We Should Be Spending More of Available Aid in Poorer Countries, Not Less

Charles Kenny

Abstract

In the context of an ongoing debate around the role of aid in middle income countries, it is worth revisiting the discussion around aid allocation in general. Accounting for the (disputed) impact of policy and declining marginal returns of aid flows, using a measure designed to focus aid on those in extreme poverty or an approach that accounts for the declining marginal utility of income consistently suggests aid is currently insufficiently focused on the poorest countries. To be equally effective as spending in poor countries, any aid used in upper middle-income countries needs the potential to generate returns that are multiples of those expected in poor countries or have considerable spillover effects in those poorer counties.

JEL: O19, D61, H87
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Many thanks for fascinating and insightful comments and suggestions from Ranil Dissanayake, Samuel Hughes, Euan Ritchie and Ian Mitchell.

The Center for Global Development is grateful for contributions from the Foreign, Commonwealth and Development Office in support of this work.


The data used in this paper is available here: https://www.cgdev.org/sites/default/files/Kenny-aidallocation-data.zip. More information on CGD’s research data and code disclosure policy can be found here: www.cgdev.org/page/research-data-and-code-disclosure.

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**Introduction**

In the context of an ongoing debate around the role of aid in middle income countries, it is worth revisiting the discussion around aid allocation in general. Some of the most influential work in this area has emphasized poverty reduction, but another simple answer on allocation is to apportion aid where it will have the largest impact on quality of life or utility. At first glance, that might suggest the scope for considerably more investments in middle income countries (MICs) than might be justified by poverty reduction alone: while richer developing countries are home to very few of the world’s poorest people, they are far from any frontier with regard to maximum quality of life or utility, and they may be able to spend aid money more effectively to improve outcomes. But using a widely accepted estimate of the declining marginal utility of consumption (still) suggests that too much aid is already provided to MICs, even allowing for a declining marginal impact of aid spending on consumption or the impact of policy on effectiveness. To be equally effective as spending in poor countries, any aid used in upper middle-income countries needs the potential to generate returns that are multiples of those expected in poor countries or have considerable spillover effects in those poorer counties.

**Optimal aid allocations and declining utility**

A number of researchers have looked at ‘optimal’ aid allocations based on some combination of need and effectiveness. This includes the influential Collier-Dollar approaches designed to maximize poverty reduction by focusing aid on poor countries with ‘good policies.’ 1 Those influenced are usually thought to include the governors of the International Development Association and the creators of the Millennium Challenge Corporation, but perhaps the effect has been felt across donors: in the post-cold-war period, per capita income is a negative and significant correlate with aid volumes while measures of government effectiveness are positively associated2 (although income may be a less significant determinant of bilateral aid flows than multilateral flows).3

Any aid allocation approach of the Collier-Dollar variety, based on maximizing the impact of aid on reducing $1.90 poverty, discounts the (aid-relevant) utility of income increases above $1.90 to zero. And that inevitably leads to allocation formulae that favor spending in the very poorest countries where $1.90 poverty is concentrated. Notably, the Millennium Challenge Corporation only works in low and lower middle-income countries (with a GNI of $3,995 per capita or less) and IDA primarily in countries with a GNI per capita of $1,185 or less (although transition and other facilities raise the de facto cutoff considerably above that level). It might be argued that these are excessively restrictive formulae —surely those living on $1.91 are still poor, and surely there are high-return aid activities in richer countries?

Using the formula of a declining marginal utility of income avoids the use of a poverty line or income threshold while still favoring expenditure on poorer recipients. The idea of the declining marginal utility of income and its potential use in allocation decisions is both historied and widely accepted in economics —dating back to at least JS Mill and engaging

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economists including Samuelson and Fisher. A comparatively recent use in international economics and global allocation issues was The Stern Review on Climate. Stern argues that empirical estimates based on savings behavior suggest utility is a function of the natural log of consumption. That implies that a doubling of income has the same impact on utility whether it is a doubling from living on $1.90 a day to $3.80 a day or from living on $3.80 a day to $7.60 a day.

It is worth noting there are a number of additional reasons beyond savings behavior to believe in the idea that each additional dollar has a declining impact on utility. This includes:

- "Engel curves" that suggest higher spending on absolute necessities (including basic foodstuffs) rather than luxuries as income declines (see also linked discussions of "hierarchies of need");
- Studies of subjective wellbeing that suggest a stronger relationship between income and answers to life satisfaction questions at lower incomes (Figure 1). 8
- "Preston curves" that show a relationship between income and health outcomes (Figure 2) that is strongly positive at low levels of income and flatter at high levels (note it is hard to enjoy utility if one is dead). 9

And as a sign of the broad acceptance of the concept, the declining marginal utility of income is also a central part of the justification for progressive taxation and safety nets.

8 It is worth noting that the relationship between income and self-reported happiness is considerably weaker than the link with 'life satisfaction' and on an ordinal scale it isn't clear that the gap between five and six in terms of this measure of utility is the same as between nine and ten. Related to this, see the ongoing debate between partisans of Easterlin and those of Stevenson and Wolters on growth and happiness/life satisfaction. Partisans of Easterlin (of whom I am one) suggest that the marginal utility of income as suggested by panel data on happiness (as opposed to Stevenson and Wolfer's preferred measure of life satisfaction) may be zero. I would argue that suggests caution in the use of happiness studies in development policy. See Layard, R., Mayraz, G., & Nickell, S. (2008). The marginal utility of income. Journal of Public Economics, 92(8-9), 1846-1857 for a longer discussion of the marginal utility of income based on subjective wellbeing studies vs Easterlin, R. A. (2004). Diminishing marginal utility of income? A caveat (available here) and Oswald, Andrew J. "On the common claim that happiness equations demonstrate diminishing marginal utility of income." IZA Discussion Paper No. 1781 (2005). See also Kenny, C. (1999). Does growth cause happiness, or does happiness cause growth? Kyklos, 52(1), 3-25.,
9 Preston, S. H. (1975). The changing relation between mortality and level of economic development. Population studies, 29(2), 231-248. The link between life expectancy increases and economic growth is weak (Kenny, Charles. Getting Better: why global development is succeeding--and how we can improve the world even more. Basic Books (AZ), 2011.) But it remains the case that poor people have a far greater tendency to die or get sick from causes that are cheaper to prevent or cure than rich people, suggesting the potential for a far higher health returns to a dollar of additional health spending in poor countries than rich ones. See Jamison DT, Breman JG, Measham AR, et al., editors. Disease Control Priorities in Developing Countries. 2nd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2006.
mechanisms within countries. The Stern Review was welcomed by British Members of Parliament from all major parties (i.a.). And the adoption of a log-shaped utility function is already used in a CGD measure of aid quality, QuODA, that has gained broad acceptance.\textsuperscript{11}

\textbf{Figure 1. The relationship between life satisfaction and income (10-point scale)}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{life_satisfaction_income.png}
\caption{The relationship between life satisfaction and income (10-point scale)}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{life_expectancy_income.png}
\caption{The relationship between life expectancy and income, 2016}
\end{figure}

If we take the assumption of a declining marginal impact of consumption on utility taking a log form to the cross-country aid allocation discussion, the implications are clear: all else equal, a dollar of aid is better spent on a project in a country where the average income is $2 than in a country where the average daily income is $4 unless the return to the project in the richer country is twice that of the return in the poorer country.\textsuperscript{12} This is not the hard cutoff of

\textsuperscript{10} https://publications.parliament.uk/pa/cm200708/cmselect/cmtreasy/231/231.pdf


\textsuperscript{12} ‘All else equal’ covers a lot of issues including the capacity to use aid and inequality within a country –there is a ninefold per capita income gap between Delhi and Bihar in India, for example.

(http://mospi.nic.in/sites/default/files/press_releases_statements/State_wise_SDG_31_07_2020_website.xls)
an allocation procedure that counts as irrelevant income increases for people on above $1.90 a day, but we will see it still implies a considerable focus on the poorest countries, especially considering evidence of considerably higher aid effectiveness in richer countries is weak.

**Is current aid allocation utility maximizing?**

Using the results from Bandyopadhyay, and Wall’s study of the drivers of actual aid allocation, their coefficients on income and income squared suggest a broadly linear relationship between income per capita and aid flows for the country at the average of population, infant mortality and government effectiveness (which they also suggest determine allocations). All else equal, donors do spend less in richer countries, but the decline is quite gradual (Figure 3). This suggests either that donors are finding a lot of very high return projects in richer developing countries or that they are not allocating to maximize utility.

**Figure 3. The partial correlation of income per capita ($000s) and ODA receipts ($m) in the post-Cold War period**

There is little evidence that differing returns are driving the allocation. Roodman concluded his robustness exercises regarding the relationship between aid, growth and other determinants by concluding fragility is “the norm.” But, first, there is little evidence that aid is less effective in poor countries simply because they are poor. Perhaps the strongest evidence we have of aid impact, from a natural experiment, regards the effectiveness of aid at the IDA threshold (around $1,175 during the period covered by the paper). That analysis

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suggests a considerable effect of aid on growth at that (low) threshold. Again, up to the year 2008, at least, estimated rates of return to individual World Bank IDA projects (in poorer countries) were almost identical (and moved in the same pattern over time) as investments in World Bank IBRD projects (in richer countries).16

Second, while Collier and Dollar suggest a strong link between policy and aid impact, there is a heated argument about the size of any policy effect and the conditions under which it holds.17 Third, the idea of a diminishing return to larger volumes of aid is considerably disputed.18 The cross-country literature and analysis of returns to World Bank projects both suggest little reason to expect higher returns to projects in richer countries, let alone the dramatically higher returns demanded by income differences twofold or (much) greater. There is no robust reason not to concentrate all aid in the very poorest countries if utility maximization is the goal.

**Allocation to maximize impact**

Without *any* declining returns to aid or policy impacts, the utility maximizing aid strategy would be to ‘kink the tail’ of global income distribution, using aid to raise the poorest countries up to the incomes of richer countries (and then, as they grow, redistributing to a larger group of somewhat richer countries over time). Figure 4 suggests what this process would generate in terms of allocation in the first years, assuming net ODA receipts of a little over $100 billion (a little above the 2018 figure for net receipts), and compared to current ODA net receipts. Aid is concentrated in the world’s 19 poorest countries in this scenario (in reality they receive about 26 percent of all ODA). The effect is to raise the world’s poorest countries up from their current incomes to the GNI per capita of Mali, or $840. Given Burundi’s GNI is $280 before this exercise, it requires a very strong belief in the absence of declining returns. But even if the world’s poorest economies had aid capped at 20 percent of GNI in ODA, the global aid budget would spread over more countries but only be enough to reach Benin at an Atlas GNI per capita of $1,200. Actual receipts for this group only totaled 43 percent of total global net ODA receipts in 2018.

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16 IEG (Independent Evaluation Group). (2010). *Cost-benefit analysis in World Bank projects*. Washington, DC: The World Bank. Note this is not evidence of the World Bank using an allocation mechanism that equalizes rates of return across countries. The IDA cutoff was set (decades ago) to ensure soft lending was focused on the poorest countries.


(Note these exercises use Atlas GNI, which is also used to determine income classifications and IDA membership, but does not take account of purchasing power. Using PPP numbers would change the allocation results at the country level. Similarly, I use 2018 data and (in particular) Atlas GNI numbers are not stable over time, so that the results should be treated as illustrative rather than suggesting a specific allocation mechanism.19)

**Figure 4. Cumulative aid allocated assuming declining utility of income ($bn)**

Taking the opposite tack, and utilizing one of the strongest declining marginal returns of aid found in the literature, Hansen and Tarp suggested a growth coefficient on aid as a proportion of GDP as 0.229 and the square of aid as -0.729. This suggests rapid and significant declining marginal impact of aid on growth, turning negative at a proportion of 17 percent of GDP.20 To repeat: the finding of declining returns is not robust. But if we use these numbers on declining returns alongside using a log relationship between income and utility we can see what it implies for the utility maximizing distribution of aid. For each country and percentage point of aid as a proportion of GNI we calculate a ‘utility score’ which is the product of the Hansen and Tarp coefficient divided by the value of one percent of GNI per capita. 2018 net aid receipts of approximately $96 billion are allocated such as to maximize the utility score. Using this allocation mechanism, the poorest countries including Burundi and Malawi receive 13 percent of GNI in ODA. The richest country to receive aid under the model is India (which does not get a full one percent of GNI in ODA because there is insufficient ODA left after previous allocations).

Figure 5 displays the results, ordering countries by income per capita and tracing cumulative receipts. At the lowest incomes actual aid allocations (blue line) match ‘utility maximizing’ allocations quite well. But actual aid allocations fall behind at around $1,000 per capita, and

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19 Note also, the discussion switches between discussing allocations to maximize the utility impact on *levels* of income per capita and allocations to maximize *growth* of income per capita. Assuming that an equal percentage rate of growth results from an equal percentage rate of aid per capita, the two are the same.

whereas India is the richest country to receive aid under this utility maximizing model, about 37 percent of ODA goes to countries richer than India.\footnote{Note ODA to richer countries in particular is often in the form of subsidized loans rather than grants, but given that ODA is recorded on a grant basis and that subsidy could be used to provide grants to lower-income countries, this does not change the results of the analysis (or conclusions drawn from it).}

**Figure 5. Cumulative aid allocated assuming declining aid impact and declining utility of income**

As a third approach, we can adopt the Collier/Dollar argument that aid should focus on reducing ($1.90) poverty but not their allocation formula based on the (disputed) impact of policy on effectiveness. Take countries where the proportion of people living under a $1.90 a day is greater than 10 percent and allocate aid according to countries share of the aggregate ‘poverty gap’ they account for (where the poverty gap is the summed total of shortfalls to $1.90 consumption amongst the population in poverty). This approach targets aids on the countries with the most widespread and deepest poverty. The result is in Figure 6, with countries lined up by GNI per capita again (red is poverty-reduction maximizing, blue is actual). The jump up at the midpoint of the graph is where India appears.

As suggested earlier, a $1.90 poverty focus implies a considerably stronger concentration of aid amongst the world’s poorest countries. (It is worth noting that even Collier-Dollar exercises that attempted to maximize poverty reduction but assumed a strong impact of policy still suggested a markedly greater focus of aid on the poorest countries --in 1999 they estimated the correlation between the poverty rate and the poverty [reducing]-efficient allocation of aid is .75, compared to .52 for the actual allocation).\footnote{Collier, P., & Dollar, D. (2002). Aid allocation and poverty reduction. *European economic review, 46*(8), 1475-1500.} This exercise also helps illustrate that even if we take poor people or poor regions rather than poor countries as the target for utility-maximizing expenditure, we will end up with more aid concentrated in poorer countries than is currently the case.
India’s Atlas GNI per capita is $2,100 in this data. There appears to be effectively no (utility-based) reason to spend significant quantities of aid in any country richer than that. Yet we have seen that about 37 percent of net ODA receipts go to countries richer than India. And there are good reasons to think that aid is better spent at greater concentrations in even poorer countries.

**Conclusion**

Certainly, governments aren’t trying to maximize global utility in *all* of their spending (they are a considerable distance from doing that even domestically). And there is a large literature on what influences aid allocation beyond recipient need. Existing allocations appear to be driven by factors including proximity, colonial relationships, domestic lobbying by groups ethnically related to recipient countries, recipient UN Security Council membership, status as a democracy and human rights observance. Some aid is spent in supporting richer developing countries responding to humanitarian emergencies or hosting refugees.

But perhaps, at least in the fraction of a percentage of GDP donors provide in foreign assistance, global utility maximization should be the *primary* goal. And if it is, that suggests a laser focus on the poorest countries. Criteria that take into account human rights or policy choices or inequalities within countries may provide a justification for reallocation across the poorest countries, but not for providing significant quantities of aid in richer LMICs and UMICs.

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IDA’s allocation mechanism comes close to a model in this regard, but it could still be improved. The formula within its poor country client base is primarily based on country policy performance (as determined by Bank staff), population size and GNI per capita.\textsuperscript{24} We have seen the actual impact of measured country performance on aid outcomes is not nearly as large as the allocation formula would suggest, and the secondary role of incomes is a mistake given even within IDA there is a threefold difference in Atlas GNI per capita. But many bilateral donors have considerably further to go than IDA towards maximizing impact – only 21 percent of Germany’s (country-allocated) ODA flows to low-income countries, for example.\textsuperscript{25}

If the expected utility of an additional dollar is about twice as high in a country half as rich, that suggests a simple rule of thumb for aid decision making in richer countries (or, indeed, richer regions of countries): for each doubling of average incomes in a recipient country, the expected returns from aid projects should be twice as high. Given the huge variation of incomes between poor and rich developing countries, this suggests a very high bar for upper middle-income countries which can see more than sixteen times the income per capita of the world’s poorest countries (Table 1). There is simply no evidence in the literature that returns to standard capital investments (human or physical) consistently vary by that much across countries (again, World Bank project economic rates of return are very similar across incomes), suggesting aid used in richer developing countries would have to be for rare national or global public goods where a small amount of money could potentially achieve considerably outsized returns. The argument for why aid is required to deliver those stunning returns should surely be made as part of project preparation and would make for interesting reading.

(I have used ‘utility’ as a catchall in this paper, it is worth noting that the argument could be rephrased in terms of other outcomes. For example, the average cost to save a child from premature mortality is far lower in poor countries than in rich countries. To justify spending aid on child health in richer developing countries, project sponsors should be able to demonstrate abnormally high returns to that spending, and why aid is needed finance it.)

The analysis also suggests something about the gap between the $96 billion in net ODA receipts that are the basis of calculations of this paper and the total of $153 billion of ODA reported to the OECD.\textsuperscript{26} The gap – a third of total aid – is made up of a hodgepodge including education costs in donor countries, aid administration, domestic spending on projects supposedly motivated by the welfare of developing countries, and spending on refugees. Some of this may be very high-return, delivering global public goods of considerable and particular benefit to the poorest countries, but if donors are truly committed to the idea of aid effectiveness, it worth be examining the financing in this category to see how much could be diverted to high-return activities in the world’s poorest countries.

\textsuperscript{25} https://public.tableau.com/views/AidAtAGlance/DACmembers?embed=y&display_count=no?&showVizHome=no#1
Table 1. Aid returns and country incomes

<table>
<thead>
<tr>
<th>Aid Returns</th>
<th>Country Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>16x</td>
<td>Central African Republic, Sierra Leone, Congo, Dem. Rep., Madagascar</td>
</tr>
</tbody>
</table>

If you are planning a project in.....

<table>
<thead>
<tr>
<th>Brazil</th>
<th>Indonesia</th>
<th>Nigeria</th>
<th>Yemen, Rep.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maldives</td>
<td>Samoa</td>
<td>India</td>
<td>Nepal</td>
</tr>
<tr>
<td>Mexico</td>
<td>Sri Lanka</td>
<td>Nicaragua</td>
<td>Tajikistan</td>
</tr>
<tr>
<td>China</td>
<td>Jordan</td>
<td>Ghana</td>
<td>Tanzania</td>
</tr>
</tbody>
</table>

Your expected returns to aid spending should be

2x


4x


8x


16x

Central African Republic, Sierra Leone, Congo, Dem. Rep., Madagascar