FONDATION POUR LES ETUDES ET RECHERCHES SUR LE DEVELOPPEMENT INTERNATIONAL

Allocation and Differentiation of the European Official Development Assistance: Simulations from Relevant Criteria

Document préparé à la demande de la Commission Européenne[1]

This version, February 2012

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Elle met en oeuvre avec la Fonddri l'Initiative pour le Développement et la Gouvernance Mondiale (IDGM).

Elle met en œuvre avec l'Iddri et le Cerdi le projet IDGM+ « Laboratoire d'excellence ».

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Focus of the study

The criteria of aid allocation have been strongly debated during the past decade. The debate has been dominated by the issue of the *performance based allocation (PBA)* used by most of the MDBs. As for the European Commission development assistance, the allocation rules and criteria mostly depend on its geographical instruments, as well as on various thematic instruments. As a result there is no synthetic formula from which the overall allocation can be drawn.

Relying on relevant criteria, the simulations prepared in that document had to be differentiated according to each instrument (cf. Table1), and then consolidated in global simulations, assuming that criteria are supposed to be simultaneously relevant for all the three geographical instruments. Simulations presented will be compared with the actual allocations, as they appear from the data communicated to and published by the OECD-DAC.

In a nutshell, the debate about criteria of aid allocation appears to have been the search of a *balance between the needs of the countries and the potential effectiveness of aid*. The PBA gives an overwhelming weight to a subjective assessment of the quality of policy and governance (through a combination of policy and governance components gathered in specific clusters) and a quite small weight to the income per capita. It has been criticized because this assessment corresponds neither to a genuine measure of performance, nor to a robust factor of aid effectiveness. Above all it does not adequately take into consideration the real needs of the countries, in particular those resulting from the structural handicaps they face for their development. More and more often, authoritative opinions have been expressed to consider that *the weakness of policy and governance should be addressed through the aid modalities rather than through the aid allocation*.

Consequently, we propose to introduce two additional criteria beside of the traditional indicators of the so-called performance based allocation, in order to better taking into account the needs of the countries and enhancing the impact of European aid. These two criteria are *the low level of human capital* and *the structural economic vulnerability* of the countries. This set of criteria allows us to adequately take into account the needs of the countries, their capacities and the potential impact of European aid, as requested by the terms of reference of the study.

- The country *needs* are reflected not only by a low level of income per capita, but also by a low level of human capital and by the structural vulnerability , two structural handicaps to

growth, to be taken into account for equity reasons (if equity means more equal opportunities) .

- The *capacities* to mobilize other sources of finance (domestic and external) depend again on the income per capita and the level of human per capita, and also to some extent on a low level of vulnerability (since vulnerability is a risk factor). Moreover the income per capita can be considered as a better proxy of the present natural resources than sectoral and partial indicators of natural resources, unavoidably debatable.
- The potential *EU impact* not only and possibly depends on the quality of policy and governance of the recipient countries, but also on their structural vulnerability: indeed it has been evidenced that the marginal effectiveness of aid is higher in vulnerable countries, because, by its stabilizing impact, aid lowers the negative effects of exogeneous shocks then enhances private capital inflows. At the same time taking into account the structural economic vulnerability is a way by which the EU may have a specific impact on the recipients' development.

Limiting the number of criteria to a small number of clear and relevant indicators such as those proposed above permits to have *a transparent approach* to allocation, contrary to the present practice of the European Commission.

A last point should be underlined. The weight given to the assessment of policy and governance, as well as to the other criteria, can be easily modified in the proposed formula and thus becomes a clear political choice.

Methodology

Contrary to the actual settings of the methodologies developed, for example, by the World Bank or the African Development Bank, which only includes the GNI per capita (*GNIpc*), the population (*Pop*) and, with a major weight, an indicator of governance's quality, we add two more variables that take into account the structural handicaps faced by the recipient countries, the structural economic vulnerability and the low level of human capital. Those two handicaps are measured by the Economic Vulnerability Index and the Human Asset Index, both used at the UN for the identification of the Least Developed Countries. EVI is a composite indicator of seven components, three related to the size of the recurrent exogenous shocks, either natural or external, and four related to the exposure to these shocks.[2] HAI is a composite index of health and education components[3]. It should be mentioned that the individual Country Policy and Institutional Assessment Index (CPIA)[4], used by the World Bank as well as the African Development Bank in their respective formula as a measurement of the countries' performance, are not available for all our countries, staying confidential for a part of

[2] The components are the instability of exports of goods and services, the instability of agricultural production and the homelessness due to natural disasters for the shock components, the smallness of population (log) number, the remoteness from word markets, the export concentration and the share of agriculture, fisheries and forestry in GDP for the exposure to shock components (Guillaumont 2009).

[3] The components of HAI are four indices respectively related to child survival, percentage of population undernourished, literacy rate and secondary enrolment ratio.

[4] The CPIA (Country Policy and Institutional Assessment Index) is composed of sixteen indicators grouped into four categories: A) macroeconomic management, B) structural policies, C) social policies and finally D) public sector management and institutions, the latter referring to the concept of governance.

them. So, in this study, and for the sake of transparency, we use the average of the six governance criteria (denoted *KKM*) from Kaufman *et al.* (2010) retrieved from the World Governance Indicator database of the World Bank.

Even if we run a large number of simulations relying on alternative formula and parameters (results upon request), we choose to present here the results obtained from one of the most intuitive or at least simplest formula. The weighted average of the criteria is geometric. With this kind of formula, whereas the computed partial derivatives are not simple to interpret, the returns to scale given by the elasticities are very easy to analyze. Another possibility would have been to use an arithmetic average. Simulation results obtained with this alternative formula are displayed in appendix.

In a first step, the retained formula is the following:

$$S1: KKM * EVI * LHAI * LGNIpc * Pop^{0.8}$$

The suffix "L" before *HAI* and *GNIpc* indicates "Low" *HAI* and *GNIpc*. In order to always keep positive exponents in the formula we transform these two variables so that they influence positively the allocation[5]. The individual scores obtained for each country represent their share in the global aid pool. We choose an exponent of 0.8 for the population in order to prevent the largest countries to attract too much assistance at the expense of the smallest states[6].

The numerical experiment presented below relies on data collected by the OECD-DAC. In the Tables 2 and 3, we compare respectively the average official disbursements and commitments over the period 2007-2009 with their simulated values obtained with formula S1. The columns "Overall" present the results obtained by considering all the 143 countries depending from the three geographical instruments (EDF, DCI and ENPI, see Table 1 below) in the same framework. The other columns present the results for each instruments treated separately.

[5] KKM, EVI, HAI and GNIpc were calibrated in order to range between one and six using the min-max transformation methodology. Hence, values close to one represent respectively relatively low governance and economic vulnerability and relatively high human capital and GNI per capita.

[6] China and India are treated in a separate fashion. Considering their characteristics, those two countries would have attracted too much aid. For our simulations, we simply impose that they received the official amount of aid as reported by the DAC. For that reason, we do observe some slight variations in the percentages between tables one and two.

Table 1: Geographic instruments

Funding Instrument	Geographical zone	Number of countries covered
European Development Fund (EDF)	African, Caribbean and Pacific (ACP) countries and the overseas territories of EU Member States	79
Development Co-operation Instrument (DCI)	Latin America, Asia and Central Asia, and the Gulf region and South Africa.	47
European Neighbourhood and Partnership Instrument (ENPI)	Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, the Palestinian Authority, Russia, Syria, Tunisia and Ukraine	17

Source: EUROPEAID

Results by categories of country

Compared both to the actual disbursements and to the actual commitments, those results show that using a basic formula as simple as the one selected for this study allows us to roughly replicate the global pattern of the allocation of European Aid across income groups while putting more focus on the poorest and the most vulnerable countries, such as the LDCs (see tables 2 and 3). Nevertheless, at the country level, we sometimes observe large gaps between actual allocations and the simulated results. On one hand, this particular result is desirable as this approach, by introducing in the formula new criteria that may not have been taken into account by the actual allocation, allows us to better take into account the needs and the capacities of the countries. On the other hand, by disturbing the actual allocation, it makes it difficult from the institutional point of view to implement such a change.

Table 2: European official development assistance, *disbursements* (as collected by OECD - DAC) compared to the simulated allocations, by geographical instruments and income group (data averaged over the period 2007-2009).

	Overall		EDF		DCI		ENPI	
	Official	Simulated	Official	Simulated	Official	Simulated	Official	Simulated
LDC	52,48%	54,78%	73,11%	78,42%	34,25%	37,07%	0,00%	0,00%
LIC	49,86%	52,86%	68,10%	78,05%	36,00%	33,39%	0,00%	0,00%
LMIC	37,13%	41,05%	19,64%	20,23%	51,37%	63,83%	83,47%	81,53%
UMIC	12,80%	6,05%	11,92%	1,63%	12,63%	2,78%	16,53%	18,47%
HIC	0,21%	0,04%	0,35%	0,09%	0,00%	0,00%	0,00%	0,00%

Source of official data: OECD – DAC

Table 3: European official development assistance, *commitments* (as collected by OECD - DAC) compared to the simulated allocations, by geographical instruments and income group (data averaged over the period 2007-2009)

	Overall		EDF		DCI		ENPI	
	Official	Simulated	Official	Simulated	Official	Simulated	Official	Simulated
LDC	54,53%	54,76%	74,87%	78,42%	31,50%	36,51%	0,00%	0,00%
LIC	53,82%	52,84%	73,55%	78,05%	32,14%	32,89%	0,00%	0,00%
LMIC	34,99%	41,07%	16,28%	20,23%	57,02%	64,37%	83,96%	81,53%
UMIC	10,87%	6,04%	9,66%	1,63%	10,84%	2,73%	16,04%	18,47%
HIC	0,33%	0,04%	0,51%	0,09%	0,00%	0,00%	0,00%	0,00%

Source of official data: OECD – DAC

Discussion of the first simulations

Why are the country simulated allocations so different for some countries?

In order to investigate further on the determinants of the observed differences at the country level between the actual allocation and the simulated results, we test to what extent the current allocation is related to the five indicators used in the formula. To do so, we run simple econometric regressions of the following form:

$$\ln(Aid) = \alpha + \beta_1 \ln(Population) + \beta_2 \ln(GNIpc) + \beta_3 \ln(KKM) + \beta_4 \ln(EVI) + \beta_5 \ln(LHAI) + \varepsilon_i$$

We use alternatively disbursements and commitments and estimate this equation with Ordinary Least Squares (OLS). Results are displayed in the next table.

Table 4: Empirical determinants of European Commission official development assistance, *disbursements* and *commitments* (as collected by OECD – DAC, data averaged over the period 2007-2009).

	Disbursements				Commitments			
	(1) Global	(2) EDF	(3) DCI	(4) ENPI	(5) Global	(6) EDF	(7) DCI	(8) ENPI
Population	0.317	0.680	0.160	0.111	0.273	0.580	0.299	0.091
	(0.075)***	(0.076)***	(0.148)	(0.593)	(0.066)***	(0.071)***	(0.171)*	(0.360)
GNI per capita	-0.390	-0.100	-0.764	-0.916	-0.517	-0.344	-0.655	-0.652
	(0.127)***	(0.114)	(0.239)***	(0.689)	(0.125)***	(0.100)***	(0.276)**	(0.448)
Governance (KKM)	0.362	0.672	-0.575	2.008	0.323	0.943	-1.467	2.447
	(0.345)	(0.222)***	(0.723)	(2.159)	(0.381)	(0.245)***	(1.114)	(1.479)
EVI	-0.337	0.259	-1.073	-1.497	-0.308	0.038	-0.640	-0.633
	(0.432)	(0.347)	(0.905)	(1.711)	(0.413)	(0.319)	(1.019)	(1.037)
Low HAI	0.230	-0.051	-0.171	0.505	0.125	-0.123	-0.403	0.416
	(0.128)*	(0.169)	(0.251)	(0.401)	(0.150)	(0.125)	(0.451)	(0.268)
Constant	6.084	2.218	13.297	13.790	7.432	5.159	11.555	8.899
	(2.451)**	(1.838)	(5.581)**	(7.888)	(2.351)***	(1.598)***	(6.319)*	(4.745)
Observations	122	69	41	12	122	69	41	12
R-squared	0.51	0.82	0.44	0.66	0.41	0.80	0.36	0.74

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

From columns (1) and (5) in Table 4 using the whole sample of countries, it appears clearly that the main source of difference between the current and simulated allocations is related to the elasticity with respect to the population size. In the presented simulations, this value is set to 0.8 while it appears that the current elasticity is closer to 0.3 on average. From the other columns, we see that this elasticity differs between the various instruments, ranging from 0.68 (0.58) for the EDF instrument to 0.11 (0.09) for the ENPI if we consider disbursements (commitments).

Another interesting result is that EVI and LHAI are never significant determinants of aid allocation at the instrument level. Governance (proxied by the KKM index) is only significant for the EDF instrument.

From those simple regressions, it is quite clear that the allocation criteria currently used are different from the ones we are implementing in our formula. This observation explains, in great part, the country-level variations between our simulated allocations and the actual OECD-DAC data. Hence, to more closely replicate the current allocation it is required to lower the coefficient related to population.

Alternative simulations with a lower population exponent

We test this hypothesis using the following revised formula with a population exponent of 0.5

$$S1bis: KKM * EVI * LHAI * LGNIpc * Pop^{0.5}$$

Table 5: European official development assistance, *disbursements* (as collected by OECD - DAC) compared to the simulated allocations (geometric formula with an exponent relative to population of 0.5), by geographical instruments and income group (data averaged over the period 2007-2009).

	Overall		EDF		DCI		ENPI	
	Official	Simulated	Official	Simulated	Official	Simulated	Official	Simulated
LDC	52,48%	59,93%	73,11%	78,32%	34,25%	27,76%	0,00%	0,00%
LIC	49,86%	56,86%	68,10%	74,42%	36,00%	26,08%	0,00%	0,00%
LMIC	37,13%	36,77%	19,64%	22,30%	51,37%	61,72%	83,47%	84,93%
UMIC	12,80%	6,17%	11,92%	3,06%	12,63%	12,01%	16,53%	15,07%
HIC	0,21%	0,20%	0,35%	0,21%	0,00%	0,18%	0,00%	0,00%

Source of official data: OECD – DAC

Table 6: European official development assistance, *commitments* (as collected by OECD - DAC) compared to the simulated allocations (geometric formula with an exponent relative to population of 0.5), by geographical instruments and income group (data averaged over the period 2007-2009)

	Overall		EDF		DCI		ENPI	
	Official	Simulated	Official	Simulated	Official	Simulated	Official	Simulated
LDC	54,53%	59,92%	74,87%	78,32%	31,50%	27,35%	0,00%	0,00%
LIC	53,82%	56,85%	73,55%	74,42%	32,14%	25,69%	0,00%	0,00%
LMIC	34,99%	36,79%	16,28%	22,30%	57,02%	62,30%	83,96%	84,93%
UMIC	10,87%	6,17%	9,66%	3,06%	10,84%	11,83%	16,04%	15,07%
HIC	0,33%	0,20%	0,51%	0,21%	0,00%	0,18%	0,00%	0,00%

Source of official data: OECD – DAC

In table 5 and 6, we show that the share of aid allocated to low income countries and least developed countries increases with this new set of weights. Looking at the amount of aid allocated by income group that this new formula reproduces grossly the pattern of the actual allocation, as it was already the case with the initial formula (S1). Furthermore, we still find large differences between actual and simulated allocations for some individual countries.

Concluding remarks

The implementation of a simple formula raises many issues of political economy. As development levels across aid receiving countries are really different, heterogeneity is clearly an issue. The rationale of including emerging economies in the pool of aid receiving countries has to be discussed. Dealing with those countries by designing, for instance, new instruments or new partnerships may be an appropriate approach. Nevertheless, in our view, a well-designed integrated approach is preferable as it will prevent threshold effects. We show in this document that a simple formula can be used to broadly reproduce the actual allocation of aid across income groups, under the condition that the exponent relative to population is adjusted.

Nevertheless, for some individual countries, the simulated allocation is lower than their actual share of resources. While this result may be ultimately desirable as the needs of those countries are better taken into account with this formula, in order to avoid immediate losses at the country level three solutions could be implemented.

First, it could be possible to mobilize more resources to prevent any countries to see its allocation reduced. We computed from the simulations that a surplus of aid of 23 to 25 percent would be required.

Second, the weights of the formula could be specifically chosen to minimize the losses. Indeed, the equality of weight of each criterion chosen for the simulations presented here can evidently be deleted. The question would be to find the correct balance between the effectiveness of the allocation and its political feasibility.

Third, to minimize the losses, it is also possible to use specific weights for each geographic instrument, in order to take into account the particular common features of those different sets of countries, and to reflect specific objectives of the European aid to each set.

Finally, the question of the transition from the actual practice to the use of a systematic formula would most likely require a period of discretionary adjustment. Even if the status of the fragile countries is well taken into account in this framework, in extreme cases, exceptional allocations could be used.

Appendix

The geometric average is preferable to the arithmetic average

The weighted average of the criteria can be arithmetic or geometric. Currently, the practice in most MDB's is to rely on a geometric approach. As previously shown, this methodology allows us to produce satisfactory results in our simulations. Even simpler is the arithmetic formula of the following form: $(\beta_1 * KKM_i + \beta_2 * EVI_i + \beta_3 * LHAI_i + \beta_4 * LGNIpc_i) * {P_i}^{\alpha}$

With this approach, the marginal contribution of each criterion is constant and independent of the level of the other criteria, while the elasticities are not. Such a property is very interesting as it can be argued that the marginal contribution is more understandable for stakeholders. Nevertheless, the choice between the two of course is not only a matter of simplicity. In our simulations, we use a set of weights that gives an equal weight to each of the four components (Formula S2). The corresponding simulations are then easily comparable with the results shown in Table 2 and 3. We have also considered that a fair or well-balanced set of weights would be to weight equally the quality of policy, the structural vulnerability and the poverty level (Formula S2bis). Furthermore, we still retain an exponent of 0.8 with respect to population in both formulas. The considered formulas are the following:

$$S2: (0.25 * KKM_i + 0.25 * EVI_i + 0.25 * LHAI_i + 0.25 * LGNIpc_i) * {P_i}^{0.8}$$

$$S2bis: (0.33 * KKM_i + 0.33 * EVI_i + 0.16 * LHAI_i + 0.16 * LGNIpc_i) * {P_i}^{0.8}$$

As displays in the following table, results are very different from our initial simulations. Using such formulas decrease the share of both commitments and disbursements received by LDC's and more generally by low income countries. On the other hand, middle income countries (lower and upper alike) share in total resources increases sharply. This result holds for each instrument taken individually and also with alternative sets of weights. Looking at the country level, it appears, using this formula that large countries notably G20 developing countries receive more aid in these simulations than in the official data due to the larger weight given to population. In light of those results, it appears that the geometric formula produces preferable results.

Table 3: European Commission official development assistance, *disbursements* and *commitments* (as collected by OECD - DAC) compared to the simulated allocations using the formula S2 and S2 bis (data averaged over the period 2007-2009).

	Formula S2				Formula S2bis			
	Overall Disbursements		Overall Commitments		Overall Disbursements		Overall Commitments	
	Official	Simulated	Official	Simulated	Official	Simulated	Official	Simulated
LDC	52,48%	36,70%	54,53%	36,69%	52,48%	35,18%	52,48%	35,17%
LIC	49,86%	35,78%	53,82%	35,76%	49,86%	34,27%	49,86%	34,26%
LMIC	37,13%	46,07%	34,99%	46,09%	37,13%	45,28%	37,13%	45,30%
UMIC	12,80%	17,85%	10,87%	17,84%	12,80%	20,09%	12,80%	20,09%
HIC	0,21%	0,30%	0,33%	0,30%	0,21%	0,36%	0,21%	0,36%

Source of official data: OECD – DAC