Performance-based financing at the Global Fund to Fight AIDS, Tuberculosis and Malaria: an analysis of grant ratings and funding, 2003–12

Victoria Y Fan, Denizhan Duran, Rachel Silverman, Amanda Glassman

Summary

Background Performance-based financing can be used by global health funding agencies to improve programme performance and thus value for money. The Global Fund to Fight AIDS, Tuberculosis and Malaria was one of the first global-health funders to deploy a performance-based financing system. However, its complex, multistep system for calculating and paying on grant ratings has several components that are subjective and discretionary. We aimed to test the association between grant ratings and disbursements, an indication of the extent to which incentives for performance are transmitted to grant recipients.

Methods We obtained publicly available data for 508 Global Fund grants from 2003 to 2012 with performance ratings and corresponding disbursements, merged with other datasets that contained data for relevant country characteristics. We used regression analysis to identify predictors of grant disbursements in phase 2 (typically the latter 3 of 5 years of a grant), using two dependent variables: whether a grant had any phase-2 disbursements, and the phase-2 disbursement amount. In a separate analysis, we also investigated the predictors of grant performance ratings.

Findings Grant performance rating in phase 1 was positively associated with having any disbursements in phase 2, but no association was seen between phase-1 ratings and phase-2 disbursement amounts. Furthermore, performance ratings are not replicable by external observers, both because subjective and discretionary decisions are made in the generation of performance measures and because the underlying data are not available.

Interpretation The Global Fund's present performance-based funding system does not adequately convey incentives for performance to recipients, and the organisation should redesign this system to explicitly link a portion of the funds to a simple performance measure in health coverage or outcomes, measured independently and robustly.

Funding Bill & Melinda Gates Foundation.

Lancet Glob Health 2013; 1: e161–68

See **Comment** page 123

Center for Global Development, Washington, DC, USA
(V Y Fan ScD, D Duran BA, R Silverman BA, A Glassman MSc)

Correspondence to:
Victoria Y Fan, Center for Global Development, 1800 Massachusetts Avenue NW, Washington, DC 20036, USA
vfan@cgdev.org

Introduction

The economic downturn in high-income economies has led to a period of stagnating or falling budgets for global health, which in turn has drawn attention to the need to obtain the best results for public funds invested—ie, to improve value for money.[1] Achieving value for money depends on both choosing the mix of interventions that offer the best value, and making sure they are implemented in the most efficient way. Global health funding agencies have several mechanisms that can be used to obtain value for money.[2] One such mechanism is performance-based financing, whereby future payments are conditioned on predefined performance or achievement of results. Performance-based financing can be defined "by the transfer of money or material goods conditional on taking a measurable action".[3] The mechanism can both make donors more accountable to their citizens by linking payments to specific outcomes, and increase the mutual accountability between the donor and recipient country by making contracts less ambiguous and focused on shared goals and measured outcomes.[4] Yet performance-based financing is clearly not a cure-all mechanism; as with other programmes, risks of unintended consequences and perverse effects are present.[3]

Among global health funding agencies, the Global Fund to Fight AIDS, Tuberculosis and Malaria (henceforth the Global Fund) has been an early innovator of performance-based financing. The Global Fund is the second-largest funder of HIV/AIDS treatment and the largest funder of tuberculosis and malaria treatment in the world, disbursing more than US$21 billion, including more than $11 billion for HIV/AIDS, since its inception in 2002. The Global Fund has long aspired to "link resources to the achievement of clear, measurable, and sustainable results", while giving "due priority to the most affected countries and communities, and to those countries most at risk".[5] The Fund relies on a "demand-driven approach" to allocate money to "where it is most needed",[6] which suggests that performance is but one of many factors—such as disease burden, country income, and previous commitments—that are used to make allocations and disbursements. In this study, we examine the extent to which performance and other factors such as disease burden determine funding, and investigate the factors that determine performance.

Under the Global Fund's financing model (the de-facto model until implementation of the New Funding Model begins in late 2013), country coordinating mechanisms,

which consisted of government and civil society stakeholders in eligible recipient countries, developed and submitted funding proposals. These proposals were then reviewed with respect to technical criteria by the Fund's technical review panel, and subsequently forwarded to the Global Fund's board for final approval. If approved by the board, grants were awarded and funds disbursed to country-based principal recipients, who led the implementation of grants. In each country, an independent local fund agent was contracted by the Global Fund to "oversee, verify, and report on grant performance" by the principal recipient.[7]

A Global Fund grant could generally last up to 5 years and consisted of two phases, with phase 1 being the first 2 years of grant implementation, and phase 2 the subsequent 3 years. The amount allocated and disbursed in phase 2 was conditional on performance and other factors in phase 1. The grant would undergo a review at the end of phase 1, at which time the Global Fund assigned a rating for the grant and determined aggregate phase-2 funding. Each disbursement for a grant was also given a rating.

See Online for appendix

Using the Grant Rating Methodology, the Global Fund assigned a grant rating at the end of phase 1 and for each disbursement for the grant (figure 1).[8] Briefly, this multistep process generated an overall letter rating from several indicators (steps 1–5). This letter rating represented a range of potential disbursements (steps 6 and 7). The system had a long and complex chain between self-reported results of individual indicators and final payment (figure 1). Notably, in steps 5 and 7, Global Fund discretion had a role in mediating the linkage between measured results and the final funding amount.

For the **data and code** see http://www.cgdev.org/publication/data-set-performance-and-payment-global-fund

In this study, we ask two questions. First, to what extent is future funding conditioned on the Global Fund's performance metric, the grant rating? Second, what determines the grant rating? The first question asks whether either the continuation of funding or the amount of funding in phase 2 is based on the Global Fund's definition of performance and other important principles of the organisation, such as due priority to the most affected countries. Here we define due priority as referring to both a country's burden of disease and income. The second question examines the extent to which the Global Fund's composite metric of performance is predicted by plausible factors, such as proportional change in numbers of disease cases, that might be used in calculating the composite measure of performance; this question attempts to investigate the factors linked to the grant ratings (irrespective of whether this metric provides a valid measure of performance).

Methods

Data sources

We pursued two different approaches to investigate our questions: regression analyses and a case study of grants allocated in selected countries. To construct the database for the regression analyses, we obtained two publicly available databases from the Global Fund's website[9]—its grant-level database and its disbursement-level database—along with variables from other datasets. Table 1 presents a summary of the data used, and the appendix (p 5) contains information about the sources and definitions for country-level variables used in the regression analyses. Since these databases do not include data for the raw indicators used to generate grant ratings, we complemented the main regression analyses with a case study. For the case study, we manually extracted information from all available grant scorecards for selected countries from the most recent Global Fund funding round.

The data and code that can replicate the regression analyses are available on the Center for Global Development website. We consulted with members of the Global Fund's Strategy, Investment and Impact division on several occasions to clarify definitions of variables in the databases.

Regression analyses

In the regression analyses, the first question of the correlates of overall phase-2 disbursements was tested separately with two different but related dependent variables. The first dependent variable was whether a grant received any phase-2 disbursement (binary), which is an indicator of whether a grant is continued into phase 2. This variable is regressed on average phase-1 grant rating, several grant-specific characteristics (start year of the grant, indicators of each principal recipient type, indicators of each local fund agent, and phase-1 disbursements), and country-specific characteristics (per-head income; government effectiveness, as defined by World Bank worldwide governance indicators; and disease burden, as measured by numbers of cases; appendix p 5). The equations are estimated separately for HIV/AIDS, tuberculosis, and malaria, and only for grants

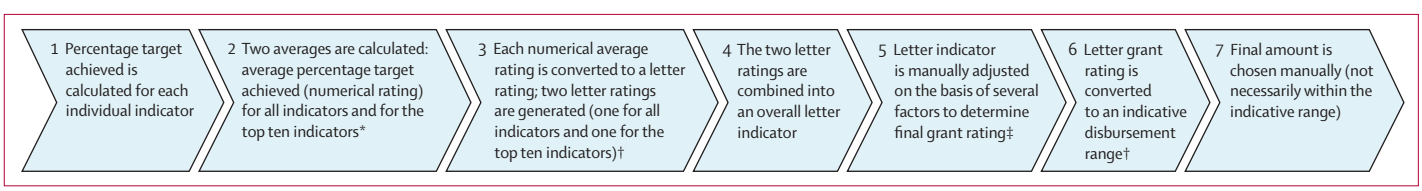

Figure 1: **Steps in the Global Fund's performance-based financing system**
*See appendix pp 1–2. †See appendix p 3. ‡See appendix p 4.

	HIV/AIDS*	Tuberculosis	Malaria
Phase-1 disbursements, US$	11 600 000 (12 100 000)	5 171 000 (5 952 000)	11 500 000 (15 600 000)
Phase-2 disbursements, US$	23 700 000 (47 000 000)	6 141 000 (10 400 000)	9 402 000 (14 000 000)
Proportion of grants that received phase-2 disbursements	0·81 (0·40)	0·79 (0·41)	0·75 (0·43)
Average phase-1 rating	3·16 (0·87)	3·24 (0·80)	2·78 (0·81)
Average phase-2 rating	3·66 (0·82)	3·63 (0·81)	3·43 (0·90)
Proportion of grants verified by specific local fund agents			
KPMG	0·15 (0·36)	0·12 (0·32)	0·05 (0·21)
PricewaterhouseCoopers	0·54 (0·50)	0·48 (0·50)	0·53 (0·50)
Swiss Tropical Institute	0·10 (0·31)	0·09 (0·29)	0·17 (0·38)
UNOPS	0·09 (0·28)	0·16 (0·37)	0·10 (0·30)
Other	0·12 (0·33)	0·15 (0·36)	0·15 (0·36)
Proportions of grants awarded by principal recipient type			
Civil society, private sector, or third party	0·24 (0·43)	0·22 (0·42)	0·24 (0·43)
Government	0·62 (0·49)	0·62 (0·49)	0·58 (0·50)
Multilateral	0·14 (0·35)	0·16 (0·37)	0·18 (0·39)
Cases of disease in grant start year	541 593 (983 887)	271 511 (732 943)	1 349 142 (2 094 566)
Grant start year	2005 (1·9)	2006 (1·9)	2006 (1·9)
GDP per head in grant start year, US$	1566 (1792)	1367 (1301)	1043 (1586)
THE per head in grant start year, US$	97 (111)	97 (124)	60 (100)
DAH per head in grant start year, US$	5·6 (5·9)	5·4 (6·1)	7·2 (7·7)

Data are mean (SD). 1090 grants and 7232 disbursements were recorded in Global Fund databases from Jan 1, 2003, to July 5, 2012. These databases were downloaded from the Global Fund website on July 11, 2012. Of these grants, only 508 had a recorded phase-2 disbursement (including US$0 value disbursements), 440 of which had phase-2 grant ratings. 321 grants in the sample had both a phase-1 grant rating and a phase-2 disbursement and 383 had a phase-2 grant rating and grant-specific characteristics recorded. Data are shown for the 508 grants used in the analyses. UNOPS=United Nations Office for Project Services. GDP=gross domestic product. THE=total health expenditure. DAH=development assistance for health. *Grants for HIV/AIDS include those that address both HIV/AIDS and tuberculosis.

Table 1: **Summary statistics of grant portfolio**

completed (ie, with the final phase-2 disbursement, if any, made) before 2012. Grants for HIV/AIDS included those that address both HIV/AIDS and tuberculosis. Units of data in regression analyses were overall grants rather than individual disbursements.

The other dependent variable was the natural log of the phase-2 disbursement amount regressed on the same independent variables as used for the binary measure of any phase-2 disbursement. By using the absolute phase-2 disbursement amount as a dependent variable, we assessed the extent to which performance competes with other factors in determining the amount of grant funding released to recipients (appendix pp 6–8).

To investigate the second question, we used the average grant rating in phase 2 as the dependent variable. Because each individual disbursement corresponds to an assigned grant rating, we did not restrict the sample to those grants that ended before 2012. As a measure of relative change in disease burden, we used the proportional change in the number of cases during the phase-1 period. Since grant ratings are reported as letters, we mapped the letters to a numerical scale, with 1 corresponding to the lowest rating (C) and 5 to the highest rating (A1). A linear probability model and an ordered probit model were estimated separately.

Analyses of grant scorecards for selected countries

The regression analyses relied on data from publicly available spreadsheets from the Global Fund.[9] However, these data did not have information about the individual indicators used to generate the grant ratings. By contrast, grant scorecards, which are the official documents used to review phase-1 performance, have the advantage, when publicly available, of providing information about all individual indicators and their values. Thus, we complemented the main analysis with a case study of selected grant scorecards. However, the Global Fund does not publish all of its grant scorecards, and those that are available are in Adobe PDF format and many are not machine readable, and so cannot be automatically exported to a spreadsheet, hence the data have to be extracted manually.

For the case study, we chose the five countries that, as of Dec 10, 2012, had received the largest amount of funding from the Global Fund for one of the three diseases in the organisation's remit. We then selected all available grant scorecards for the most recent funding round for which any scorecard was available. We used these scorecards to assess the linkage between the individual indicators and the final grant rating, and the linkage between the final grant rating and the phase-2 disbursement amount.

	Any phase-2 disbursements			Ln(phase-2 disbursements)		
	HIV/AIDS*	Tuberculosis	Malaria	HIV/AIDS*	Tuberculosis	Malaria
Average phase-1 rating	0·098 (0·045)†	0·003 (0·053)	0·174 (0·068)†	–0·023 (0·166)	0·111 (0·098)	–0·192 (0·207)
Ln(phase-1 disbursements)	0·012 (0·045)	0·033 (0·041)	0·079 (0·053)	1·052 (0·135)‡	0·729 (0·152)‡	0·874 (0·127)‡
Local fund agent§						
KPMG	–0·172 (0·138)	0·243 (0·143)	0·054 (0·123)	–0·116 (0·391)	–0·036 (0·296)	0·170 (0·282)
PricewaterhouseCoopers	–0·076 (0·081)	–0·013 (0·086)	0·034 (0·110)	–0·361 (0·193)	–0·059 (0·241)	–0·064 (0·229)
Principal recipient¶						
Civil society, private sector, or third party	0·254 (0·124)‡	–0·110 (0·137)	–0·010 (0·185)	0·762 (0·345)†	0·904 (0·318)‡	0·953 (0·431)†
Government	0·138 (0·126)	0·172 (0·155)	0·140 (0·181)	0·453 (0·303)	0·735 (0·328)†	1·124 (0·336)‡
Number of disbursements in phase 1	–0·022 (0·024)	0·029 (0·026)	–0·028 (0·030)	–0·105 (0·052)†	–0·022 (0·063)	–0·150 (0·077)
Grant start year	–0·131 (0·024)‡	–0·157 (0·029)‡	–0·151 (0·037)‡	–0·194 (0·075)†	0·318 (0·166)	–0·204 (0·102)
Government effectiveness in grant start year	0·003 (0·086)	–0·070 (0·124)	–0·166 (0·121)	–0·563 (0·224)†	–0·401 (0·322)	–0·366 (0·283)
Ln(GDP per head) in grant start year	0·149 (0·113)	0·124 (0·140)	0·139 (0·146)	–0·033 (0·191)	0·558 (0·327)	0·156 (0·256)
Ln(THE per head) in grant start year	–0·152 (0·112)	–0·132 (0·113)	–0·011 (0·140)	0·065 (0·208)	–0·511 (0·367)	–0·105 (0·269)
Ln(DAH per head) in grant start year	0·049 (0·037)	0·056 (0·038)	0·049 (0·041)	0·040 (0·111)	–0·058 (0·103)	–0·185 (0·115)
Cases of disease in grant start year (in millions)	–0·004 (0·056)	–0·004 (0·082)	–0·047 (0·029)	0·249 (0·121)†	0·279 (0·117)†	0·120 (0·061)
Constant	261·854 (48·741)‡	314·938 (58·142)‡	301·856 (74·736)‡	388·022 (149·057)†	–636·348 (332·153)	410·125 (203·309)
n	112	79	71	79	51	47
R^2	0·392	0·509	0·455	0·668	0·718	0·737

Data are regression coefficient (SE), apart from in bottom two rows, where only the coefficient is listed. Sample is restricted to grants that ended before 2012. Sources and definitions of variables are available in the appendix (p 5). GDP=gross domestic product. THE=total health expenditure. DAH=development assistance for health. *Grants for HIV/AIDS include those that address both HIV/AIDS and tuberculosis. †p<0·05. ‡p<0·01. §Reference category for local fund agent is Swiss Tropical Institute, United Nations Office for Project Services, and other. ¶Reference category for principal recipient is multilateral.

Table 2: **Predictors of phase-2 disbursements**

Role of the funding source

The funder had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Results

When controlling for other factors, a higher grant rating is associated with continuation to phase 2 through renewal ($p<0·05$) for HIV/AIDS and malaria grants, but not for tuberculosis grants (table 2). Grants with a later start year were less likely to be continued into phase 2 than those that started earlier.

Phase-2 disbursement amounts are not correlated with grant ratings, irrespective of disease. The most consistent predictor of phase-2 disbursement amounts across the three diseases is the amount of phase-1 disbursements; a 1% increase in phase-1 disbursements is associated with a 1% increase in phase-2 disbursements. Additionally, each additional year of a grant's start year was significantly correlated with reduced phase-2 disbursements for HIV/AIDS, consistent with the Global Fund's reported efficiency cuts,[10,11] which have led to reductions in phase-2 funds by 10–25%.

For HIV/AIDS and tuberculosis grants, numbers of disease cases were significantly correlated with phase-2 disbursements. For tuberculosis and malaria grants, having a government principal recipient was significantly associated with higher phase-2 disbursements compared with having a multilateral principal recipient. For tuberculosis and HIV/AIDS grants, grants to civil-society, private-sector, or third-party principal recipient were significantly associated with higher phase-2 disbursements than those with a multilateral principal recipient. Generally, country characteristics such as amount of health aid, total health expenditure, and GDP per head were not correlated with phase-2 disbursements. Our results are mostly robust to different specifications (appendix pp 9–12).

We identified few significant predictors of phase-2 grant ratings (table 3). Notably, neither local fund agent nor type of principal recipient was associated with phase-2 grant ratings, contrary to the findings of a previous study[12] that used a dataset with fewer and earlier grants. Although we might expect that the grant ratings reflect changes in health status, our findings suggest that only for tuberculosis (but not HIV/AIDS or malaria) grants a decrease in prevalence is correlated with significantly increased grant ratings—a 10% decrease in prevalence was associated with an increase in grant rating of 0·16 on the numerical scale of 1–5 (C to A1), compared with a mean of 3·6 (ie, a 4% increase). For HIV/AIDS grants, countries with lower incomes and higher health spending per head tended to achieve higher grant ratings.

In our analysis of information manually extracted from grant scorecards of selected countries, at least 42% of grants had final phase-2 amounts that were outside the expected indicative disbursement range derived from the grant rating, suggesting manual adjustment by Global

	Linear probability model			Ordered probit model		
	HIV/AIDS*	Tuberculosis	Malaria	HIV/AIDS*	Tuberculosis	Malaria
Ln(phase-1 disbursements)	0·043 (0·073)	0·008 (0·095)	−0·150 (0·129)	0·025 (0·102)	0·007 (0·131)	−0·196 (0·134)
Local fund agent†						
KPMG	−0·415 (0·253)	0·104 (0·277)	0·261 (0·413)	−0·583 (0·346)	0·164 (0·363)	0·349 (0·579)
PricewaterhouseCoopers	0·026 (0·155)	−0·074 (0·192)	−0·076 (0·224)	0·026 (0·211)	−0·088 (0·231)	−0·103 (0·268)
Principal recipient‡						
Civil society, private sector, or third party	0·440 (0·199)§	0·165 (0·286)	0·139 (0·322)	0·570 (0·348)	0·152 (0·404)	0·230 (0·405)
Government	−0·105 (0·202)	−0·095 (0·215)	0·003 (0·294)	−0·258 (0·326)	−0·178 (0·357)	0·0786 (0·380)
Number of disbursements in phase 1	0·042 (0·040)	0·057 (0·041)	0·000 (0·072)	0·065 (0·053)	0·079 (0·058)	0·004 (0·078)
Grant start year	−0·059 (0·059)	−0·011 (0·057)	0·089 (0·085)	−0·079 (0·075)	0·001 (0·079)	0·103 (0·096)
Government effectiveness in grant start year	0·282 (0·182)	0·366 (0·243)	0·392 (0·297)	0·494 (0·231)¶	0·534 (0·315)	0·494 (0·362)
Ln(GDP per head) in grant start year	−0·557 (0·184)¶	−0·210 (0·231)	−0·474 (0·346)	−0·826 (0·282)§	−0·261 (0·329)	−0·597 (0·392)
Ln(THE per head) in grant start year	0·578 (0·188)¶	0·143 (0·238)	0·208 (0·322)	0·821 (0·283)§	0·164 (0·292)	0·280 (0·362)
Ln(DAH per head) in grant start year	−0·189 (0·074)¶	−0·073 (0·074)	−0·022 (0·088)	−0·265 (0·099)§	−0·112 (0·109)	−0·039 (0·112)
Proportional change in numbers of cases of disease during phase 1	0·165 (0·233)	−1·641 (0·762)§	−0·275 (0·168)	0·193 (0·234)	−2·372 (1·197)¶	−0·316 (0·242)
Constant	122·423 (118·173)	27·105 (115·159)	−170·686 (168·710)	..	..	..
Number of grants	137	98	85	137	98	85
R^2||	0·258	0·164	0·137	0·045	0·028	0·0271

Data are regression coefficient (SE), apart from bottom two rows, where only the coefficient is listed. Sources and definitions of variables are available in the appendix (p 5). GDP=gross domestic product. THE=total health expenditure. DAH=development assistance for health. *Grants for HIV/AIDS include those that address both HIV/AIDS and tuberculosis. †Reference category for local fund agent is Swiss Tropical Institute, United Nations Office for Project Services, and other. ‡Reference category for principal recipient is multilateral. §p<0·05. ¶p<0·01. ||Data for ordered probit model are pseudo-R^2 values.

Table 3: **Predictors of phase-2 ratings**

Fund staff (figure 2, appendix p 13). A third of grant ratings themselves were also subject to manual adjustment, since the letter ratings were not within the range expected on the basis of the combined results for individual indicators (appendix p 14). These results corroborate the main findings from our regression analyses.

Discussion

The results from both the regression analyses and the scorecard case study suggest that, as expected, different factors affect phase-2 funding. Global Fund grant ratings in phase 1 were associated with having any phase-2 disbursement for some grants. At least for HIV/AIDS and malaria grants, grant ratings were correlated with whether a grant continued in phase 2, suggesting that the organisation has been using its authority to reallocate funds from non-performing grants. Two possible (and not mutually exclusive) reasons could account for why some grants did not continue into phase 2 (ie, had zero disbursements in phase 2): truly non-performing grants were discontinued; or grants with poor performance were discontinued for political or financial reasons. Phase-2 disbursement amounts were not associated with phase-1 grant ratings, but the most consistently significant determinant was phase-1 funding. Thus, the probability of grants continuing to phase 2 might be affected by performance, but disbursement amounts in phase 2 were not correlated with performance measures (panel). The results also show that disease burden is correlated with phase-2 disbursement amount, suggesting that the Global Fund is giving priority to countries with greater disease burdens.

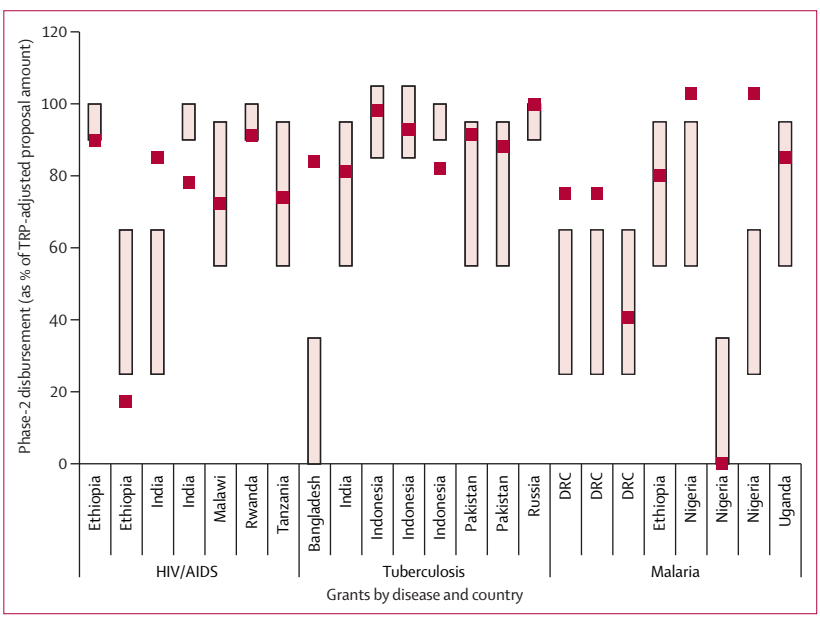

Figure 2: **Indicative disbursement ranges and disbursement amounts obtained for selected grants**
Bars show the indicative disbursement ranges, and red squares show the actual phase-2 disbursement amounts. One malaria grant for Tanzania (TNZ-809-G11-M) is not shown because it received a negative disbursement. TRP=technical review panel. DRC=Democratic Republic of the Congo.

Moreover, the Global Fund's average grant ratings in phase 2 were (encouragingly) not correlated with any

other grant variables, but were associated with selected country characteristics such as income and health spending. Our case study of selected grants further suggests that the ratings generated from individual indicators are not easily replicated, and that manual adjustments of both grant ratings and disbursement amounts conditional on the final chosen grant rating occur frequently.

The fact that these ratings cannot be replicated without the underlying data, let alone the various discretionary factors and decisions involved, shows that grant ratings are very much a black box to the public, and probably even to those most affected—ie, the countries and principal recipients. By having so many indicators used to calculate the composite grant rating and various discretionary factors, the Global Fund risks not leveraging performance-based financing to improve performance. Our results suggest that the incentives transmitted from the Global Fund to its recipients are weak at best. Questions can be raised about how the Global Fund can on the one hand reallocate resources from non-performing grants to performing grants, while on the other build capacity in countries with non-performing grants—two aspirations of the Global Fund's performance-based financing system.

The perceptions of principal recipients seem to accord with the results of our statistical analyses. According to the results of a 2013 Aidspan survey,[14] only 34% of principal recipients believe that "the grant rating system accurately reflects performance". If principal recipients do not believe that performance is accurately measured or tied to future disbursements, performance-based financing incentives will not have the desired effect to motivate better health outcomes. Further work is needed through qualitative research with principal recipients and Global Fund managers to better understand the types of incentives (or disincentives) transmitted from the present system, and the extent to which the present system motivates improved performance. Questions can be raised about the extent to which national-level incentives can align incentives within the country, and how unintended, if not perverse, outcomes can be generated by a focus on inputs and outputs as performance measures, or by poorly measured indicators.[15]

One major argument of the Global Fund in explaining the complexity of the financing system is that funding is determined by several different factors, not only performance. We agree that relying on several factors is both reasonable and expected, especially where continued funding is a matter of life and death (ie, so-called ethical commitments to ensure continuity of services).[16] However, performance-based financing can be compatible with ethical commitments if the direct and explicit linkage occurs for only a portion of funds. Since few examples of donor agencies using donor-to-country performance-based financing exist, the Global Fund should assess the few existing systems in operation currently—the Inter-American Development Bank's *Salud Mesoamerica*, the World Bank's Health Results Innovation Trust Fund, and the GAVI Alliance's performance-based financing system.[17] In all of these systems payments are explicitly linked to observed performance—but for a portion of funding, not the total financed amount.

Although immunisation services are quite different from services for HIV/AIDS, tuberculosis, and malaria, the Global Fund should look to its sister organisation, the GAVI Alliance, to learn from its implementation of performance-based financing. GAVI approved a new performance-based funding scheme in November, 2011, and has begun to roll it out.[17] The scheme has several key features. In the first year, countries will receive the full amount as an upfront investment from GAVI. In subsequent years, a portion of the payment will be based on improvements in immunisation outcomes. This outcomes-based portion will be used as a reward rather than a penalty. Moreover, GAVI also focuses its performance measurement on downstream coverage measures, rather than upstream indicators of product purchases, distribution, or training. Finally, in the past GAVI relied on problematic self-reported data that led to the perverse outcome of over-reporting by countries.[18,19] However, GAVI has redesigned its performance-based financing system to move towards the use of survey-based estimates in some countries.[17]

***Panel:* Research in context**

Systematic review

We searched PubMed and EconLit for all articles containing the term "Global Fund" in either the title or the abstract. We manually reviewed all identified abstracts and selected relevant articles. We also manually reviewed reference lists of all identified articles. We selected studies that specifically addressed performance-based financing and resource allocation at the Global Fund to Fight AIDS, Tuberculosis and Malaria. We noted several reports, particularly those by Lu and colleagues[13] and Radelet and Siddiqi,[12] that partly addressed this topic, but used earlier data and a more restrictive scope than we have adopted (eg, Radelet and Siddiqi[12] only examined the determinants of grant ratings, and did not look at the relation between grant ratings and disbursement amounts). The existing evidence identified several important predictors of Global Fund grant ratings, including type of principal recipient and recipient country characteristics. However, the evidence also suggested the possibility of subjectivity and bias in the grant rating process.

Interpretation

Our findings add to the existing evidence base by providing information about the relation between grant performance and disbursements, and thus the effectiveness of performance-based financing at the Global Fund as an incentive mechanism. The Global Fund's existing performance-based financing system provides only a weak link between grant performance and disbursement amounts, and thus is unlikely to transmit performance incentives to funding recipients. The cumulative evidence base suggests that the Global Fund should revise its performance-based financing processes to create a more explicit link between clearly defined performance and at least a portion of disbursements. Such a move would help to reduce opportunities for bias and subjectivity, and thus improve the predictability of resource flows and the strength of performance incentives encountered by funding recipients.

Similarly, the Global Fund should shift to key measures of health coverage and health outcomes, and make payments on the basis of individual measures of performance rather than on composite measures of performance. Although the organisation recently announced an increased emphasis on these downstream outcomes in its existing performance-based financing system,[20] it still does not directly link payment to specific performance measures. By moving away from many to fewer indicators, from upstream to downstream indicators, from payments linked to composite indicators to those linked to specific indicators, and from self-reported to robustly measured data, the Global Fund's redesigned performance-based financing system could transmit stronger incentives and have greater value for money than it does at present.

In view of the many alternative models for the design of performance-based financing, we recommend that the Global Fund explore different design features. Specifically, as the Global Fund's New Funding Model is implemented, the organisation should pilot and gradually scale up a simplified version of performance-based financing in selected countries, where performance is explicitly linked to a portion of funds (eg, 10–20% of the total grant amount). For this portion, payments should be based on one or more clear and easy-to-understand measures of performance based on core outputs and outcomes—eg, US$400 per additional person-year of antiretroviral therapy provided at a minimum quality standard.[2] Finally, the redesigned system should use independent and robust performance measurement,[2] and the organisation should track and assess the implementation of such modifications, particularly with respect to understanding how these national-level incentives can potentially spur within-country incentives to change.

The Global Fund's New Funding Model should be lauded for adopting an allocation formula that will explicitly take into account disease burden and income in the allocation of absolute amounts of funding.[21] However, its incorporation of performance as a factor into its allocations is secondary to its focus on income or disease burden. Since funding cycles are iterative and funding decisions for a country occur several times, incentives exist that can affect how funding is allocated. For example, by paying more to countries with higher disease burden, the de-facto incentive is to report a higher disease burden to generate greater funding. By contrast, if the Global Fund were also to use performance and results to allocate funding, then the de-facto incentives will align performance with payment. The New Funding Model will also have two funding streams, one called indicative funding (for which the allocation formula will be applied), and another called incentive funding. Although their roles in the New Funding Model have yet to be finalised, both could be used in part to provide the additional portion of funds needed for a redesigned performance-based financing system.

Contributors
VYF led the statistical design, analysis and interpretation of results, and the writing of the report. DD organised the databases for econometric analyses, extracted data from grant scorecards for the case study, did statistical analyses, and contributed to the review of the scientific literature and the writing of the report. RS led the review of the scientific literature and contributed to the interpretation of results and the writing of the report. AG contributed to study design, interpretation of results, and the writing of the report.

Conflicts of interest
We declare that we have no conflicts of interest.

Acknowledgments
We thank the Bill & Melinda Gates Foundation for their generous financial support of this work. We also thank William D Savedoff, Mead Over, Bruno Meessen, and other participants of the Value for Money for Global Health Funding Agencies Working Group for their helpful comments. The views expressed are those of the authors and do not necessarily represent those of the Center for Global Development or the Bill & Melinda Gates Foundation.

For more on the **Value for Money for Global Health Funding Agencies Working Group** see http://www.cgdev.org/page/value-money-agenda-global-health-funding-agencies

References

1 IHME. Financing global health 2011: continued growth as MDG deadline approaches. Seattle: Institute for Health Metrics and Evaluation, 2011.
2 Glassman A, Fan V, Over M, Silverman R, McQueston K, Duran D. More health for the money: a practical agenda for the Global Fund and its partners. A report of the Center for Global Development Working Group on Value for Money in Global Health (consultation draft). Washington, DC: Center for Global Development, 2013. http://www.cgdev.org/sites/default/files/more-health-for-the-money-consultation.pdf (accessed Aug 8, 2013).
3 Eichler R, Levine R, Performance-Based Incentives Working Group. Performance incentives for global health: potential and pitfalls. Washington, DC: Center for Global Development, 2009.
4 Birdsall M, Savedoff WD. Cash on delivery: a new approach to foreign aid. Washington, DC: Center for Global Development, 2010.
5 The Global Fund to Fight AIDS, Tuberculosis and Malaria. The framework document. Geneva: The Global Fund to Fight AIDS, Tuberculosis and Malaria, 2001. http://www.theglobalfund.org/documents/core/framework/Core_GlobalFund_Framework_en/ (accessed June 15, 2013).
6 The Global Fund to Fight AIDS, Tuberculosis and Malaria. Our principles. http://www.theglobalfund.org/en/about/principles/ (accessed June 20, 2013).
7 The Global Fund to Fight AIDS, Tuberculosis and Malaria. Local Fund Agents (LFAs). http://www.theglobalfund.org/en/about/structures/lfa/ (accessed April 9, 2013).
8 The Global Fund to Fight AIDS, Tuberculosis and Malaria. Grant rating methodology. LFA training, November, 2010. http://www.theglobalfund.org/documents/lfa/LFA_GrantRatingMethodology_Presentation_en/ (accessed Oct 12, 2012).
9 The Global Fund to Fight AIDS, Tuberculosis and Malaria. Global fund grants in detail (raw data). http://www.theglobalfund.org/documents/core/grants/Core_GrantDetailsRaw_Report_en/ (accessed July 11, 2012).
10 The Global Fund to Fight AIDS, Tuberculosis and Malaria. Funding decisions. http://www.theglobalfund.org/en/fundingdecisions/ (accessed July 23, 2013).
11 Wendt D. How the Global Fund is dealing with more demand than supply. Global Health Policy Blog, Center for Global Development, Nov 17, 2009. http://www.cgdev.org/blog/how-global-fund-dealing-more-demand-supply (accessed July 23, 2013).
12 Radelet S, Siddiqi B. Global Fund grant programmes: an analysis of evaluation scores. *Lancet* 2007; **369:** 1807–13.
13 Lu C, Michaud CM, Khan K, Murray CJ. Absorptive capacity and disbursements by the Global Fund to Fight AIDS, Tuberculosis and Malaria: analysis of grant implementation. *Lancet* 2006; **368:** 483–88.
14 Wafula F, Marwa C, McCoy D. Global Fund principal recipient survey: an assessment of opinions and experiences of principal recipients (working paper 01/2013). Nairobi: Aidspan, 2013.

15 Soeters R, ed. PBF in Action: theory and instruments. The Hague: Cordaid–Sina, 2013. http://www.sina-health.com/wp-content/uploads/PPFCourseBookCordaid-SINA-TheoryActionEng-V020413.pdf (accessed June 19, 2013).
16 The Global Fund to Fight AIDS, Tuberculosis and Malaria. Continuity of services. Operational policy note, July 11, 2011.
17 Hansen P, Eriksson P, Stormont L. Performance based funding. Report to the GAVI Alliance board, Nov 16–17, 2011. http://www.gavialliance.org/about/governance/gavi-board/minutes/2011/16-nov/minutes/performance-based-funding/ (accessed March 30, 2013).
18 Lim SS, Stein DB, Charrow A, Murray CJL. Tracking progress towards universal childhood immunisation and the impact of global initiatives: a systematic analysis of three-dose diphtheria, tetanus, and pertussis immunisation coverage. *Lancet* 2008; **372:** 2031–46.
19 Glassman A, Savedoff W. The health systems funding platform: resolving tensions between the aid and development effectiveness agendas (working paper 258). Washington, DC: Center for Global Development, 2011. http://www.cgdev.org/sites/default/files/1425300_file_Glassman_Savedoff_HSFP_FINAL.pdf (accessed March 30, 2013).
20 The Global Fund to Fight AIDS, Tuberculosis and Malaria. Report of the Executive Director. Twenty-Ninth Board Meeting; Colombo, Sri Lanka; June 18–19, 2013. GF/B29/03.
21 Garmaise D. The new funding model allocation methodology explained. *Global Fund Observer Newsletter,* June 14, 2013.