main instrument for mobilising and allocating resources for climate change mitigation in developing countries. This is arguably appropriate, since funds are likely to be used to finance specific activities. Although all developing countries are eligible for GEF resources for climate change mitigation, the resources are allocated using a PBA-type formula. A case can be made for adjusting this formula; this is discussed further in Section 6.2. Climate change adaptation could have a big impact on the allocation of aid, depending on how forward looking donors are in their aid allocation decisions. A strong case can be made for taking a more forward looking approach, so that a country which becomes more vulnerable to adverse shocks caused by climate change would receive additional aid. However, doing so would require developing indicators of countries' future vulnerability to climate-related shocks, which could prove difficult.

6.2 *Recommendations*

1. The first recommendation is that the international community carries out further investigation into positive and negative aid outliers. As discussed in Section 2.3, these are countries for which there is a large difference between the actual amount of aid received, and the amount they would be expected to receive given their levels of standard need and performance indicators. It is very important to stress that the existence of outliers does not necessarily represent unfair or unequal treatment by donors, nor the operation of strategic and/or political self-interest by donors. National-level need and performance indicators are necessarily broad-brush, and for this reason there are good reasons for at least some deviations between actual and expected allocations.

Nevertheless, aid outliers do certainly warrant further investigation. This should proceed on a case-by-case basis, beginning with those countries with the largest discrepancies between their actual and expected aid allocation. The investigation itself would need to address questions such as:

- are any of the need or performance indicators badly measured for the country concerned: either under-estimated or over-estimated for example?
- is the country's true level of need and/or performance much higher or lower than the national-level need and/or performance indicators suggest (e.g. there is a very unequal distribution of income);
- does the country in question receive particularly large or small amounts of aid from other sources, such as non-DAC donors, or from private flows (e.g. NGOs, private foundations, remittances)?
- (for negative outliers) does the country receive a lot less in terms of actual disbursements of aid, in comparison with commitments?
- is there a recognition among donors that the country is over- or under-aided, and steps being taken to rectify the situation?

If the answers to these questions are all in the negative, then there is a good case for recommending that action should be taken to rectify the situation.

2. The second is that donors seek to alter some of the prevailing average relationships between per capita aid allocations and need and performance indicators. As discussed in Section 2.3, these relationships can be inferred from regression analysis, but the

prevailing relationships are not necessarily the most appropriate ones. Judging from simple simulations carried out in this paper, a case can be made for:

- reducing slightly (i.e. make less negative) the negative effect of population on per capita allocations;
- strengthening significantly the generally negative effect of GDP per capita on aid allocations;
- reducing slightly the level of GDP per capita below which the effect of per capita GDP on aid allocations becomes 'perverse' (i.e. positive);
- strengthening the positive effect of non-income indicators of country need (e.g. under-5 mortality) on aid allocations.

The most sensible way to achieve the first change would be for those donors which deliberately and explicitly incorporate small-country bias into their aid allocation models (e.g. AsDF, IFAD, the Netherlands, EC) to reduce the amount of this bias. One way to achieve the second and third changes would be for more bilateral donors to make commitments to raise the share of aid allocated to lower income countries, following the UK (with its target to raise the share of its aid allocated to low-income countries to 90%) and Spain (with its target to raise the share its aid allocated to the Least Developed Countries). Another way would be for bilateral donors to raise the share of their aid channelled via multilaterals, which (as a group) give GDP per capita a greater weight in determining per capita allocations, and for which (again as a group) the level of GDP per capita at which the relationship between aid and GDP per capita becomes positive is lower. The fourth change could be achieved by allocating relatively more of aid to those multilateral donors with a clear emphasis on non-income measures of country need; UNICEF is the obvious example here.

3. The third recommendation is that the international community carries out further research towards determining the most appropriate relationship between population, GDP per capita and aid allocations, as well as between aid allocations and other need and performance indicators (e.g. subjective performance, non-income measures of need), is still required. This can be done by linking estimates of the impacts of aid, derived from econometric analysis, and variations in impacts according to different recipient country circumstances, to appropriate allocations of aid, via the use of optimisation techniques. (The simple simulations carried out in this paper use this basic approach, but need to be extended.)

The difficulty in this exercise lies in the controversy which remains, in the econometric literature, regarding precisely which recipient country characteristics

influence the impact of aid, and by how much. The greatest controversy surrounds the impact of subjective measures of performance, such as the World Bank's CPIA index, on the impact of aid on economic growth. This makes it very hard to estimate the most appropriate relationship between such measures and aid allocations: the answer depends very much on which set of econometric estimates you believe. Donors should continue to support research aimed at resolving this controversy. In the meantime, it could be argued that a balanced approach would involve giving more equal weights to objective and subjective measures of performance, rather than, as at present, a much greater emphasis on subjective as opposed to objective measures.

4. The fourth recommendation is that the donors and recipients seek to state more clearly the normative principles according to which they believe aid should be allocated. This could be done in the light of the discussion (see Section 3) of the differences between an MDG-efficient allocation, a country-by-country MDG allocation, and a modified MDG-efficient allocation. It could of course take on other perspectives on allocation, such as the 'equal opportunities' approach. For example, if (as the evidence suggests) land-locked developing countries face certain inherent disadvantages in terms of raising economic growth and poverty reduction, should they receive more aid than developing countries with otherwise similar levels of need and performance? This is a normative question which can only be resolved through debate and deliberation. The process could be facilitated through an international workshop involving participants from both donors and recipients.

5. The fifth recommendation is that bilateral donors carefully consider the implications of any moves toward greater specialisation on the overall allocation of aid. The danger of course is that, without adequate co-ordination, some recipient countries will be left-behind. The best approach would be for a group of like-minded donors to get together and agree an appropriate allocation for their *combined* (programmable) aid resources. As a second stage, the donors would then be able to determine an appropriate division of labour, given their experience and track-records, consistent with the agreed combined allocation.

6. In terms of aid allocation and climate change, it is probably desirable that most resources for climate change mitigation are channelled through a separate organisation, such as the GEF. There is however a case for relatively more of such resources to be allocated to countries with lower GDP per capita, which have lower ability to pay for climate change mitigation (currently, the allocation formula used by the GEF makes no such adjustment). In terms of resources for climate change adaptation, donors should consider taking a more forward looking approach in their aid allocation decisions, and look into the possibility of developing indicators of a recipient country's future vulnerability to climate-related shocks, as a way of guiding such decisions.

7. The final recommendation is that more bilateral and multilateral donors adopt and making publicly available some sort of model to guide their allocation decisions. Such a model should be clearly set out, and related to the underlying principles guiding allocation to which the donor subscribes. Each indicator entering the model should be transparent, and if subjective it should be constructed according to clear criteria. The indicators entering the model should also be combined in ways which can be justified on the basis of evidence.

Of course, an aid allocation model need not be taken literally, and each donor could legitimately use a significant amount of discretion in applying the model. Each donor could also make gradual adjustments to the model over time (e.g. in the light of new evidence), without undermining credibility. But it should be made publicly available, in such a way that invites comment and stimulates discussion. For like-minded donors looking to specialise and reduce overlap (see point 4), there would be one single model used to guide the allocation of their combined aid resources. (For small donors acting alone, the merits of adopting a model are more marginal).

Many donors may of course be reluctant to adopt an allocation model (in public at least), since it could raise awkward questions. One might also argue that the current allocation of aid has many positive features, which have been achieved with most donors not adhering (in public at least) to a formal model. However, it seems unlikely that much further improvement in this area – addressing the low weight attached to non-income indicators of need for example, or the very high weight attached to subjective performance indicators – can be achieved without a move to a more systematic, open and transparent approach.

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