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## Is the Distribution of Foreign Aid MDG-Sensitive?

*Degol Hailu and Raquel Tsukada*

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**Abstract**

This paper examines whether Official Development Assistance (ODA) is disproportionately allocated to countries that need to make the most progress on the Millennium Development Goals (MDGs). We expect MDG-sensitive distribution of foreign aid – or a good donor-recipient match – to be guided by the principles of the Global Partnership for Development. When we apply the MDG-sensitivity criteria for aid allocation, the results indicate that ODA allocation since the Millennium Declaration has become more MDG-sensitive – ODA is given to countries that need it most. While such trends in aid disbursements are commendable, total aid flows, however, fall short of promised levels.

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# Is the Distribution of Foreign Aid MDG-Sensitive?

*Degol Hailu and Raquel Tsukada*

One of the positive features of the MDGs is their ability to galvanise global support, mainly mobilisation of resources to finance their achievement. In this respect, foreign aid is a key instrument. According to the Organisation of Economic Cooperation and Development (OECD), the objective of aid is to ensure that it “helps developing countries reduce poverty and build sustainable economic growth”. If this is the aim, then we would expect the allocation of aid to reflect recipient needs in terms of reducing poverty and achieving the MDGs. However, two strands of the literature on aid have doubted this assumption on aid allocation.

First, researchers have argued that aid allocation is determined by the self-interest of donors. The work by Alesina and Dollar (2000) and Schraeder *et al.* (1998) show that aid allocation, particularly bilateral assistance, for the most part is determined by non-economic factors such as geopolitical interests and colonial ties. Berthélemy (2006a and 2006b) stated that aid is given to deepen commercial interests and trade linkages with recipient countries. Second, Burnside and Dollar (2000) argue that aid should be given where growth and poverty reduction are expected to follow, and not on a needs basis, for instance in terms of MDG achievement gaps. The logic is that aid works better in an environment of “good” policy conditions, measured by economic indicators such as low inflation rates, and hence, aid should be directed to countries with “good” policies.

Given the commitment of countries to achieving the MDGs, including MDG8 (Global partnership for Development), it is worth looking into if MDG agenda has changed the patterns of aid allocation. There is little formal assessment of whether foreign aid flows to the countries that need it most or not, in terms of the need to achieve the MDG targets. There are some attempts, for instance by Berthélemy (2006a and 2006b) who used per capita income (in PPP), life expectancy, child mortality, literacy rates and school enrolment ratios as measures for development need. While these variables showed some correlation with foreign aid allocation, the results were not robust. For instance, Berthélemy (2006b, p. 88) notes that:

A reduction of income per capita (in logarithm) of the average recipient country by one standard deviation would increase its assistance from the average donor by USD 1.3, assuming unchanged export ratios, but if imports were assumed to be proportional to income, the net result would be a reduction of assistance by about USD 1.4 per capita.

Perhaps one reason for the lack of robust relationships between recipient needs and aid allocation in the study by Berthélemy is the period covered. The data used covers 1980 through 1999, well before the Millennium Declaration and the MDGs. While this paper is in effect an assessment of the progress on MDG8, whether donors begun to allocate relatively more aid to those countries in greater need of support or not.

An important motivation for focusing attention on the MDG needs of recipients is clear – countries that are far from achieving the goals need higher aid financing. In our earlier paper, Hailu and Tsukada

(2011), we introduced a methodology that measures the effort made by countries in achieving the MDGs. We corrected for two biases ignored in previous methodologies that assess MDG performance: non-linearity in the rate of change and effort appreciation. By correcting for the first, we showed that the rate of progress in MDG indicators is not linear across time. In the case of the second bias, we showed that natural constraints hinder countries from achieving the targets as they approach their upper or lower bound limits. These two corrections allowed us to identify countries that are making respectable progress on MDG acceleration, in contrast to the established practice of labelling countries “off-track” or “failure”. Our findings were that the least-developed countries made faster progress on MDGs compared to more developed countries. Hence, it is likely that countries further away from MDG achievement targets could derive the highest marginal utility from aid (see also Osorio 2008a and 2008b; and Kakwani, 1993 for discussion of effort appreciation and non-linearity).

The paper is structured as follows: Section 2 introduces the data. Section 3 presents the methodology. Section 4 discusses the results from the statistical exercises. Concluding remarks are provided in Section 5.

## Data

### *MDG score index*

We propose an index that measures MDG performance by ranking countries in terms of their MDG achievements. This ranking is a distribution of MDG achievement among countries that are close to meeting the MDG targets and those further away from them. The innovation in this index is that it compares the relative achievement level of the MDG indicators among a set of developing countries.

We measure a country’s position by the achievement of the 21 targets which are monitored by 60 technical indicators (following the official UN MDG monitoring approach). To assess each country’s MDG achievement, we translate the multidimensional information contained in the several MDG indicators into a single objective measure. This objective measure must fulfil four main properties: (i) be comparable across countries; (ii) represent the aggregate information provided by the eight MDG goals; (iii) be invariant to the different units of measurement of the MDG indicators; and (iv) show the distance between each country’s achievements relative to the others’.

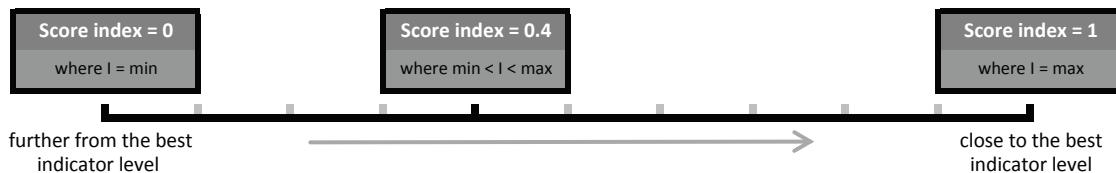
The score index we propose complies simultaneously with all four properties above. It is a transformation of the indicators into an intuitive measure between 0 and 1. Denoted  $S_{indicator}$  (Equation 1), the score index represents the distance between two indicator levels – the distance of a given country that is close to achieving its target from the country that is further away from achieving the target. In other words, since our analysis refers to the allocation of aid to those countries in most need, our indicator must capture how far countries are from each other in their overall achievement of the MDGs.

$$S_{indicator} = 1 - \left( \frac{\max - I}{\max - \min} \right) \quad (1)$$

Where  $S_{indicator} \in [0,1]$ ;  $\max$  is the maximum value of a given indicator across all countries in the sample;  $\min$  is the minimum value of that indicator in the sample, and  $I$  is the actual achievement level of an individual country in the indicator<sup>1</sup>. The extreme score value of zero indicates that a country’s indicator is at the minimum level of achievement in the sample. A score of one indicates that the country’s indicator is the

closest to the maximum level of the MDG indicator achieved in the sample. An intermediary value, say 0.4, indicates that the country is more than half way from the maximum level of the indicator achieved by other countries that are close to achieving the MDG target (see Figure 1).

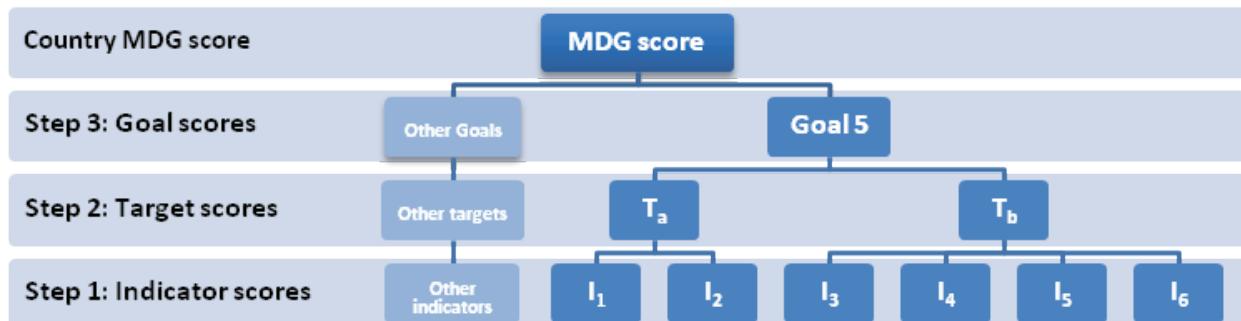
**Figure 1. Score index**



Because some targets are evaluated by more than one indicator, it is appropriate to reserve the hierarchical structure of goals, targets and indicators. We build an aggregate MDG indicator score for each country from the aggregation of the single indicator scores,  $S_{indicator}$ , into a single value. This avoids giving larger weight to one or other targets just because there are more indicators under them.

We, therefore, perform a 3-step aggregation process (see Figure 2): First, we aggregate the indicator scores (Equation 1) into target scores,  $S_{target}$ . Target scores are then aggregated into goal scores,  $S_{goal}$ . Finally, for each country, the eight goal scores are aggregated into a single score value,  $S_{MDG}$ , the MDG Score Index. The *MDG score index* is a unit-free indicator comparable across all countries and produces a distribution which helps us identify which countries need disproportionately more aid relative to other countries.

**Figure 2. MDG score index: Example of a three-step aggregation of indicators**



In the example above, Goal 5 comprises two targets: ( $T_a$ ) reduce maternal mortality ratio and ( $T_b$ ) achieve universal access to reproductive health. Each of these targets is measured by specific indicators, the  $I_{1-6}$  (see Appendix A for details). The simple average indicator scores determine unique scores per target. The average of such target scores gives the goal score. A country's MDG score is thus given by the mean of the eight goal scores (see Equation 2)<sup>2</sup>.

$$S_{MDG} = \frac{1}{n_{goals}} \sum_{i=1}^{n_{goals}} \frac{1}{n_{targets}} \sum_{j=1}^{n_{targets}} \frac{S_{indicators}}{n_{indicators}} \quad S_{MDG} \in [0,1] \quad (2)$$

Where  $n$  is the number of scores.

## Measuring aid allocation

Aid is measured as ODA disbursements, disaggregated by bilateral and multilateral flows.<sup>3</sup> Our sample consists of 108 developing countries.<sup>4</sup> Given that both population as well as economic size varies across countries, the ODA data is also measured in per capita terms and as a share of GNI. The data is from the OECD online statistics database and the World Development Indicators 2011.

For an MDG-sensitive distribution of foreign aid, one would expect that donors would allocate more resources and aid towards countries further away from achieving the targets. For analyzing such aid matching, we take a snapshot of the development status of countries in 2001 measured by the MDG indicators at that time. Then we analyse annual ODA allocation in the following years. The reason for using single year MDG data against a moving year ODA performance is because 2001 corresponds to the time the implementation of the MDG agenda was initiated. We expect ODA allocation decisions to be based on the level of development and MDG gaps for that period. Moreover, information on MDG indicators is not always available on time for donors to adjust their allocations frequently. National household surveys, in particular demographic and health surveys, are not always taken at frequent intervals. In addition, not all national statistics offices and bureaus have the capacity to process data and carry out useful analysis on time. It is reasonable to assume that donors' decisions about aid disbursements are based on lagged information not only in response to data, but also depending on their own political and administrative processes.

## Methodology

We use three methods to investigate good donor-recipient matches. First we perform a *correlation analysis*. Second, for intuitive understanding, we present a *graphical analysis* with scatter plots and linear prediction of ODA allocation. Finally, we use *concentration curves* to analyse inequality in aid distribution.

### Correlation analysis

Correlation analysis has been used in the literature for analysing donors' progressivity in foreign aid allocation (Little and Clifford, 1965; Frank *et al.*, 1972). We use the Pearson correlation coefficient to examine the relationship between ODA and the recipient's MDG score index. The coefficient ranges between positive and negative one. The former indicates a perfect positive relationship (more ODA is given to countries close to achieving MDG targets) and the latter shows a perfect negative relationship (more ODA flowing to countries far from achieving MDG targets). As the correlation coefficient approaches zero (either from positive or negative values), the relationship between the two variables becomes weaker, i.e., ODA allocation is independent of the MDG achievement status of countries.

First, we calculate the Pearson correlation coefficient between annual ODA received since year 2002 and the country's development needs which was signalled in the starting period of the MDGs, the year 2001. We expect that aid has become more targeted toward the countries that were farther away from the MDG targets when the global community signed on to the MDGs. Thus, the correlation coefficient should be strongly negative.

$$\rho_{S, ODA} = \text{corr}(S_{MDG}, ODA) = \frac{\text{cov}(S, ODA)}{\sigma_S \sigma_{ODA}} \quad (3)$$

Where  $\text{cov}(S, ODA)$  is the co-variance between the MDG score index and ODA received;  $\sigma_S$  and  $\sigma_{ODA}$  are the respective standard deviations in the sample.

White and McGillivray (1992, p. 6), however, argue that “the correlation coefficient is unable to distinguish between a donor that almost (but not quite) gives the same amount of aid to all recipients, regardless of income, and that which gives a much higher multiple of aid to poorer countries than relatively better off ones”. Since countries are quite different in economic and population size, the amount of aid flow is expected to vary according to the recipient’s size. Therefore, we use ODA as a share of GNI and ODA per capita as adjustment measures.

## Graphical analysis

In a second approach, we investigate graphically whether aid has followed a needs-driven targeting. We plot each country’s ODA as a share of GNI against the MDG score index. The literature has used scatter plots to analyse donors’ lending portfolio and classify their behaviour as progressive (i.e. more aid to countries with lower development outcomes) or regressive (i.e. larger amounts to better off countries) (see Mosley, 1987; White and McGillivray, 1992). In a good matching scenario, we would expect a downward sloping line where aid decreases as countries get more developed.

We expand this graphical analysis to the identification of countries which are *over-*, *under-* and *reasonably-assisted*, according to a linear prediction. Over-assisted are countries that received on average more ODA than it would be expected given their nearness to MDG targets by 2001. Under-assisted countries receive on average less assistance than would be expected given their relative distance (further away) from the MDG targets. Countries that received close to the expected amount of ODA are reasonably-assisted. They are identified as lying within the 95 per cent confidence interval of the expected value of aid according to their MDG status.

## Concentration curves

Finally, we are interested in how the distribution of aid has evolved over time, especially after the MDGs. We look at the behaviour in aid allocation by type (multilateral and bilateral) and over time (between 2001 and 2008). We build aid concentration curves and compare whether aid has become more or less concentrated. Mosley (1987) used distribution analysis to compare Lorenz curves and Gini coefficients of income worldwide. He calculated the world income distribution including and excluding foreign aid transfers and concluded that foreign aid in the 1970s promoted modest but visible redistribution of world income. His finding sheds light on the importance of foreign aid as a tool for decreasing world income inequality when effectively targeted, assuming that aid flows do not have any “Dutch disease” adjustment effects, such as real exchange rate appreciation and wage inflation. Another frequent use of aid concentration curves is to measure progressivity of foreign aid allocation (White and McGillivray, 1992).

We derive aid concentration curves by plotting the cumulative share of total ODA disbursed against the cumulative share of population, ranked by the countries’ MDG score index. If aid is distributed equally among all countries, proportional to their population size, i. e., the transfer per person in the world has exactly the same value then the concentration curve is a 45 degree line. But if a higher amount of aid is disbursed to countries with a lower MDG score index than the rest of the population, the concentration

curve lies above the equality line. That means that aid is indeed disbursed to countries that are farther away from achieving the MDG target.

Aid concentration curves resemble Lorenz curves used in income distribution analyses. The difference is that while the concentration in income distribution often has a negative connotation, concentration of aid towards countries with a relatively greater need is a desired outcome. Straightforward comparison of two aid concentration curves, as in Lorenz, is only possible if curves do not cross each other. Therefore we calculate a statistical counterpart, the *aid concentration index*, which allows us to compare the degree of concentration between two different curves.<sup>5</sup>

The aid concentration index ranges from -1 to +1. Since it is possible that a concentration curve lies above the equality line, the coefficient would take a negative value. In fact, in the case of ODA allocation, a negative value for the concentration index is a desired outcome. On the other hand, if the distribution of aid is regressive, or the better off countries receive more aid, then the concentration index assumes a positive value, as the Gini does. A concentration index around 0 reflects an equal distribution, with countries receiving the same amount of aid irrespective of their MDG status. That is not necessarily the desired outcome in development assistance, particularly when countries are unequal in their MDG achievement.

Our methodology has caveats especially concerning the data. The method is sensitive to the sample for two reasons: (i) a correlation analysis is, by nature, highly dependent on the sample selection; and (ii) the transformation in scores depends on the minimum and maximum values of indicators, which are influenced by the extreme values in the sample. To minimize this problem we use the largest sample of developing countries.

Another general issue on ODA analyses is the fact that small islands developing states (SIDS) have usually a skewed pattern of aid assistance. Claessens, *et al.* (2010) and Alesina and Dollar (2000) note that small countries tend to receive significantly more per capita aid than the average developing countries. This can be due to high vulnerability to external shocks. Where appropriate, we present the results excluding the SIDS.

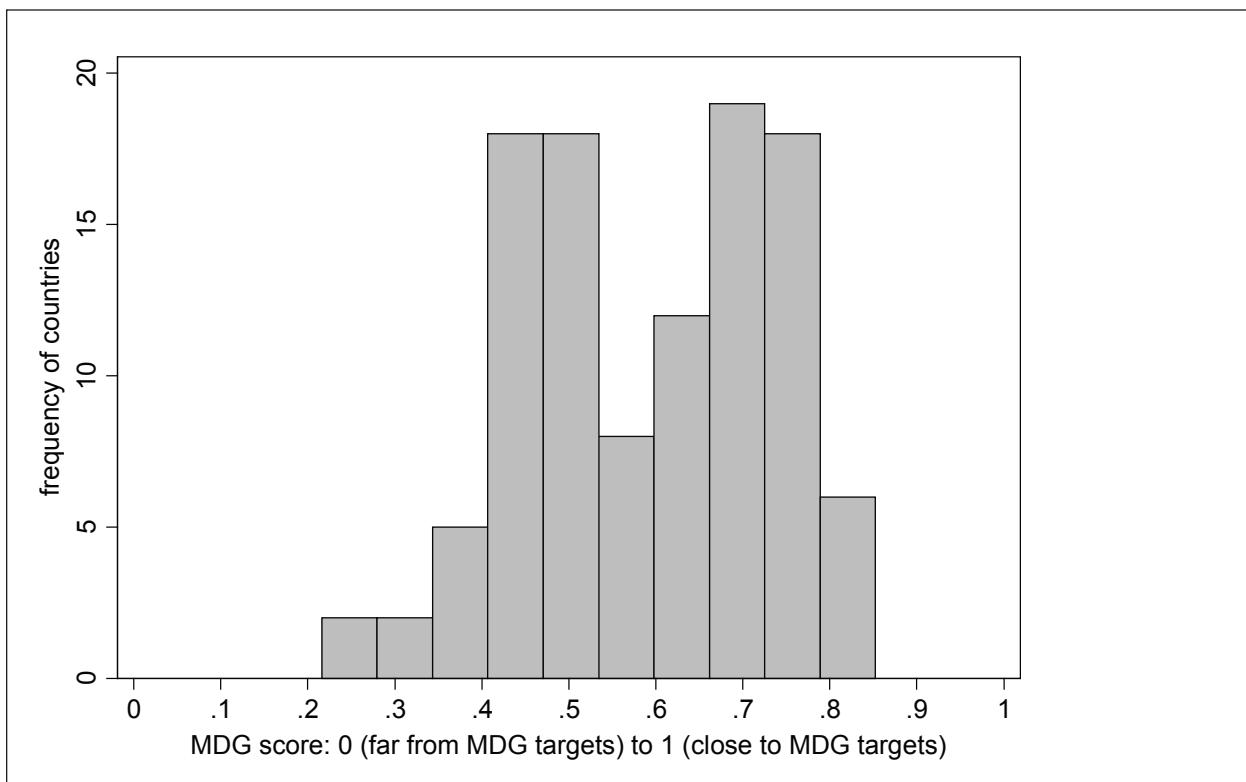
## The Results

### *The MDG score index and ODA flows*

The results show that 51 per cent of the countries have MDG score indexes between 0.6 and 0.8.<sup>6</sup> These are the countries that had indicators close to MDG targets. About 42 per cent of the countries scored between 0.4 and 0.6 in the MDGs score index. These are at the mid-range in relation to countries close to the best MDG outcome and those further away from them. The group furthest away from MDG achievements is composed of eight countries, all but one located in Sub-Saharan Africa. These are Afghanistan, Chad, Niger, Sierra Leone, Ethiopia, Central African Republic, Mali and Burkina Faso. We would expect special attention would have been given to these countries in terms of aid allocation.

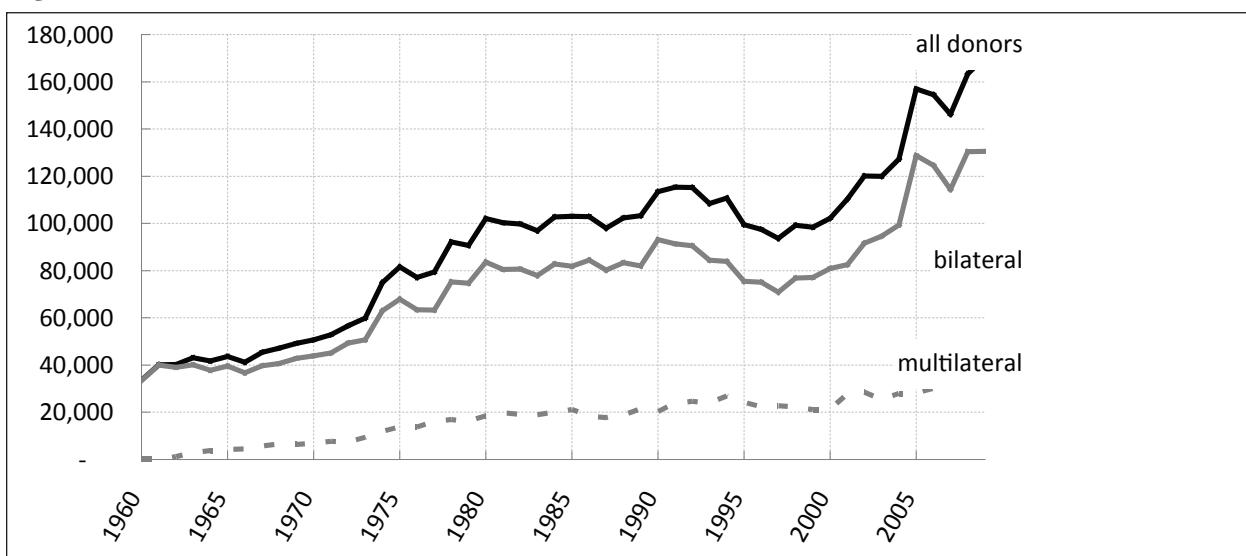
Total ODA has increased by fivefold during the 1960-2009 period. It rose from \$33.6 billion in 1960 to about \$170 billion in 2009 (see Figure 4).<sup>7</sup> After 2001, the growth in total ODA was driven by a significant growth in bilateral aid. Bilateral ODA grew on average by 20 per cent per year, while multilateral aid grew at a constant average of 3 per cent per year. Bilateral aid, however, shows larger volatility than multilateral aid, which is evident from cuts in bilateral aid during the 1990s, before the Millennium Declaration.

**Figure 3. Histogram of countries by MDG score index**  
*(Development needs measured by relative MDG achievements in 2001)*



Source: Authors' calculations.

**Figure 4: Total, Bilateral and Multilateral Aid Disbursements between 1960 and 2009**



Source: OECD QWIDS 2010 Database

Note: ODA in constant 2008 USD. ODA disbursements include all donors and all recipients.

## Correlation analysis

Table 1 shows the Pearson correlation coefficient between the MDG score index and ODA. We measure aid allocation both in total value (US dollars at constant 2008 value) and also adjusted to the size of the recipient economy (ODA as a share of the country's GNI). As expected, the results show that both correlation coefficients are negative and significant, indicating progressivity in aid allocation – more aid is flowing where the MDG indicators were further away from the targets.<sup>8</sup> On average, the correlation in the period was negative and moderate at -0.342 and -0.414, for total ODA and as a share of GDP, respectively.

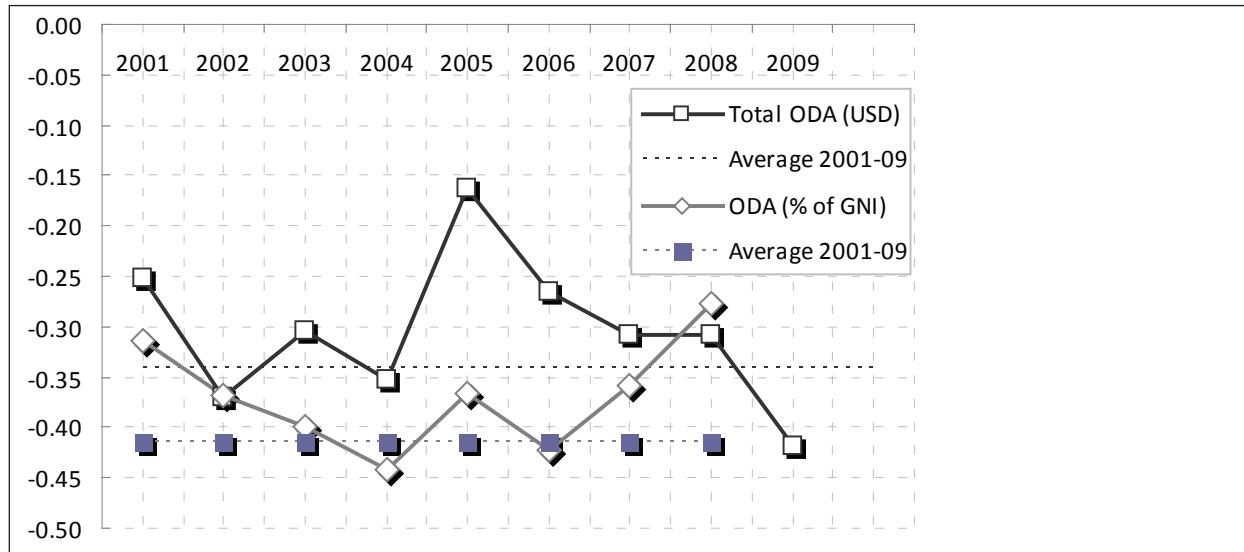
**Table 1: Pearson pairwise correlation of aid allocation and MDG score index**  
*(see Appendix C for detailed results)*

Reference year	Correlation coefficients		
	ODA (in USD)	ODA (% of GNI)	Difference
Average	-0.342	-0.414	-0.07
2001	-0.252	-0.315	-0.06
2002	-0.370	-0.368	0.00
2003	-0.303	-0.399	-0.10
2004	-0.353	-0.441	-0.09
2005	-0.162*	-0.366	-0.20
2006	-0.266	-0.423	-0.16
2007	-0.309	-0.358	-0.05
2008	-0.307	-0.278	0.03
2009	-0.418	-	-

*Source:* Authors' calculations based on WDI 2011.

*Note:* (1) All coefficients are significant at 1 percent significance level, but \* significant at 10% level.  
(2) The correlation coefficients are robust when excluding SIDs and Afghanistan. The ODA (in USD) correlation however becomes a little weaker when excluding the SIDs.

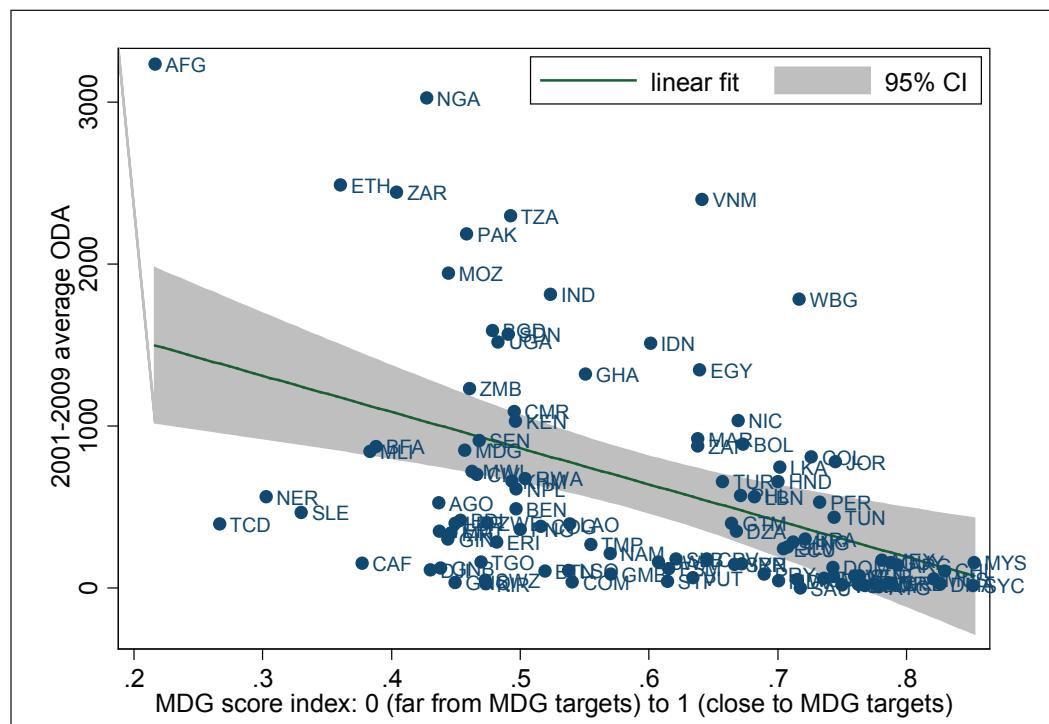
For a highly progressive aid allocation, however, we expect a large and negative correlation. Figure 5 shows that the correlation between nominal ODA and recipients' MDG status has been historically weaker than that of the income adjusted ODA. In all years but 2008, the correlation curve of nominal aid is above the income adjusted aid curve. If one assumes that donors do consider recipients' needs then the curves suggest that donors also take into consideration other factors when allocating aid, mainly economic size and income level, which are proxies for the resource base of aid recipient countries. The important finding to retain is that all correlation coefficients are negative, meaning that the lesser the progress towards the MDG, the larger the amount of aid received.

**Figure 5: The correlation between aid allocation and MDG score index**

Source: Authors' calculations based on World Bank WDI 2011.

### Graphical analysis

We use a scatter plot to examine whether countries have received as much foreign aid as it would be expected given how further away from the MDG targets their indicators were. We plot the countries' average ODA as a share of GNI received between 2001 and 2009 against the MDG score index (Figure 6). Overall, aid has targeted those countries which need to make the most progress in MDGs. ODA represented a larger share of the countries' GNI for those who were farther from the MDG targets rather than those closer to achieving them.

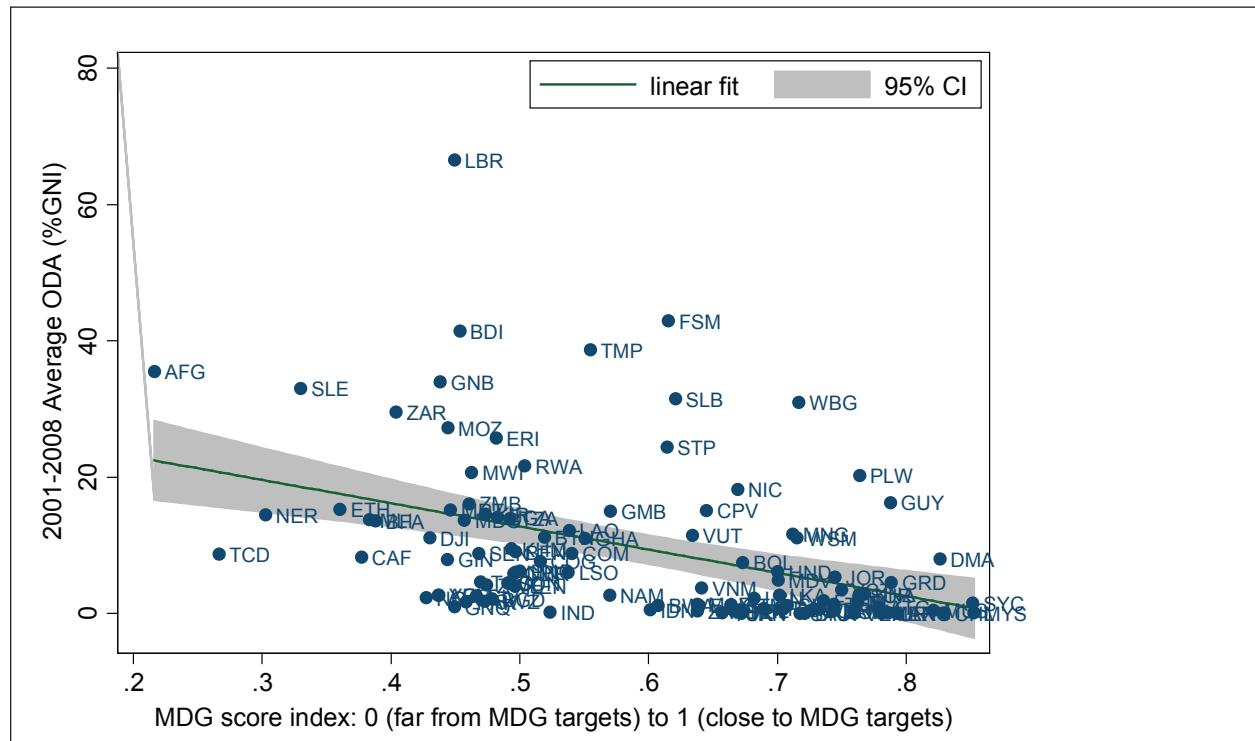
**Figure 6: Scatter plot and linear prediction of average ODA against MDGs score index, 2001-2009**

Note: Total ODA in constant 2008 USD. One outlier country, Iraq, is not displayed in the graph although it was included in the calculations.

We use the scatter plots to further examine the relationship between ODA/GNI and the MDG score index. The scatter plot in Figure 7 and the fitted line with low dispersion across the confidence interval reflect a good donor-recipient matching.

Among the group of least developed countries scoring below 0.4 on the MDG score index, two countries would be considered under-assisted. Chad (TCD) and Central African Republic (CAF) received lesser aid as share of GNI, and they are persistently receiving less aid (note that they were also under-assisted as observed in the nominal aid and MDG score index analysis above). Afghanistan (AFG) and Sierra Leone (SLE), on the other hand, received more ODA than expected given their MDG achievement level.

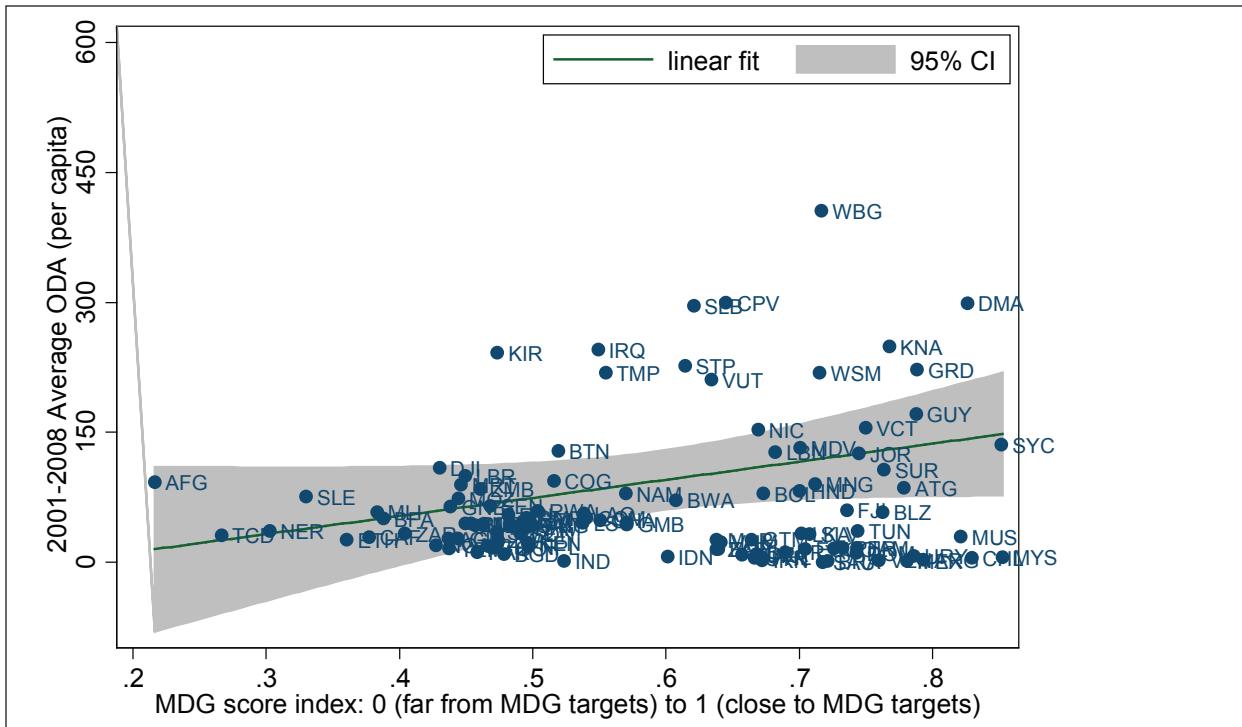
**Figure 7: Scatter plot and linear prediction of average adjusted ODA against MDGs score index**



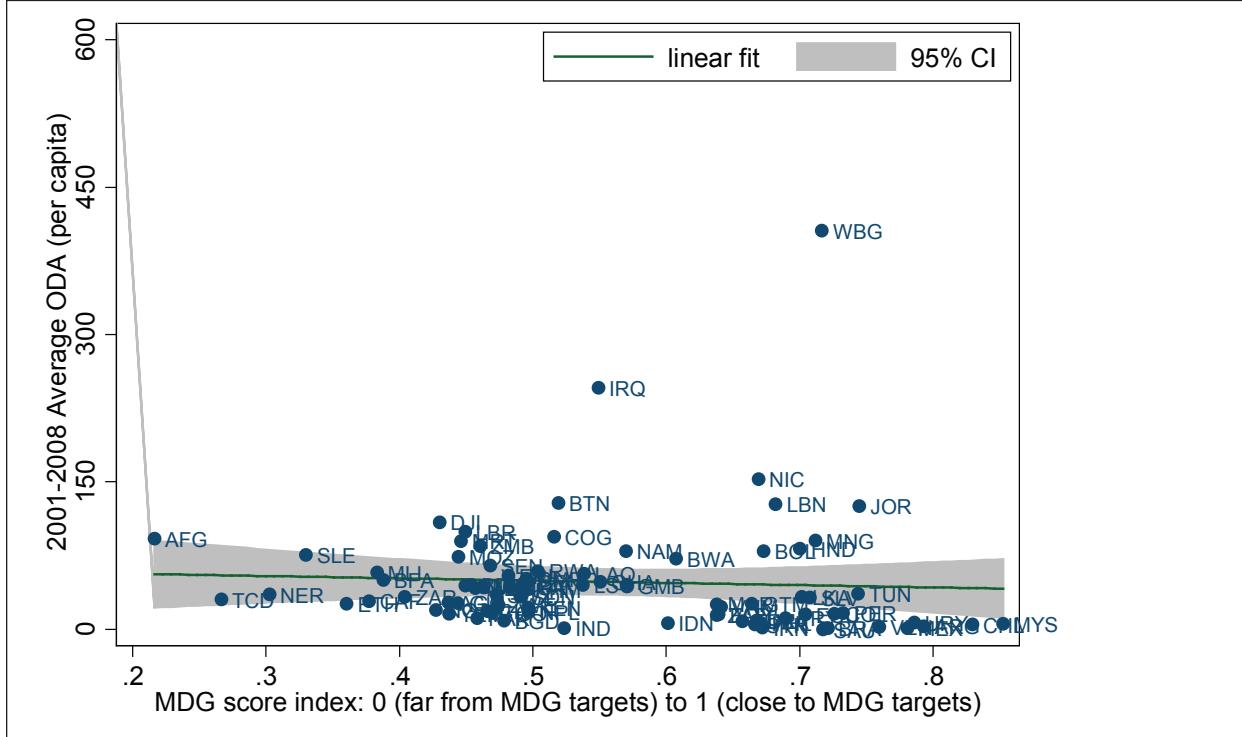
*Note:* One outlier country, Iraq, is not displayed in the graph although it was included in the calculations.

As a robustness check, we examine the relationship between ODA and MDG score index using population adjusted ODA (ODA per capita) instead of ODA as a share of GNI. ODA per capita produces misleading results. The upward sloping linear fit in Figure 8a indicates that higher ODA per capita is allocated to countries with the best MDG achievement levels. Since Claessens et al. (2010) and Alesina and Dollar (2000) warn that the small population of SIDS may distort the regression results, we exclude these countries. The flat line in Figure 8b suggests that ODA is distributed proportionally. Nevertheless, these results are at best tenuous and statistically insignificant.

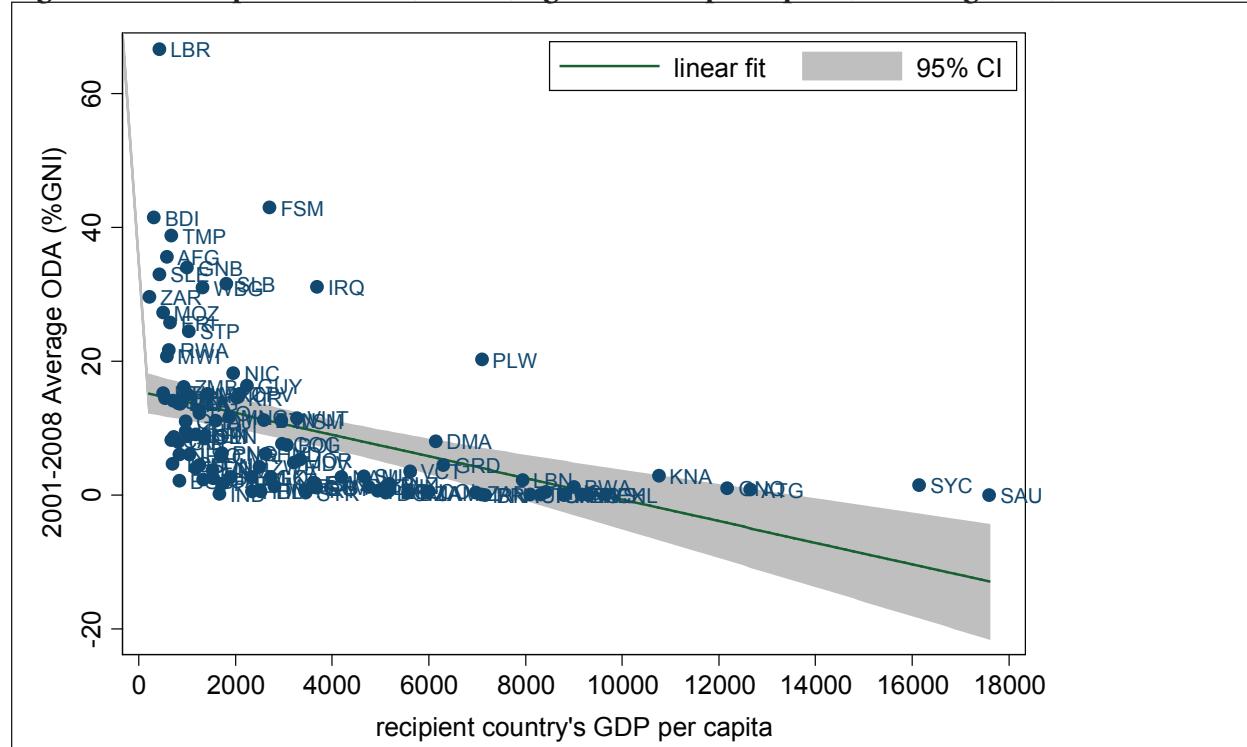
Another robustness check is to use GDP per capita instead of our development measure (the MDG score index). The results suggest that the correlation between the MDG score index and aid allocation is stronger than the correlation between GDP per capita and aid allocation (see Figure 9). The relationship between the latter two variables is also non-linear, where a great portion of countries are clustered at GDP per capita around \$2,000 (PPP in 2001). Figure 9 is thus not conclusive about the relationship between ODA and the development need of countries as measured in income terms.

**Figure 8a: Scatter plot and linear prediction of ODA per capita against MDGs score index**

*Note:* Two outlier countries, Micronesia and Palau, are not displayed in this graph although they are included in the sample.

**Figure 8b: Scatter plot and linear prediction of ODA per capita against MDGs score index (excluding SIDS)**

*Note:* Two outlier countries, Micronesia and Palau, are not displayed in this graph although they are included in the sample.

**Figure 9: Scatter plot of ODA (% GNI) against GDP per capita (excluding SIDs)**

### Aid concentration

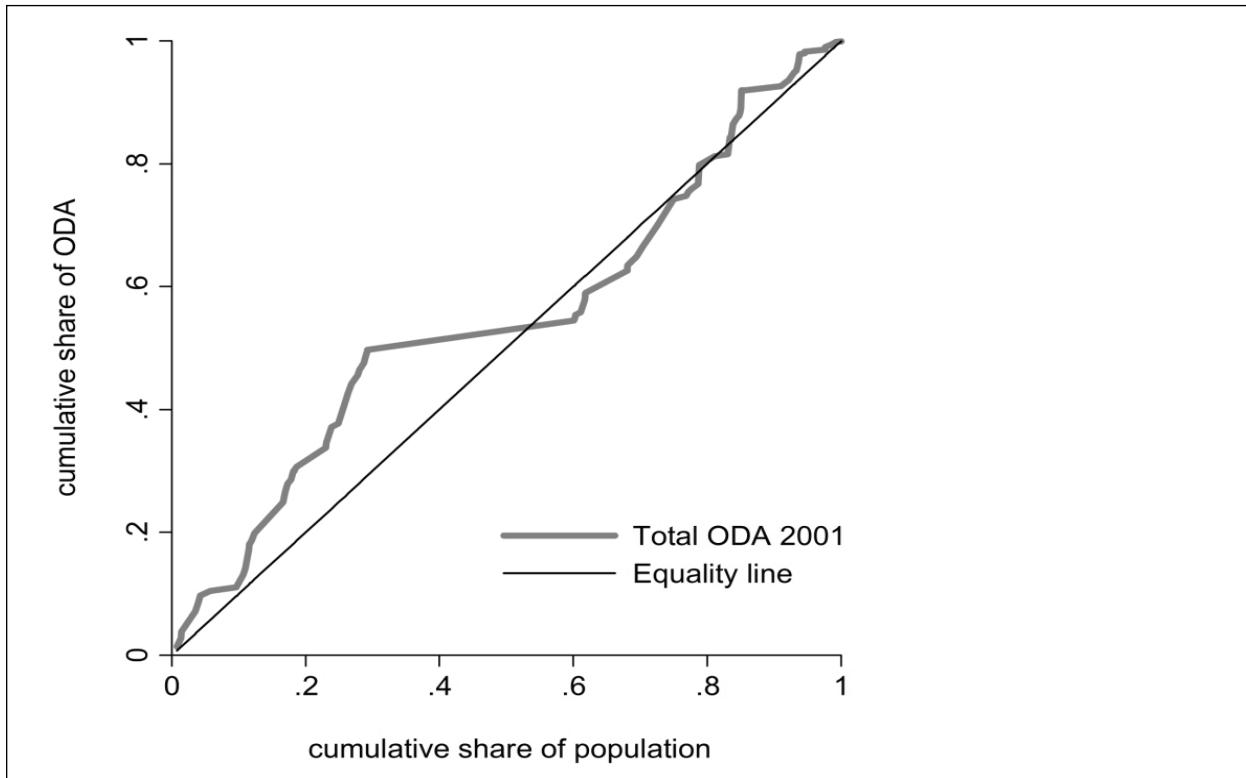
Since the advent of the MDGs, aid allocation has become more concentrated towards the countries that are further away from achieving the MDG targets. The concentration index that captures progressivity became negatively strong (see Table 2). As Figures 10, 11, and 12, show, the concentration curves lie above the equality line, meaning that countries that are farther away from the MDG targets receive larger share of aid than the “least needy” ones.

**Table 2: Aid Concentration Index, 2001, 2009**

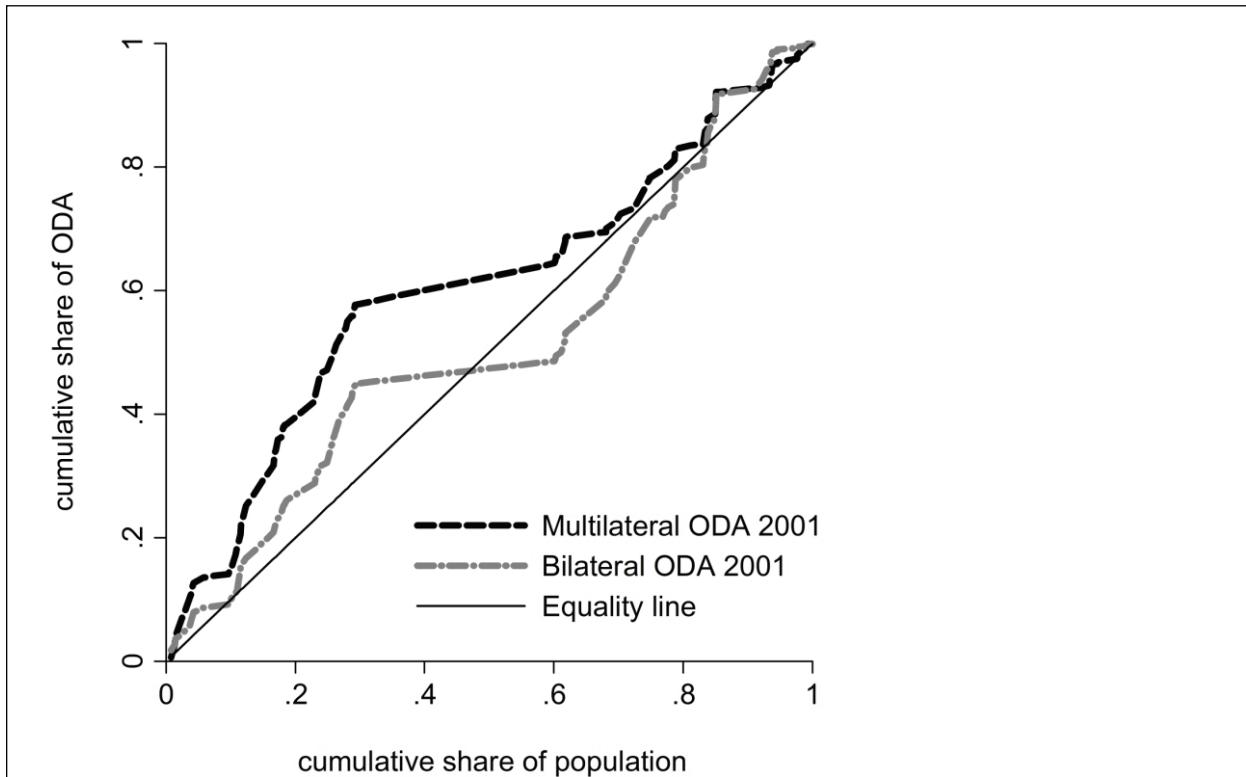
ODA by donor classification	2001	2009	2001-2009	Between 2001 and 2009 aid has become:
Total	-0.225	-0.305	0.080	Overall more MDG-sensitive
Bilateral	-0.183	-0.232	0.048	More MDG-sensitive
Multilateral	-0.296	-0.433	0.137	More MDG-sensitive than bilateral ODA

Source: Authors' calculations based on World Bank WDI 2011.

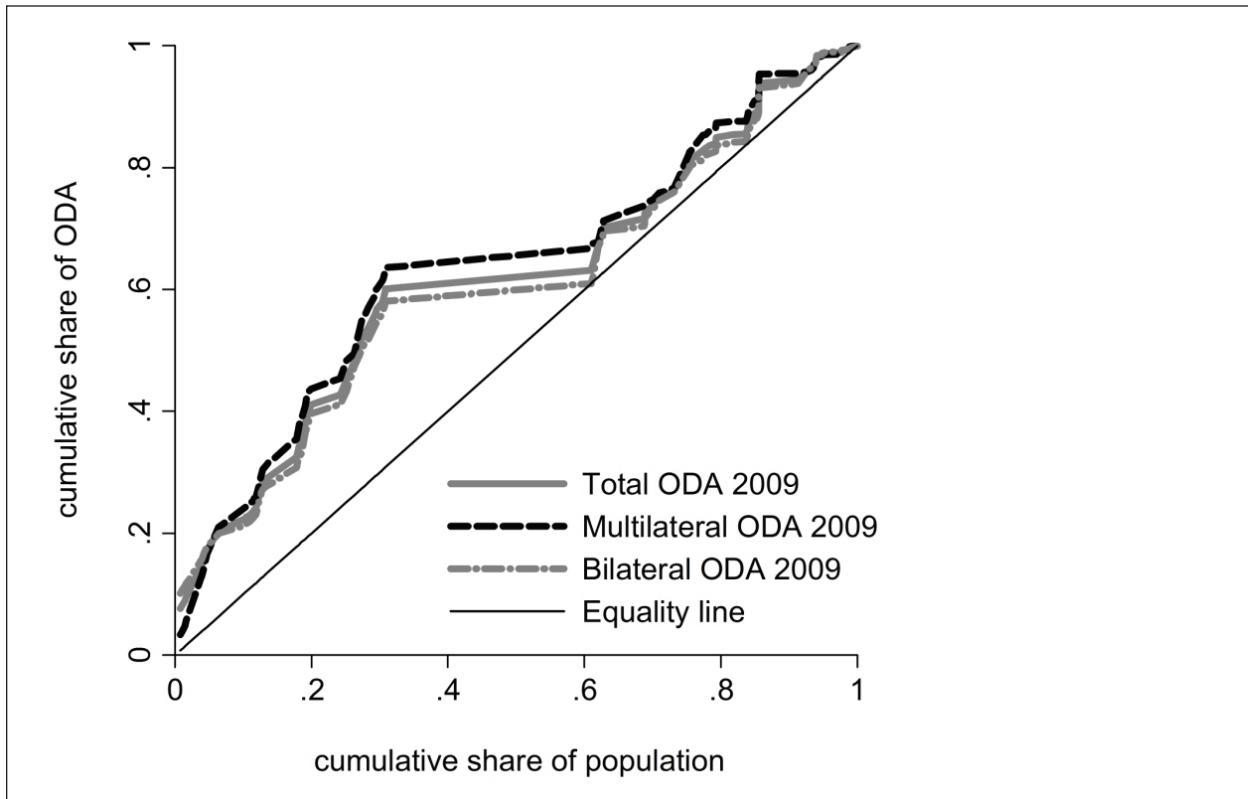
The figures also show that, more than bilateral aid, multilateral ODA tends to be concentrated towards the countries that are further away from the MDG targets. Although multilateral ODA makes up a lower share of total ODA as shown in Figure 1, it is the most MDG-sensitive. As shown in Figure 11, the bilateral ODA concentration curve is much closer to the equality line than the multilateral one. The concentration index for multilateral aid in 2001 was -0.296 and increased to -0.433 in 2009.

**Figure 10: Aid concentration curve – Total ODA in 2001**

*Note:* Countries were ranked in the x axis by their MDG score.

**Figure 11: Aid concentration curves – bilateral and multilateral ODA in 2001**

*Note:* Countries were ranked in the x axis by their MDG score.

**Figure 12: Aid concentration curves – total, bilateral and multilateral ODA in 2009**

*Note:* Countries were ranked in the x axis by their MDG score.

## Conclusion

The motivation to test the MDG-sensitivity of ODA allocation comes from the debate on what determines donors' decision to disburse aid. The official position of donors is that aid is given to ensure poverty reduction and the achievement of the MDGs. Some observers, however, argue that aid allocation, particularly from bilateral sources, is determined by geopolitical interests, colonial relationships and commercial interests. Others argue that ODA should be disbursed to countries with "good" policy conditions, irrespective of development needs.

This paper contributes to the debate by attempting to answer the question: is aid disproportionately allocated to countries that need to make the most progress on the MDGs? To answer this question, we introduced the concept of *MDG score index*. The index ranks countries based on how far they are from achieving the best level of the MDG indicators. The farther a country is from the best level achieved in the sample, the index would suggest that the country needs disproportionately more aid, and vice-versa.

Our methodology involved three approaches – correlation, graphical and concentration analyses. In all three approaches the results indicate that since the Millennium Declaration, ODA allocation has become MDG-sensitive. In other words, ODA is given to countries that need it most. We also find that multilateral aid is more MDG-sensitive than bilateral aid.

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While MDG sensitivity in aid allocation is a positive stride towards meeting the commitments under MDG8, total aid disbursements still fall short of the promised levels. Aid volume globally has been well below the desired level. According to the MDG Gap Task Force Report (UN, 2011), ODA in 2010 was:

“equivalent to 0.32 per cent of the gross national income (GNI) of members of the Development Assistance Committee (DAC). Only five countries provided assistance exceeding the United Nations target level of 0.7 per cent of GNI, and a large gap of \$153 billion remains in actual delivery. Moreover, owing to fiscal constraints in several donor countries, growth of ODA is expected to slow to about 2 per cent per year during 2011-2013, compared to 8 per cent annually over the previous three years (p. xii).”

Overall, trends in aid disbursement are very positive, but scaling-up and fulfilling promises are a far cry from that of promises made under the Global Partnership for Development.

## Appendix A. MDG goals, targets and indicators

<b>Goal 1: Eradicate extreme poverty and hunger</b>
Target 1.A: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day
1.1 Proportion of population below \$1 (PPP) per day
1.2 Poverty gap ratio
1.3 Share of poorest quintile in national consumption
Target 1.B: Achieve full and productive employment and decent work for all, including women and young people
1.4 Growth rate of GDP per person employed
1.5 Employment-to-population ratio
1.6* Proportion of employed people living below \$1 (PPP) per day
1.7 Proportion of own-account and contributing family workers in total employment
Target 1.C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger
1.8 Prevalence of underweight children under-five years of age
1.9 Proportion of population below minimum level of dietary energy consumption
<b>Goal 2: Achieve universal primary education</b>
Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
2.1 Net enrolment ratio in primary education
2.2 Proportion of pupils starting grade 1 who reach last grade of primary
2.3 Literacy rate of 15-24 year-olds, women and men
<b>Goal 3: Promote gender equality and empower women</b>
Target 3.A: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015
3.1 Ratios of girls to boys in primary, secondary and tertiary education
3.2 Share of women in wage employment in the non-agricultural sector
3.3 Proportion of seats held by women in national parliament
<b>Goal 4: Reduce child mortality</b>
Target 4.A: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate
4.1 Under-five mortality rate
4.2 Infant mortality rate
4.3 Proportion of 1 year-old children immunised against measles
<b>Goal 5: Improve maternal health</b>
Target 5.A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio
5.1* Maternal mortality ratio
5.2 Proportion of births attended by skilled health personnel
Target 5.B: Achieve, by 2015, universal access to reproductive health
5.3 Contraceptive prevalence rate
5.4 Adolescent birth rate
5.5 Antenatal care coverage (at least one visit and at least four visits)
5.6 Unmet need for family planning
<b>Goal 6: Combat HIV/AIDS, malaria and other diseases</b>
Target 6.A: Have halted by 2015 and begun to reverse the spread of HIV/AIDS
6.1 HIV prevalence among population aged 15-24 years
6.2 Condom use at last high-risk sex

6.3* Proportion of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS
6.4 Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years
Target 6.B: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it
6.5* Proportion of population with advanced HIV infection with access to antiretroviral drugs
Target 6.C: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
6.6* Incidence and death rates associated with malaria
6.7 Proportion of children under 5 sleeping under insecticide-treated bednets
6.8 Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs
6.9 Incidence, prevalence and death rates associated with tuberculosis
6.10 Proportion of tuberculosis cases detected and cured under directly observed treatment short course
<b>Goal 7: Ensure environmental sustainability</b>
Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
7.1 Proportion of land area covered by forest
7.2* CO2 emissions, total, per capita and per \$1 GDP (PPP) check 703 704
7.3* Consumption of ozone-depleting substances
Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss
7.4* Proportion of fish stocks within safe biological limits
7.5 Proportion of total water resources used
7.6* Proportion of terrestrial and marine areas protected
7.7* Proportion of species threatened with extinction
Target 7.C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation
7.8 Proportion of population using an improved drinking water source
7.9 Proportion of population using an improved sanitation facility
Target 7.D: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers
7.10* Proportion of urban population living in slums
<b>Goal 8: Develop a global partnership for development</b>
Target 8.A: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system
Official development assistance (ODA)
8.1 Net ODA, total and to the least developed countries, as percentage of OECD/DAC donors' gross national income
8.2 Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water and sanitation)
Target 8.B: Address the special needs of the least developed countries
8.3 Proportion of bilateral official development assistance of OECD/DAC donors that is untied
8.4 ODA received in landlocked developing countries as a proportion of their gross national incomes
8.5 ODA received in small island developing States as a proportion of their gross national incomes
8.6 Proportion of total developed country imports (by value and excluding arms) from developing countries and least developed countries, admitted free of duty
Target 8.C: Address the special needs of landlocked developing countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly)
8.7 Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries
8.8* Agricultural support estimate for OECD countries as a percentage of their gross domestic product
8.9* Proportion of ODA provided to help build trade capacity

Target 8.D: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term

8.10 Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points

8.11\* Debt relief committed under HIPC and MDRI Initiatives

8.12\* Debt service as a percentage of exports of goods and services

Target 8.E: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

8.13\* Proportion of population with access to affordable essential drugs on a sustainable basis

Target 8.F: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

8.14 Telephone lines per 100 population

8.15 Cellular subscribers per 100 population

8.16 Internet users per 100 population

*Note:* \* indicates not included in our sample.

*Source:* UN MDGs Monitoring

## Appendix B. MDG score indexes

Countries ranked according to MDG score index

(Countries at the top of the ranking are far from MDG targets and need the most assistance)

	Country	MDG score		Country	MDG score		Country	MDG score
1	Afghanistan	0.216	37	Cameroon	0.495	73	Lebanon	0.682
2	Chad	0.266	38	Kenya	0.496	74	Paraguay	0.690
3	Niger	0.302	39	Benin	0.497	75	Honduras	0.700
4	Sierra Leone	0.330	40	Nepal	0.497	76	Maldives	0.701
5	Ethiopia	0.360	41	Papua New Guinea	0.500	77	Sri Lanka	0.701
6	Central African Rep.	0.377	42	Rwanda	0.504	78	Ecuador	0.704
7	Mali	0.383	43	Congo, Rep.	0.516	79	El Salvador	0.708
8	Burkina Faso	0.388	44	Bhutan	0.519	80	Mongolia	0.712
9	Congo, Dem. Rep.	0.404	45	India	0.524	81	Samoa	0.715
10	Nigeria	0.427	46	Lesotho	0.538	82	West Bank and Gaza	0.717
11	Djibouti	0.430	47	Lao PDR	0.538	83	Saudi Arabia	0.718
12	Angola	0.436	48	Comoros	0.540	84	Brazil	0.721
13	Yemen, Rep.	0.437	49	Iraq	0.549	85	Colombia	0.726
14	Guinea-Bissau	0.438	50	Ghana	0.551	86	Peru	0.733
15	Guinea	0.444	51	Timor-Leste	0.555	87	Fiji	0.736
16	Mozambique	0.444	52	Namibia	0.570	88	Dominican Republic	0.743
17	Mauritania	0.446	53	Gambia, The	0.570	89	Jamaica	0.743
18	Equatorial Guinea	0.449	54	Indonesia	0.601	90	Tunisia	0.744
19	Liberia	0.449	55	Botswana	0.607	91	Jordan	0.745
20	Burundi	0.453	56	Sao Tome & Principe	0.614	92	St. Vincent & the Grenadines	0.750
21	Madagascar	0.457	57	Micronesia, Fed. Sts.	0.616	93	Venezuela, RB	0.760
22	Pakistan	0.458	58	Solomon Islands	0.621	94	Belize	0.763
23	Zambia	0.460	59	Vanuatu	0.634	95	Suriname	0.764
24	Malawi	0.463	60	South Africa	0.638	96	Palau	0.764
25	Cote d'Ivoire	0.466	61	Morocco	0.638	97	St. Kitts and Nevis	0.768
26	Senegal	0.468	62	Egypt, Arab Rep.	0.639	98	Antigua and Barbuda	0.779
27	Togo	0.469	63	Vietnam	0.641	99	Mexico	0.781
28	Swaziland	0.473	64	Cape Verde	0.645	100	Uruguay	0.786
29	Kiribati	0.473	65	Turkey	0.657	101	Guyana	0.788
30	Zimbabwe	0.474	66	Guatemala	0.664	102	Grenada	0.789
31	Bangladesh	0.478	67	Syrian Arab Republic	0.666	103	Argentina	0.793
32	Eritrea	0.482	68	Algeria	0.668	104	Mauritius	0.821
33	Uganda	0.483	69	Nicaragua	0.669	105	Dominica	0.826
34	Sudan	0.491	70	Philippines	0.671	106	Chile	0.829
35	Tanzania	0.492	71	Iran, Islamic Rep.	0.672	107	Seychelles	0.852
36	Cambodia	0.494	72	Bolivia	0.673	108	Malaysia	0.852

Note: Author's calculations.

**Appendix C. Pearson pairwise correlation of aid allocation and MDG score index**

Reference year	all countries		excluding SIDs		excluding Afghanistan	
	ODA (in USD)	ODA (% of GNI)	ODA (in USD)	ODA (% of GNI)	ODA (in USD)	ODA (% of GNI)
Average 2001-09	-0.342***	-0.414***	-0.254*	-0.474***	-0.295***	-0.382***
2001	-0.252***	-0.315***	-0.107	-0.456***	-0.250***	-0.309***
2002	-0.370***	-0.368***	-0.271**	-0.449***	-0.336***	-0.341***
2003	-0.303***	-0.399***	-0.210	-0.424***	-0.274***	-0.377***
2004	-0.353***	-0.441***	-0.265**	-0.479***	-0.305***	-0.404***
2005	-0.162*	-0.366***	-0.1109	-0.413***	-0.144	-0.329***
2006	-0.266***	-0.423***	-0.206*	-0.533***	-0.239**	-0.386***
2007	-0.309***	-0.358***	-0.234**	-0.396***	-0.255***	-0.326***
2008	-0.307***	-0.278***	-0.227**	-0.304***	-0.244**	-0.244**
2009	-0.418***	-	-0.343**	-	-0.347***	-

*Note:* Significant at \*\*\* 1% s.l., \*\*2% s.l. and \*1% s.l..

## Notes

- 1 Note that equation (1) is built for positive indicators, i. e. those where an increase in level is desired (e. g. primary education enrollment rate). For negative indicators, those where a decrease in level is desired, equation 1 is adjusted as:  $S_{indicator} = \left( \frac{max - I}{max - min} \right)$
- 2 Note that the set of indicators that compose the MDG score index depends on country-specific data availability. Unfortunately there is no data available for all countries and all indicators in a single period. We excluded from our analysis indicators for which data was available for only less than 25 countries.
- 3 Although commitments would better reflect the intentions of donors, disbursements allow a better comparison of potential impact and effectiveness of aid on the MDGs indicators.
- 4 Afghanistan, Algeria, Angola, Antigua and Barbuda, Argentina, Bangladesh, Belize, Benin, Bhutan, Bolivia, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Rep. , Chad, Chile, Colombia, Comoros, Democratic Republic of Congo, Republic of Congo, Cote d'Ivoire, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gambia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Honduras, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kenya, Kiribati, Laos, Lebanon, Lesotho, Liberia, Madagascar, Malawi, Malaysia, Maldives, Mali, Mauritania, Mauritius, Mexico, Micronesia, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Palau, Papua New Guinea, Paraguay, Peru, Philippines, Rwanda, Samoa, Sao Tome and Principe, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Solomon Islands, South Africa, Sri Lanka, St. Kitts and Nevis, St. Vincent and Grenadines, Sudan, Suriname, Swaziland, Syria, Tanzania, Timor-Leste, Togo, Tunisia, Turkey, Uganda, Uruguay, Vanuatu, Venezuela, Vietnam, West Bank and Gaza, Yemen, Zambia, Zimbabwe.
- 5 The concentration index is given by twice the area between the aid curve and the equality line.
- 6 See appendix B for a complete list of MDG score indexes.
- 7 Total ODA disbursement values in 2008 constant USD. Source: OECD QWIDS 2011.
- 8 The correlation between the MDGs score index and ODA per capita is not significantly different from zero. Thus, we continue the analysis focusing on ODA as a share of GNI.

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