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Working Paper

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WIDER Working Paper, No. 2012/54

Provided in Cooperation with:

United Nations University (UNU), World Institute for Development Economics Research (WIDER)

Suggested Citation: Bourguignon, François; Platteau, Jean-Philippe (2012) : Does aid availability affect effectiveness in reducing poverty?, WIDER Working Paper, No. 2012/54, ISBN 978-92-9230-517-8, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki

This Version is available at:

<https://hdl.handle.net/10419/81000>

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World Institute for Development
Economics Research

Working Paper No. 2012/54

Does Aid Availability Affect Effectiveness in Reducing Poverty?

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Jean-Philippe Platteau²

May 2012

Abstract

This paper addresses the issue of the impact of aid supply on aid effectiveness. We proceed in two steps. First, we review research works that deal with the problem of governance in donor-recipient relationships and are susceptible of highlighting effects of aggregate aid availability. Second, we provide a conceptual framework that explicitly incorporates a trade-off between considerations of needs and governance. We examine the impact of aid supply on the manner in which a donor agency allocates the available money between countries differing in terms of both needs and domestic governance. The central conclusion is that a donor's utility function that embodies the need-governance trade-off and the associated optimization mechanism yield a meaningful rule to guide inter-country allocation of aid resources.

Keywords: aid effectiveness, aid allocation, governance, elite capture, monitoring
JEL classification: O11, O17, O19, O43

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This working paper has been prepared within the UNU-WIDER project 'Foreign Aid: Research and Communication (ReCom)', directed by Tony Addison and Finn Tarp. UNU-WIDER gratefully acknowledges specific programme contributions from the governments of Denmark (Ministry of Foreign Affairs, Danida) and Sweden (Swedish International Development Cooperation Agency—Sida) for the Research and Communication (ReCom) programme. UNU-WIDER also acknowledges core financial support to UNU-WIDER's work programme from the governments of Finland (Ministry for Foreign Affairs), the United Kingdom (Department for International Development), and the governments of Denmark and Sweden.

ISSN 1798-7237

ISBN 978-92-9230-517-8

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Typescript prepared by the Authors.

The views expressed in this publication are those of the author(s). Publication does not imply endorsement by the Institute or the United Nations University, nor by the programme/project sponsors, of any of the views expressed.

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1 Introduction

In contrast to the mass of empirical papers dealing with various aspects of development aid, there is a surprisingly narrow body of theoretical literature devoted to the joint question of aid effectiveness and allocation of available funds by donors. If we leave aside the research pieces that use a macroeconomic framework (see Azam and Laffont, 2003, for a useful survey), we find that this limited literature is focused on agency problems. One particular issue that has received scant attention so far is the impact of aid supply, or the volume of aid, on aid effectiveness. Such an issue has become especially critical nowadays since the donor community puts emphasis on the twin needs to increase aid to poor countries (see the objectives of the Millennium Development Goals, launched by the United Nations) and to enhance aid effectiveness. The two objectives are obviously interdependent since donor agencies are unable to mobilize more money for development aid unless they persuade the taxpayers or voluntary contributors that the funds are put to good uses and, in particular, reach the poor effectively. It is therefore important to look at the way aid effectiveness is affected by aid availability.

The problem is far from trivial because the most needy countries tend to also be the worst governed: there is at least a significant (inverse) correlation, if not causal relationship, between governance and poverty (Collier, 2007, Chap. 5). There are then three conceivable answers to the above question. The first line of argument is based on the normative principle that aid ought to accrue in priority to the neediest. Thus, Liberia receives an amount of aid that exceeds its national budget although it is considered the most corrupt country in the world according to the ranking of Transparency International (Economist, 2011). This is the path suggested by Thirlwall (2011) when he proposes that aid assistance be distributed on a per capita basis according to some target level of per capita income, a principle “which would operate rather like an international negative income tax” (p. 476). He rapidly glosses over the governance problem

by pointing out that “all this would be conditional, of course, on the new guiding principle of good governance”.

The second line takes the governance problem seriously and adheres to the view that primary attention should be given to potential beneficiaries with the best governance record. An extreme version of this view is the principle of “zero tolerance for corruption”. Finally, the third line allows explicitly for a trade-off between needs and governance. It therefore addresses upfront the issue escaped in Collier and Dollar’s (2002) statement that “to maximize the reduction in poverty, aid should be allocated to countries that have large amounts of poverty and good policy” (p. 1482).

Depending on the normative approach chosen, the effect of aid supply on aid effectiveness differs if we measure aid effectiveness by the proportion of the aid flow that actually reaches the poor and therefore helps to improve their welfare. When the volume of aid is increased, the additional amounts available may accrue to better, or worse governed countries (or regions, or communities), and it may therefore be useful to distinguish between average and marginal aid effectiveness. Marginal aid effectiveness then measures the proportion of the additional amount of aid available that effectively reaches the poor (which increases in the first case and decreases in the second case) whereas average aid effectiveness measures the proportion of the aggregate aid amount that reaches the poor.

A direct implication of the needs-based approach is that more aid will cause the marginal (and average) effectiveness of aid to rise: the donor community begins by serving the needs of the poorest but also worse governed potential beneficiaries and, as more aid becomes available, it gradually shifts its efforts towards less poor but also better governed beneficiaries. In contrast, the governance-based approach leads to the opposite implication: since priority is given to the better governed countries, the marginal (and average) effectiveness of aid falls as the aid amount grows bigger (unless, of course, this approach denies aid to all countries below a certain threshold of good governance, as the view of ‘zero tolerance for corruption’ would imply). The need-based approach thus implies that the first units of aid money have a low impact on poverty reduction in the sense that the poorest are reached but in low numbers. Therefore, a relatively large quantity of aid is required to reach them all, before attention can be shifted to less needy people. By contrast, the governance-based approach implies that not-so-poor people are helped yet in comparatively large numbers. The amount of aid required to remove poverty among them is relatively modest.

Donors may be interested in aid outreach rather than aid effectiveness as measured above. How many poor people, however defined, can be reached by aid efforts is then their central concern. Finally, they may be concerned with the extent of poverty reduction or the poor’s welfare. When the volume of aid is constant, the latter criterion is obviously equivalent to that of aid effectiveness: when aid is more effective, the absolute amount of money accruing to the poor increases (while aid outreach may improve or not). When the volume of aid is varied, the equivalence is no more guaranteed. If the poor obtain a lower share of a larger total fund or a higher share of a reduced fund, it is not possible

to say a priori whether the poor's welfare moves in the same direction as aid effectiveness.

The aim of the present paper is to probe further into the relationship between aid availability, on the one hand, and aid effectiveness, aid outreach, and the poor's welfare, on the other hand. Special emphasis is put on the trade-off approach under which the effect of aid availability is hard to elucidate without the support of a formal framework. Before embarking upon this central task, it is nevertheless useful to deepen our understanding of the analytics of the governance-based approach and its implications in terms of the effects of aid availability on aid effectiveness, aid outreach, and poverty reduction. This is done, in Section 2, by reviewing significant pieces of research that use a one-donor-one-beneficiary or a one-donor-multiple-beneficiaries framework. Section 3 then looks at the issue of aid allocation with multiple recipient countries when the donor's utility function balances needs against governance considerations. The first approach we review assumes the existence of random shocks that make reform efforts of recipient countries non-observable (SubSection 3.1). Thereafter, we look at papers that explicitly model the donor's allocation choice between countries that differ ex ante in terms of governance quality (SubSection 3.2). In a first step, we consider models that assume the quality of domestic governance as exogenous and, in a second step, we examine an effort to address the problem of aid allocation when the donor is able or willing to influence the outcome of governance by adding external to internal discipline of the national elites. In Section 4, we summarize the main results of our survey, and discuss their policy implications.

The central lesson that emerges from the review is the following: a utility function for the donor that embodies the need-governance trade-off, such as the one proposed by Bourguignon/Platteau, and the associated optimization mechanism yield a meaningful rule to guide inter-country allocation of aid resources. This rule does not present the problems inherent in rules emphasizing aid effectiveness at the expense of considerations of needs, or rules focusing on poverty reduction regardless of aid embezzlement or misuse. At the heart of the new approach to optimal aid allocation lies the concept of need-adjusted aid effectiveness which is a combined measure of the needs and governance quality in a country.

2 The governance-based approach

2.1 Optimal aid contracting with multiple countries of unknown (governance) type

In the pioneer paper by Azam and Laffont (2003), the authors look for the optimal aid contract that will best mitigate the moral hazard problem arising from the presence of an intermediary whose actions are imperfectly observed. Some form of conditionality needs to be applied to moderate the effects of opportunism by local elites or governments. The optimal contract specifies

that the recipient government will receive an aid amount (which is endogenous) linearly dependent on the level of consumption of the poor that it provides. This obviously implies that aid must just be disbursed only after observing the consumption of the poor (p. 52).

Azam and Laffont also consider the problem of inter-country allocation of aid. More precisely, assuming that the donor is imperfectly informed about the recipient government's concern for the poor, they ask the question as to how the optimal aid contract must be altered to take into account the strategic behaviour of the government about its private information. What they show is that the donor will surmount this adverse selection problem by denying aid to governments of countries which have too low a level of altruism (or poverty aversion), so as to decrease the information rents accruing to the local rich. To put it in another way, the donor should help countries "which have a high enough quality of governance" (p. 40), and which also turn out to be those where the poor have the highest consumption level. In more technical terms, the incentive compatibility constraint requires the donor to give a costly rent to 'good' governments in order to deter them from pretending that they are 'bad'.¹ Such a rent therefore measures the cost to the donor of its ignorance about the recipients' altruism. In the presence of a participation constraint on the side of the donor (the donor country also cares for the consumption of its own citizens, and these citizens will provide aid only if it increases their welfare thanks to their altruistic preferences), it would be too costly to provide the right incentives to 'good governments' if aid also has to be supplied to 'bad governments' (pp. 30, 43).²

It bears emphasis, however, that Azam and Laffont do not really address the issue of inter-country allocation of aid resources. They actually assume that their own-country model can be extended to several countries, which is not a fully satisfactory approach. It is, therefore, in a limited sense that they can talk about country selection by the donor. In particular, their analytical framework does not allow them to consider recipient countries which differ in wealth or income. Moreover, owing to the restrictive assumption regarding the utility functions for both the donor and the recipient countries -the functions being quasi-linear, no wealth effect can exist-, it is impossible to derive any meaningful implication of Azam-Laffont model for our problem of the effect of aid availability on aid effectiveness or outreach. It is nevertheless easy to imagine what would happen if incomes were higher in the donor country provided that the marginal utility of own consumption is decreasing yet not the marginal utility of the public good represented by the consumption of the poor in the recipient countries. In these conditions, as income rises in the donor country, its government would presumably decide to lower the threshold of good gover-

¹In the Azam-Laffont framework, the aid contract is equivalent to a truthful revelation mechanism: it associates with each announcement of governance quality level (as reflected in the poverty aversion parameter) by the elite or government of the recipient country a level of aid and a required consumption level of the poor.

²Since there is competition between people in the donor's country and the poor in developing countries for the available money, the amount of aid is endogenous.

nance that makes poor countries eligible for development assistance. We thus reach the conclusion mentioned in Section 1, namely that marginal aid effectiveness decreases as availability of aid resources increases. Whether aid outreach improves cannot be determined.

A similar conclusion is also reached when two alternative setups focusing on governance problems are used. In the first of these set-ups, proposed by Wahhaj (2008), attention is again drawn to the issue of adverse selection of local leaders or elite, yet there is now an explicit recognition of the impact of the aid amount available on effectiveness. The aid amount plays a role through project size which bears upon the incentive of the leaders to exert more or less effort (to steal more or less of the aid money) in the context of the development project. In the second setup, due to Gaspart and Platteau (2012), there is no selection issue and the focus is entirely on the moral hazard problem created by the opportunistic and non-observable behaviour of the leader. Again, the effect of aid supply on effectiveness is explicitly brought out and even constitutes the central aim of the whole exercise. But, in this second alternative set-up, the aid fund is measured at the aggregate level (through the cost of access to financial resources for aid agencies) and, therefore, it is the impact of general abundance or scarcity of aid funds that is considered. In the first alternative set-up, what is measured is the influence of the aid amount at project level, which needs not bear any relation to the global aid fund available. In other words, whereas in the first attempt attention is paid to the way aid agencies ought to distribute the available aid resources, in the second attempt attention is turned to the welfare effects of the total amount available for development assistance.

After having highlighted their differences, let us now review the two above approaches in more detail so as to gain a better grasp of the underlying mechanisms.

2.2 A general framework with multiple potential leaders of unknown (governance) type

We start by writing the welfare function of a local government, whether national, regional or municipal, or the welfare function of the local elite through which the aid funds are channelled. We assume that the local leader or elite cares about his own personal rewards as well as the benefits that accrue to his community (the nation, a region, a municipality, or a rural community). The most natural way to represent this preference is by using an altruistic function in which a unitary weight is attached to the personal utility obtained by the leader, and a smaller weight, say α , to the welfare of the community ($\alpha < 1$). In the literature, such a utility function is sometimes referred to as “paternalistic altruism” (Azam and Laffont, 2003), or considered to reflect a “traditional aristocratic governance structure” (Foster and Rosenzweig, 2002). One possible way to justify this approach is by conceiving of the coefficient of altruism as describing aversion to poverty.

On the other hand, following Wahhaj (2008), we consider that the leader chooses the quality of the input which he is ready to put into the aid develop-

ment project. Higher values of this input lead to an improved welfare of the community yet is costly for the leader. The input in question can be thought of as a level of effort produced by the leader, or as the amount of embezzlement of the aid funds that he chooses to commit. In the latter case, a low value of the leader's input is associated with a higher level of fraud. Whichever the interpretation, the leader's utility function is written thus:

$$V = u(w, x) + \alpha W(y, x)$$

where w is the wage received by the leader from the aid agency if he is hired, x is the quality level of his input into the community development project, and y the amount of money allocated for this project. Clearly, the first component of this utility function represents the direct utility of the leader whereas the second component reflects the welfare of the community to the extent that he takes it into account. $u(\cdot)$ and $W(\cdot)$ are increasing and concave in w and y , respectively. Moreover, while $u(\cdot)$ is decreasing in x , $W(\cdot)$ is increasing.

Imagine that there exist leaders of different types corresponding to the coefficient of altruism or poverty aversion. Finally, each leader has an outside option denoted by \bar{u} , such that he would be willing to participate in a development project only if his own utility exceeds \bar{u} . The problem of a leader of type i is therefore to choose his input quality level, x , so as to maximize his utility $V_i = u(w, x_i) + \alpha_i W(y, x_i)$. As for the aid agency, it seeks to maximize its own utility function which corresponds to that of the community, $W(\cdot)$. towards that purpose, it chooses the values of the decision variables w and y , the wage paid to the leader and the size of the project. In doing so, it is nevertheless constrained by the participation constraint of the leader, $V_i \geq \bar{u}$.

The key point is that there is a critical value of α , called $\hat{\alpha}$ for which the leader is just indifferent between choosing a project defined by the parameters w and y , and his outside option \bar{u} . Denoting the optimal value of the level of effort (fraud) chosen by the leader as x^* , we can thus write:

$$u(w, x^*) + \hat{\alpha}W(y, x^*) = \bar{u}$$

If $\alpha_i < \hat{\alpha}$, the leader of type i will refuse to participate in the project and prefer his outside option whereas if $\alpha_i > \hat{\alpha}$ he will make the opposite choice. This follows from the fact that the leader's utility is found to be increasing in α , once he has made his optimal choice of the level of input, x . It is also increasing in the size of the project, y , and in the wage received from the aid agency, w . The positive relationship between the leader's utility and the size of the project is obtained despite the fact that the leader decreases his effort (or increases his embezzlement) as the project aid fund becomes larger. On the contrary, the leader increases his effort (or decreases his embezzlement) when the wage or his poverty aversion is higher.³ On the other hand, the welfare of the community

³These results -the optimal input level chosen by the leader is increasing in w and α , and decreasing in y - rely on the assumption that the leader is more willing to exert effort when he is paid a higher wage, and that project funds and the leader's effort are substitutes in the utility that the community derives from the project. In formal terms these are conditions on the cross derivatives: $u_{wx} > 0, W_{yx} < 0$.

increases with w , y , and α (see Wahhaj, 2008, for details).

From the above results, we may immediately infer that the threshold $\hat{\alpha}$ varies inversely with both w and y . In words, the critical level of poverty aversion above which a potential leader is willing to engage in the project is lowered as the wage paid to the leader is higher or the size of the project fund larger.

To understand the intuition behind the second result, we must just bear in mind that a larger size of the project increases the welfare of the community while the leader's reduced effort has the opposite effect. The first effect nevertheless outweighs the second so that the community's utility increases. Since it enters positively into the leader's own utility and the leader directly benefits from a lower effort level (or a larger embezzlement), his utility also increases. Regarding the first result, a higher wage induces the leader to apply a greater amount of effort (or to embezzle less money), which benefits the community. The leader's utility therefore increases on two counts –he receives a higher 'wage' and he values positively the enhanced welfare of the community–, and it decreases on one count –he applies more effort. Yet, the two positive effects dominate the negative one. Leaders with lower levels of poverty aversion are therefore incited to participate in the aid project after an increase in the project size or in their wage.

In real world situations, the leader's effort (or extent of fraud) and his type α_i are typically not observable by the aid agency. Under these conditions, an increase in the aid fund allocated to a project (or a higher wage) will not necessarily lead to a better outcome. This is because such an increase would lower the threshold value $\hat{\alpha}$, and thus induce less altruistic leaders to participate. There are actually two opposite effects of more abundant aid on the expected welfare of the community. On the one hand, there is the positive effect which an increased aid fund generates for the community for each type of leader (an increase in y causes W to rise). On the other hand, there is the negative effect arising from the fact that when more funds are available, less altruistic leaders enter the pool of leaders willing to manage the project (a decrease in α causes a fall in W).

Translated into the language of aid effectiveness, aid outreach, and poor's welfare, and interpreting the input level as the rate of appropriation of the aid flow by a leader, the implications of Wahhaj's analysis are the following. First consider the case where, in possession of a larger amount of aid resources, the donor decides to increase the size of each existing project. Then, aid effectiveness falls because each leader (of a given type) appropriates a larger share of the project money. On the other hand, the welfare of each community increases since the poor are better taken care of. Aid outreach (the absolute number of poor reached by the aid programme) is unaffected. The second case occurs when the donor decides to use the additional amount of resources to multiply projects of a given size. Then, aid effectiveness remains constant but aid outreach improves. Finally, the donor may use the additional resources to both increase average project size and the number of projects. In this instance, aid effectiveness declines on two counts: existing leaders appropriate a larger share of the aid flow and leaders with a lower poverty aversion or level of altruism participate

in new projects. Aid outreach again improves. As for community welfare, it may possibly decrease but only in projects where previous leaders are replaced by less altruistic ones as a result of the increase in project size. In conclusion, the community welfare is not always increasing in the volume of aid, and aid effectiveness is certain to decline if larger aid resources are used to enlarge project size. Aid outreach improves or stays constant.

The conclusion entirely hinges upon the assumption that neither the level of effort (or fraud) nor the type of leader is known with certainty by the aid agency. The latter knows only the distribution of types over the population of potential leaders. As a matter of fact, if the aid agency knew the type of leader to deal with, it could increase the aid amount indefinitely without having to fear any negative consequence since no selection effect would be at work.

2.3 A two-period framework with one leader and one aid agency with no uncertainty about type

In a recent paper, Gaspart and Platteau (2012) analyze explicitly the effect of greater availability of aid funds on effectiveness in reaching poor beneficiaries. Here, aid availability is not measured by project size but by the cost of access to financial resources for the aid agency. In contrast to the two above setups, the aid agency is able to discipline the local leader through a procedure of conditional disbursement of aid money. Underlying this procedure is a mechanism of fraud detection the effectiveness of which varies with the amount of supervision expenditures incurred by the agency.

Another significant difference with the above-described frameworks lies in the specification of the leader's utility function. Instead of the leader's actions being influenced by altruistic (poverty aversion) considerations, they are here constrained by the bargaining strength of the poor (community members or citizens). However, the aid agency can improve the situation of the poor by itself disciplining the leader in the way suggested (ex post conditionality).

The game that is played out in Gaspart and Platteau's model has the three following stages:

In the first step, the aid agency chooses three positive quantities of money, namely the amount of aid money released at the beginning of the first period (denoted by X_1), the amount conditionally disbursed at the end of this first period (denoted by X_2) if no fraud was detected, and the supervision expenses (Z). In the second stage, the local leader (or the government) decides which part of the first tranche is handed over to the grassroots or the poor (σ_1), and which part is appropriated for own use ($1 - \sigma_1$). In the third stage, the leader and the poor bargain over how X_2 is to be shared between the latter (σ_2) and the former ($1 - \sigma_2$). Finally, a move of nature gives the aid agency enough evidence against the leader's fraud, or it does not. If it does, X_2 is not disbursed.

The unit cost of aid money for the aid agency is an exogenous parameter denoted by λ (with $0 < \lambda < 1$). It corresponds to the interest rate if the money has to be borrowed, or to the cost of mobilizing it during fund-raising campaigns, if it is not. Another parameter of interest reflects what is being

done with the aid funds saved in the event of fraud detection. It is denoted by η (with $0 < \eta < 1$), and is interpreted as the share of saved money that can be transferred to other beneficiaries after the deduction of some transaction costs. It is valued at unitary cost λ , the same shadow price as obtains during the first period.

The utility function of the altruistic aid agency is then written:

$$EU_A = \sigma_1 X_1 + \sigma_2 X_2(1 - \psi) - \lambda(X_1 + X_2 + Z) + \lambda\eta X_2\psi,$$

where $\psi = f(\sigma_1, Z)$ is the probability of fraud detection assumed to decrease with the share of the aid fund earmarked for the poor (chosen by the leader), and to increase with the monitoring budget (chosen by the aid agency). The effectiveness of fraud detection itself tends to increase, and to decrease, as the amount embezzled and the monitoring expenditures become larger, respectively.

Since the money is disbursed over a limited number of periods (there are two periods in this case), the leader is not disciplined in the last period given the absence of disbursement of aid once this period has elapsed. The limited duration of the 'aid game' is a direct result of the fact that aid agencies typically aim at making beneficiaries eventually self-supporting, and are therefore keen that their aid transfers stop after some time. On the other hand, granting funds for a finite but indeterminate period is not a realistic option either. It would, indeed, create perverse incentives to under-perform in order to lengthen the project's duration, thereby creating a 'dependency' syndrome.

Gaspart and Platteau's way to overcome this problem is to consider that the leader is not an all-powerful agent able to impose any distribution of proceeds on its constituency in the terminal period of the 'aid game'. Besides this limited-duration 'aid game', the leader participates in a long-term 'social game' of indefinite or unlimited duration in which he has to bargain with the poor. In the 'social game', corresponding to a patron-client relationship, the poor organized as a group are able to extract concessions from the leader who has much to lose from the rebellion of his whole clientele (his advantage is decisive only when he is able to deal with each client separately). Confident that the poor will receive a reasonable share of the last tranche, the aid agency is ready to deliver it to the leader unless embezzlement has been detected at the end of the previous period.

The utility of the leader thus takes on the following form:

$$EU_L = (1 - \sigma_1)X_1 + (1 - \sigma_2)X_2(1 - \psi) + \Pi_L,$$

where Π_L is the benefit from the 'social game' accruing to the leader in the event that he has reached an agreement with his poor clients. If no agreement were reached, the leader would simply get $(1 - \sigma_1)X_1 + X_2(1 - \psi)$: he would appropriate the entire second tranche yet simultaneously lose the benefits of future cooperation with the poor.

An intermediate finding concerns the leader-disciplining mechanism: when the aid agency decreases the amount of the first tranche, for given levels of the conditional transfer (the second tranche) and supervision effort, or when it

increases the conditional transfer for given levels of the first tranche and the supervision effort, the local leader is induced to raise the share that goes to the poor during the first period. Larger supervision expenses, which increase the probability of fraud detection, also reduce the amount embezzled by the leader.

The central result is the following: when access to aid money for development is easier (resulting in a lower λ), the share accruing to the poor becomes smaller. The adverse distributive impact of low-cost aid money is to be understood in the light of the incentive structure underpinning the model. When the cost of access to aid money falls, the aid agency is prompted to use its two instruments less intensively: the amount of the conditional transfer (the second tranche) and the monitoring budget are reduced. As a consequence, elite capture increases. The opposite effects occur when the cost of aid money is higher. The result suggests that massive injections of cheap money to alleviate poverty may end up enriching and consolidating local elites, much in the same way as windfall incomes from natural resources can be a curse because they give rise to greater rent-seeking activity (see, e.g., Tornell and Lane, 1998).

The effects of a variation in η are analogous to those of a variation in λ : when the aid agency can more easily reallocate funds in the event of a project failure (η is higher), elite capture is encouraged. Conversely, when the transaction cost of establishing a partnership link with a community is higher, an aid agency is more inclined to pay attention to the elite capture problem, which benefits the poor. Therefore, aid organizations working in remote and backward areas are predicted to be more effective in reaching the intended beneficiaries than those operating in areas where all sorts of communication (physical, psychological, cultural, etc) with the inhabitants are easier.

Aid effectiveness in relieving poverty, understood as the share of each unit of aid money that reaches the poor, therefore declines in response to easier access to financial resources for the aid agency. Of course, this does not imply that a lower λ (or a higher η) will also cause the absolute amount of aid money reaching the poor to decrease. The absolute effect may fail to materialize if only because a decrease in λ is typically the outcome of an increase in the supply of aid money in the corresponding market. Increased aid availability may thus allow the aid agency to cater to new countries, regions, or communities.

Regarding the existing project, we know already that the amount of the second tranche is smaller and, since σ_2 is determined by the relative bargaining power of the poor, this implies that $\sigma_2 X_2$, the money reaching the poor in the second period, is certain to decline. As for the direction of variation of $\sigma_1 X_1$, the money reaching the poor in the first period, it is indeterminate. What Gaspart and Platteau show, however, is that this amount will decrease with the fall in the cost of aid money if monitoring by the aid agency is effective enough (meaning that the response of the fraud detection probability, ψ , to monitoring expenditures, Z , is sufficiently strong). Under this condition, we may thus conclude that the total amount of aid money available to the poor in a project decreases as the supply of aid becomes more abundant. Aid outreach may still improve since greater aid availability may allow the donor to cater to new countries, regions, or communities.

3 The trade-off approach

3.1 A two-country framework with random shocks and reform effort

Svensson (2000, 2003) has addressed the problem of the trade-off between needs and governance in the particular context of reforms. He analyzes a two-stage game among two recipient countries and a donor who has an exogenous aid budget. The two recipients are identical yet subject to independently correlated shocks, so that their ex post situation may differ. The key assumption is that the probability of good states increases monotonically with the amount of reform effort applied by the recipient country. In Svensson's model (2000), the aid contract thus specifies the amount of aid disbursed as a function of aggregate state (the configuration of the states of nature obtaining in each country) and reform effort. If the degree of implementation of the reforms is fully contractible (the first-best situation), so that the governance problem is actually surmounted, it is always optimal for the aid agency to give aid to the most needy countries, and the marginal utilities of aid across countries are equalized. Moreover, the recipient governments are no better off with aid than without (the poor appropriate the entire surplus from the recipient government). Indeed, since aid is conditional on reform effort which is verifiable, the aid agency actually "buys a certain amount of reform effort for the aid it disburses" (p. 68).⁴

When reform effort or policies of recipient governments are not observable, such as is the case in the real world, the optimal contract can only be made conditional on the state of nature that is observed after the shock has occurred. The second-best contract that then emerges is a compromise between giving aid to those who most need it and providing optimal incentives. This translates into the following donor's strategy: in order to induce the recipient to exert higher effort, aid flows in bad states must be lowered and aid flows in good states (more likely to occur when reform effort has been higher) must be raised (p. 70). Three consequences follow: (1°) there will be less than full consumption smoothing across countries; (2°) the optimal amount of reform effort will be lower than in the first-best situation; and (3°) the recipient governments will be strictly better-off and the aid agency (and the poor) will be strictly worse off compared to the first-best.

Interestingly, Svensson believes there exists a serious commitment or time-inconsistency problem on the side of the donor: ex post, once the shock is realized, the donor is tempted to increase disbursements to the country most in need. Anticipation that this will happen in turn affects the recipient's incentive to carry out politically costly reform policies ex ante. As a result, donor's discretion (modeled as a simultaneous game) yields lower reform effort (compared to the second-best) but full consumption smoothing. Hence the author's attempt

⁴In Svensson's model, the poor derive their utility from the consumption of a good that is either produced by the aid agency's resources, or provided by the recipient government. The latter chooses how to allocate its budget between poverty-reduction expenditures and expenditures that benefit the rich.

to look into other mechanisms that may possibly mitigate the donor’s commitment problem: tied project aid, delegation to an agency with low poverty aversion (and, therefore, more reliable as a committed donor), and competition between recipient countries for a given amount of aid in a sort of tournament game (Svensson, 2000, 2003).

Svensson’s work is clearly an important contribution towards understanding the trade-off between needs and governance. Yet, it does not address the problem of the effect of aid availability on the equilibrium allocation of aid between the recipient countries. The same holds true of the work of Collier and Dollar (2002) who look explicitly at the problem of a donor’s allocation of aid between several recipient countries when they differ in terms of both policy quality and poverty. In their setup where the quality of policies in each recipient country is taken as given by the donor, and where the latter maximizes poverty reduction, the following conclusion is reached: holding the level of poverty constant, aid should increase with quality of policy and, holding policy quality constant, it should increase with poverty. This problem of the impact of aid availability is explicitly tackled in a recent paper by Bourguignon and Platteau (2012) who also look at the donor’s allocation problem when recipient countries differ in terms of both needs and governance (or policy) quality. Note that, unlike in Svensson where it appears as an equilibrium outcome, the need-governance trade-off is embodied in the donor’s utility function in both Collier/Dollar and Bourguignon/Platteau.

3.2 A two-country framework featuring both domestic and external governance

3.2.1 The one-donor-one-recipient framework

In Bouguignon and Platteau’s paper, the local leader or government is subject to two kinds of discipline: a domestic discipline and an external discipline. Domestic governance, as measured by parameter β , takes on the form of a cost (punishment) imposed by the community (citizenry) on the leader whenever he embezzles funds, and this ‘tax’ increases with the degree of embezzlement. Instead of being assumed to be altruistic or averse to poverty, the leader is therefore depicted as constrained by the vigilance of his people. The latter are perfectly informed about his behaviour because they participate in the information networks functioning locally. External discipline is exerted by the aid agency which possesses an imperfect fraud detection technology and is able to impose a punishment, γ , on the leader whenever fraud has been detected. Since the model extends to a single period, no conditionality mechanism is explicitly introduced. Denoting by y the share of aid appropriated by the leader (so that $0 \leq y \leq 1$), his utility function is written:

$$V(y) = y - \gamma\pi(by) - \beta y^2 - g$$

The first two terms show the expected gain by the leader, bearing in mind that $\pi(by)$ is the probability that the fraud y is detected when monitoring preci-

sion, which is costly for the aid agency, is set at value b . It is assumed that this probability increases exponentially with y and with b . The third term is the cost of stealing arising from the operation of domestic governance, assuming that this cost and also its marginal value increase with y . Finally, the last component, g , is the (constant) cost of handling one unit of aid for the leader. It stands for all the expenses or effort that the leader has to incur in order to get hold of the aid fund by applying to the agency, providing the required information, receiving foreign experts, submitting follow-up reports, and the like.

Let us now consider the utility function of the aid agency, which it maximizes with respect to its two instruments, the amount of punishment and monitoring precision. In doing so, the agency takes into account the optimizing behaviour of the leader as resulting from the maximization of $V(y)$, and the participation constraint ensuring that the leader will not prefer his outside option. Defining w as the income per capita in the recipient country (or community), and t as the amount of aid transfer, the agency which cares about both poverty and governance has the following utility:

$$\text{Max}_{\gamma,b} \text{Log}[w + t(1 - \tilde{y}(\gamma, b))] - C(b) - \pi(b\tilde{y}) \cdot D(\gamma)$$

First note that $t(1 - \tilde{y}(\gamma, b))$ is the aid transfer that effectively reaches the poor. This term embodies the governance effect, both domestic and external: as expected, the optimum share appropriated by the leader varies inversely with β, γ , and b . There are two cost elements figuring out above: the cost of monitoring, $C(b)$, which the agency incurs prior to any disbursement of aid, and the cost of punishing, $D(\gamma)$, which is only incurred if a fraud is detected.

What the authors show is that monitoring precision and domestic governance are substitutes: if domestic governance is lower, the agency increases its effort to detect fraud. Perhaps surprisingly, the effects of a change in domestic governance on the amount of punishment cannot be determined, implying that the two disciplining instruments available to the aid agency may be either substitutes or complementary. What can be predicted, however, are the comparative-static effects on the expected punishment: $\pi(\cdot)\gamma$ increases as β falls.

3.2.2 Allocating aid between two heterogeneous countries when external discipline is exogenous

The one-donor-one-recipient model is just an intermediate step in Bourguignon-Platteau's effort to analyze the donor's problem of aid allocation between several potential recipient countries. In their second step, they consider the case of two beneficiaries with initial income per capita w_1 and w_2 , and population n_1 and n_2 . The donor is willing to transfer a total amount T , and the values of the two disciplining instruments (b, γ) , which apply equally to both countries, are fixed. As a consequence, the donor knows the shares that are going to be embezzled by the elites ruling in these two countries, y_1 and y_2 . His problem is to allocate total aid so as to maximize social welfare as given by (ignoring monitoring and

punishing costs):

$$W = n_1 \text{Log} [w_1 + s_1 T(1 - y_1)/n_1] + n_2 \text{Log} [w_2 + s_2 T(1 - y_2)/n_2]$$

where s_1 and s_2 are the shares of total aid going to the two beneficiaries. The main argument in the donor's welfare function, $[w_i + s_i T(1 - y_i)/n_i]$, is the level of income per capita achieved in the community or country i once the effect of aid transfer is taken into account. The weight ascribed to a country is proportional to the size of its population. It is clear from the above expression that the aid agency faces a trade-off between needs and governance. Other things being equal, it would prefer to help the poorer country, yet if domestic governance is too low in that country, it would derive a higher utility by helping the richer but better governed country (assuming identical population sizes in the two countries).

The (interior) solution to the donor's problem is:

$$s_1 = \frac{n_1}{n_1 + n_2} + \frac{1}{T} (\omega_2 - \omega_1) \frac{n_1 n_2}{n_1 + n_2},$$

$$\text{with } \omega_1 = \frac{w_1}{1 - y_1}; \omega_2 = \frac{w_2}{1 - y_2}$$

And analogously for s_2 . The lessons to be taken from this result are important and according to expectations. The share of country 1 increases with own population, but decreases with initial income and the opportunism of the leader. On the other hand, the share of country 1 increases with the initial income of country 2 and the opportunism of its leader while it decreases with its population.

Leaving population size aside, the key factor featuring in the above equilibrium relationship is ω_i , a composite variable which encapsulates the needs versus governance dilemma. In a particular sense, it provides a need-adjusted measure of aid ineffectiveness, aid being ineffective when it goes either to a country that barely needs it, i.e. high w_i , or to a country that cannot properly direct it towardsss the needy. Therefore, the higher ω_i the less induced is the donor to allocate aid to country i . In the particular case where $n_1 = n_2$, relative country shares in total aid are equal to 1/2 plus an expression that is positive or negative depending on whether the country considered is comparatively aid effective in the need-adjusted sense.

We can now consider the effect of a change in the total amount of aid available, T . The critical role of relative inter-country need-adjusted aid effectiveness is evident:

$$\frac{\delta s_1}{\delta T} \geq 0 \iff \omega_1 \geq \omega_2$$

The share of aid money allocated to a given country will thus rise with total aid available if and only if need-adjusted aid ineffectiveness is greater in that country than in the other country competing for the donor's favour. The intuition behind this apparently puzzling result follows from the fact that

the equilibrium share of the country less attractive for the donor (the country with the highest need-adjusted aid ineffectiveness) is smaller than the share of the other country. If the amount of aid marginally increases (and the two populations are identical in size), the aid agency will increase by the same absolute amount the flow accruing to each country. As a result, the share of the country which initially had the lowest share will increase.

It may well be the case that one country will receive the whole aid amount, and the other one nothing. Country 1 gets the entire aid available if:

$$\hat{s}_1 = 1; \hat{s}_2 = 0 \iff \omega_2 > \omega_1 + \frac{T}{n_1}$$

In words, this means that the donor allocates the whole aid fund to a country if the need-adjusted measure of aid ineffectiveness for the excluded country exceeds that obtained for the favoured country by a sufficiently wide margin. This margin is equal to the amount of aid that the favoured country would receive on a per capita basis. Again, we find that the total amount of aid available matters: the larger this amount the less likely is the donor to exclude one of the two countries from the list of beneficiaries. This result can be generalized to n countries: when T increases, the number of aid beneficiaries increases, and the share of the relatively aid effective beneficiaries decreases.

In the light of their results, the authors then examine the explicit allocation formulas used by two well-known international aid agencies, the International Development Association (the arm of the World Bank that specializes in managing multilateral aid to low income countries), and the African Development Bank (AfDB). They find that the elements of these formulae are identical to those discussed above (population sizes, levels of living, and levels of governance), yet are combined in a different manner. The manner in which they are combined (the weights attached to each of them) appears to be totally arbitrary. Moreover, the total amount of aid available, which may prove critical as we have just seen, plays no role in the formulas used by these aid organizations. Finally, they do not allow for the role of possible disciplining instruments and, therefore, the allocation shares are not susceptible of being modified, as they should, when the aid agencies decide to use these instruments differently.

The same observations essentially apply to the work of Collier and Dollar (2002). These authors have derived their aid allocation formula from a donor's objective function that balances considerations of needs against considerations of governance, on the one hand, and from the estimation of a growth equation, on the other hand.⁵

⁵More precisely, the donor has a fixed amount of aid and he wants to allocate it between the recipient countries so as to maximize poverty reduction measured as: $\sum_i G^i \alpha^i h^i N^i$, where G^i is the rate of growth of country i , α^i is the elasticity of poverty reduction with respect to income, h^i is a measure of poverty (say, the headcount index), and N^i is the size of its population. The rate of growth is influenced by the amount of aid received (assuming diminishing returns), the quality of policies, p^i , and the interaction between these two variables (plus a number of exogenous conditions). Using their estimate of the growth equation, Collier and Dollar arrive

3.2.3 Allocating aid between two heterogeneous countries when external discipline is endogenous

The problem becomes much more complex, but also much more interesting and relevant, when the domestic governance of the recipient countries is considered to be susceptible of improvement by the donor's actions. The above predicament in which the poorest, but also worse governed, country receives no aid is then remediable even when the total amount of aid cannot be increased. As a matter of fact, if the donor can influence the outcome of domestic governance, through monitoring of the uses of aid and the meting out of sanctions, the exclusion of the ill-governed and needy country needs not happen. Even though monitoring and sanctioning are costly for the donor, he may choose to incur these expenditures and include that country in his aid programme.

Because the outcome of domestic governance in the recipient countries is endogenous, the donor, now acting as a principal, has four decision variables at hand to maximize his utility: the shares of aid allocated to each country, the level of monitoring precision that he wants to achieve, and the severity of the sanctions that he wants to impose. Sanctions are imposed when fraud is detected, and this occurs with a probability that itself depends on monitoring precision. On the other hand, acting as agents, the leaders (elite) of each recipient country choose the level of aid appropriation given the monitoring effort and the level of punishment set by the donor.

Several cases must be distinguished depending on whether there is a binding participation constraint on the side of each country's elite (with the further complication that either one of them is binding, or both of them are), and whether the donor is willing or able to impose a discipline matching the characteristics of each recipient country (in particular, its intrinsic domestic governance level), or must resort to uniform disciplining mechanisms (identical values of monitoring precision and sanctions regardless of the country). Thus set, the problem is complex enough to prevent the derivation of any explicit analytical expression for the shares of aid accruing to recipient countries, thus forcing recourse to numerical solutions.

There is one special, and largely irrelevant case, in which an explicit solution exists to the donor's problem. This case occurs when (i) the participation constraints of the leaders of both countries are binding; (ii) the values of the donor's disciplining instruments are individualized; and (iii) the costs of monitoring and sanctioning are negligible. When these three conditions are obtained, the donor equalizes the rate of elite's appropriation of aid funds across the two recipient countries, thus putting more effort on the country which is intrinsically less well governed. The allocation formula will then be quite similar to

at the following allocation formula:

$$A^i = 13.5 + 7.8p^i - \frac{\lambda}{0.04\alpha^i} \left(\frac{h^i}{y^i} \right)^{-1},$$

where A^i is the aid received by country i as a proportion of its GDP, y^i is its level of income per capita, and λ is the shadow value of aid.

that obtained with exogenous governance, except for the fact that the measure of need-adjusted aid ineffectiveness for a country is now entirely determined by its level of per capita income: since $y_1 = y_2$, the differential $(\omega_2 - \omega_1)$ depends only on the difference between w_1 and w_2 . Because the comparative disadvantage of the poorer country in terms of governance has been erased, and only poverty therefore influences the donor's choice, it will never be denied aid by the donor whereas this can be true of the richer country. However, the richer country is less likely to be excluded if the total amount of aid available is greater. In the following, we focus most of our attention on what is probably the most realistic case: no participation constraint is binding and the donor's disciplining treatment is individualized for each country.

Let us now turn to what is probably the most realistic case: no participation constraint is binding and the donor's disciplining treatment is individualized for each country. In this case, Bourguignon and Platteau (2012) find that the conclusion reached with exogenous governance is essentially confirmed. That is, the larger the aid resources available the more likely the less need-adjusted efficient countries will be to receive aid.

Conversely, when aid becomes more scarce, the worse governed country is more at risk of being excluded from the benefit of aid programs. It is in these circumstances that the donor's ability to influence governance by improving upon the intrinsic characteristics of the recipient countries becomes important. The donor can then rescue poor but ill-governed countries from oblivion or neglect. A direct consequence of this new possibility is that, to operate in failed states or weakly governed countries, donor agencies should "budget for a considerably higher ratio of administrative costs to money actually disbursed" (Collier, 2007: 118).

Note, finally, that when the donor applies a uniform disciplining treatment to the recipient countries (the values of the external disciplining variables are assumed to be identical), three outcomes can arise: only the poorer country is eligible (if it is not too badly governed and the other country is too rich in relative terms); only the richer country is eligible (if it is not too rich and the other country is too badly governed); or the poorer and the richer countries receive aid (in the other cases). Again, the quantity of aid resources available plays a critical role. As it increases, the likelihood of an inclusive aid programme tends to be higher, yet only provided that the governance levels in the two countries are not too far apart.

4 Conclusion, discussion, and policy implications

When the issue of aid is discussed in international circles, it is implicitly assumed that larger aid availability can have commensurate effects on the welfare of poor people. This is especially apparent in the ambitious programme of the Millennium Development Goals and in many talks regarding the need for a Marshall Plan for sub-Saharan Africa, for example. Yet, the effects on aid effectiveness, aid outreach, and the welfare of the poor are not evident in the

absence of clearly defined analytical frameworks.

According to an argument due to Wahhaj (2008), who reasons in terms of aid projects, a greater project size induces the leader to relax his effort applied to the project or to increase his embezzlement of aid money. At the micro-level, aid effectiveness therefore decreases. Moreover, if there are different types of local leaders (in terms of level of altruism), if the type is not observable by the aid agency, and if the leaders have identical outside options, an increase in the aid fund allocated to a project induces more opportunistic leaders (who appropriate a larger portion of the aid money) to participate. As a consequence, the welfare of the community may possibly decrease. If one wishes to consider the effects of a larger volume of aid at the aggregate level, several cases have to be distinguished depending on how the donor chooses to use an increment in aid resources. In most of them, aid effectiveness decreases as the total volume of aid is larger. Moreover, community welfare may possibly decrease but only in projects where previous leaders are replaced by less altruistic ones as a result of the increase in project size. Aid outreach improves or remains unaffected.

In Azam-Laffont's approach, as in that of Wahhaj, there is uncertainty about the type of leaders or governments through whom aid money is channeled. If there is more money available in the rich countries for support to poor countries, then the governments of the former would presumably decide to lower the threshold of good governance that makes poor countries eligible for development assistance. It is hard to be precise about other effects because the analytical framework underlying this approach is not fully appropriate to the problem of inter-country allocation of aid resources.

The conclusion that greater aid availability may cause aid effectiveness to fall is also obtained in contexts where the aid agency (or the consortium of aid agencies) knows the level of governance prevailing in each potential recipient country or community. In Gaspart and Platteau's set-up, more plentiful aid is reflected in a lower cost of access to financial resources for the aid (implementing) agency. The harmful effect of aid availability on the share of the aid fund reaching the poor results from the smaller incentive for the aid agency to impose discipline on local leaders when financial resources are cheaper. The way in which the absolute amount of money reaching the poor in an existing project, which influences their welfare, changes as aid resources become more abundant cannot be generally predicted by their model. But this amount declines if monitoring by the aid agency is effective enough in the sense that the response of the fraud detection probability to monitoring expenditures is sufficiently strong. Aid outreach may still improve since greater aid availability may allow the donor to cater to new countries, regions, or communities.

In Bourguignon and Platteau's paper, the need-governance trade-off is brought to centre stage in a one-donor-two-recipients framework. Furthermore, the influence of the total amount of aid available is analyzed by varying that amount marginally rather than by varying its price as in Gaspart and Platteau. When the donor is unable to improve domestic governance through the use of disciplining instruments, the conclusion is rather straightforward. Assuming that the poorer country is also the least well governed (so that the trade-off exists), the donor is

all the more likely to include both the (relatively) rich and poor countries in its aid programme as the available aid fund is larger. If, on the contrary, the aid fund is rather small, the donor may well choose to concentrate its support exclusively on the richer and better governed country. This will happen when the governance in the poorer country is too low compared to what it is in the richer country. The inclusion of all countries, regardless of their governance levels, when aid is sufficiently abundant, follows from the fact that the marginal utility of the donor with respect to the income level of a given country is decreasing, and this effect becomes strong when the total amount of aid is large.

The above conclusion essentially holds when the outcome of governance can be influenced by the donor, and external discipline is tailored to the governance situation of each recipient country. It is only in a rather special and spurious case, –the participation constraints of the two leaders are binding and the costs of monitoring and punishment are negligible–, that a different result is achieved: the poorer country can never be excluded from the aid programme. By contrast, the richer country can be excluded if it is relatively too rich and total aid resources are too limited.

When the donor can influence the outcome of domestic governance, yet only by applying a uniform disciplining treatment to the recipient countries, the three following outcomes can arise: only the poorer country is eligible (if it is not too badly governed and the other country is too rich in relative terms); only the richer country is eligible (if it is not too rich and the other country is too badly governed); or the poorer and the richer countries receive aid (in the other cases). Again, the quantity of aid resources available plays a critical role. As it increases, the likelihood of an inclusive aid programme tends to be higher, yet provided only that the governance levels in the two countries are not too far apart.

What needs to be emphasized is that the aforementioned conclusions rest on the assumption that there exists a single donor agency or, what comes down to the same thing, an effective coalition of donors. If donors are unwilling or unable to coordinate their aid policies, the positive, inclusive effects of larger aid availability may not materialize. This is particularly evident when the increase in aid supply takes on the form of a multiplication of donors acting independently (or, in Wahhaj's framework, a multiplication of projects). The phenomenon of 'aid darlings' and 'aid orphans' is also a consequence of uncoordinated aid allocation by individual donors. Finally, donor coordination may help to improve the efficiency of monitoring and punishment mechanisms, in particular through exploitation of scale economies and wide circulation of information about fraudulent behaviour in the use of aid funds.

From Bourguignon-Platteau's effort, two major lessons need to be drawn. First, when the donor has the ability to add external to internal discipline, badly governed countries are more likely to receive aid. It is true that the use of such instruments is costly for the donor, but the costs involved are taken into account in the donor's optimization problem.

Second, the fact that, under exogenous governance or under endogenous governance with individualized disciplining treatment, greater aid availability

triggers an ‘inclusive’ move (that is, a shift from a regime where only the richer and better governed country receives aid to a regime where both the poorer and the richer countries do) implies that marginal and average aid effectiveness decrease as aid resources become more abundant. Yet, when the donor’s utility function balances needs against governance considerations, it is evident that it is no more meaningful to be concerned with the criterion of aid effectiveness understood as the outcome of domestic governance. What matters is how many among the poorest can be reached cost-effectively by the donor, and this is precisely the objective pursued by the donor possessing such a utility function. If we adopt the Rawls criterion as the appropriate yardstick to assess aid policies, stressing outreach instead of effectiveness, the above situation of increasing ‘inclusiveness’ should cause relief rather than concern. On the other hand, the situation where, under uniform disciplining treatment, greater availability of aid has the effect of making the richer and better governed country eligible while it was excluded in the initial situation, gives rise to an ambiguous judgment. This is because the poorer people then get a lower share (less than 100 per cent) of a larger total aid fund. Therefore, we do not know whether their welfare increases or decreases. At the same time, the average effectiveness of aid is unambiguously raised.

In conclusion, a donor’s utility function that embodies the need-governance trade-off and the associated optimization mechanism yield a meaningful rule to guide inter-country allocation of aid resources. At the heart of this new approach to optimal aid allocation lies the concept of need-adjusted aid effectiveness which is a combined measure of the needs and governance quality in a country. The shortcomings inherent in the need-based approach, which focuses on poverty reduction regardless of the costs, or in the governance-based approach, which emphasizes aid effectiveness at the expense of considerations of needs are thereby avoided. When the governance-based approach is interpreted as justifying the principle of “zero tolerance for corruption”, it becomes just absurd and dangerous.

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