Grant Performance and Payments at the Global Fund

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Abstract

Performance-based financing can be used by global-health funding agencies to improve program 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.

We obtained publicly available data for 508 Global Fund grants from 2002 to 2011 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.

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.

Based on these findings, we conclude that the Global Fund's present performance-based funding system does not adequately convey incentives for performance to recipients. The organization 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.

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1. Introduction

The economic slowdown in high-income economies has led to a period of stagnating or declining global-health budgets, which in turn has increased attention to obtaining the most impact for public funds invested, or better 'value for money'.[1] The term 'value for money' can be defined loosely as both 'doing things right' and 'doing the right things'. In general these two components of 'value for money' respectively refer to 'technical efficiency' (i.e. when cost is minimized and impact per dollar maximized for a given intervention) and 'allocative efficiency' (i.e. when investments are optimally focused on the right mix of interventions to the right target population in order to achieve a maximum social or health goal).

Global-health funding agencies have a limited set of tools to obtain 'value for money'.[2] One such tool is performance-based financing (PBF), where future payments are conditioned on predefined performance or achievement of results *ex post*. Performance-based financing can be "defined by the transfer of money or material goods conditional on taking a measurable action."[3] PBF 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 PBF is clearly not a cure-all; as with other programs, there are risks of unintended consequences and perverse effects.[5]

In a wide range of countries and contexts, performance incentives have been shown to improve the efficiency and quality of services within the health sector.[6][7] These PBF schemes can be broadly categorized into two types. First, several countries have incorporated PBF schemes sub-nationally within their health systems, wherein providers or facilities are remunerated by the central or provincial government based upon the quality and quantity of care delivered. For example, Rwanda's PBF scheme has been shown to have a positive impact on coverage of institutional deliveries, quality of prenatal services, and uptake of HIV counseling and testing.[8][9] While subnational PBF schemes may be supported by donor funding, such as the World Bank's Health Results Innovation Trust Fund (HRITF), disbursements are determined at the provider or facility level rather than the national level.

In contrast, a second form of PBF governs the relationship between an international donor and the direct recipient of donor funding (typically a country government, non-profit entity, or contractor), wherein disbursements are made to a single national-level entity based on overall performance. The GAVI Alliance, for example, was among the first global health funders to explicitly link payment to intervention coverage – an approach that appears to have improved self-reported vaccination rates, but which also may have motivated over-reporting of results.[10]

Among global-health funding agencies, the Global Fund to Fight AIDS, Tuberculosis and Malaria (henceforth 'the Global Fund') was an early adopter of PBF. 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 over US$21 billion, including over $11 billion to 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."[11] The Fund has historically relied on a "demand-driven approach" to allocate money to "where it is most needed."[12] This would suggest that performance is but one of many factors such as disease burden, country income, and prior commitments that are used to make allocations and disbursements.

In this study we examine the extent to which performance and other such factors determine disbursements, and seek to identify the predictors of grant performance. We first describe the Global Fund's performance-based financing system and pose two questions: (1) To what extent is future funding conditioned on the Global Fund's performance metric, the grant rating?; and (2) What determines a grant rating? The first question asks whether the continuation or level of Global Fund funding in phase 2 is based on the Fund's definition of performance, as well as its other important founding principles, such as giving due priority to the most affected countries. In allocating levels of funding, the 'most affected' countries are plausibly those with the largest numbers of disease cases. The second question examines the extent to which the Global Fund's composite metric of performance is predicted by plausible components; this question attempts to understand the factors linked to the grant ratings (regardless of whether this metric is a valid measure of 'performance').

2. Performance-Based Financing in General and in the Global Fund

2.1. An overview of performance-based financing

PBF can address the problems implicit in the 'principal-agent relationship', whereby the principal and the agent share a general goal for the agent to provide certain services, but the principal lacks the ability to monitor the agent's activities. PBF attempts to mitigate the information asymmetry by basing payment on observable, mutually agreed performance measures. Through this process, PBF can (1) make donor and recipient governments more accountable to their citizens by linking payments to specific outcomes that can be externally observed; and (2) increase the mutual accountability between the donor and country by focusing contract terms on shared goals and verified results.[13] PBF is often proposed as an alternative to traditional aid regimes, i.e. systems in which donors attempt to overcome information asymmetry through expenditure tracking and direct operational controls. The traditional approach is thought to be undesirable because it entails large transaction costs and does not necessarily improve performance on shared goals.

In this paper we examine PBF at the international level, between global-health funding agencies and countries (see box 1 for an overview of performance-based financing).

Box 1. Overview of performance-based financing

When the contract is between a donor and a country, PBF has been called 'results-based aid' or 'output-based aid'. PBF can also be applied at subnational, clinical, or individual levels.[14] Within the health sector, the principal could be the national government and the agent a subnational administrative unit; alternatively, the principal could be a hospital and the agent the primary health-care provider.

Funding can be conditional on *ex post* inputs, outputs, outcomes, or impact. In our paper 'impact' refers to health outcomes, such as mortality, morbidity and other objective measures of health status, i.e. life expectancy or cases averted. 'Outcomes' are measures of uptake and coverage of certain health-services and other healthy behaviors, such as the percentage of households *using* an insecticide-treated bed net (ITN), the number or share of people infected with HIV who are on anti-retroviral treatment (ART), or the number or share of people infected with tuberculosis who are diagnosed and successfully treated. Finally, inputs and outputs crudely refer to the purchase or distribution of certain supplies, health commodities or services, such as the number of bed nets, condoms, or anti-malarial drugs that a government purchased or distributed. Payments or reimbursements for inputs, outputs and outcomes can be paid through various methods, including fee-for-service, capitation (fee for person per year), and diagnostic reimbursement groups (DRG). Each of these payment methods has different implications for both efficiency and quality.

A critical design feature of PBF is the performance measure on which funding is conditional; the act of defining 'performance' and 'results' through shared goals between the two parties is key to PBF's effectiveness. However, performance is a multidimensional concept and hence not easily summarized into a single score. There is disagreement around whether 'performance' metrics should measure the direct actions taken by the agent (e.g. inputs and outputs); the results of those actions for health service coverage, uptake, or behavior chance (e.g. outcomes); ultimate changes in mortality, disease incidence, or health status ensuing from the program (e.g. impact); or a composite score incorporating one or more of the aforementioned elements.

In addition to the conditioned performance metric, there are many other important design features of PBF, including:

- The recipient of performance payments, e.g. which ministry or organization;
- The proportion of total funding disbursed through PBF versus other funding approaches;
- The total number of metrics, and whether payments are linked to a composite score or calculated independently for each of several individual metrics;

- Whether payments are made per additional unit of performance, or whether payments are tied to achieving a preset indicator target;
- The frequency of data collection and performance-based disbursements; and
- Whether metrics are self-reported from administrative data, or robustly collected and/or verified by an independent third party.

A number of development agencies have used different variants of PBF, including the Millennium Challenge Corporation, the World Bank, and the Inter-American Development Bank. The Millennium Challenge Corporation considers performance *ex-ante* to determine which countries are eligible for funding, particularly looking at a combination of indicators that measure governance and state capacity.[15] The World Bank's Health Results Innovation Trust Fund (HRITF) has multiple projects that condition financing based on progress toward certain health outcomes within countries.[16] The Inter-American Development Bank's *Salud Mesoamerica 2015* initiative, which seeks to close the health equity gap in Mesoamerica, has a results-based funding tranche, which is conditional on independently measured progress toward a pre-defined set of coverage goals and policy changes.[17] Among global-health funding agencies, the Global Fund and the GAVI Alliance have been early adopters of PBF, although others have argued that the operationalization of PBF by both agencies could benefit from significant design changes.[18,19]

2.2. Overview of the Global Fund and its use of performance-based financing

Created in 2002, the Global Fund is a public-private partnership mandated to "[invest] the world's money to save lives" and create "a world free from the burden of HIV/AIDS, tuberculosis and malaria."[20] The Global Fund draws its financial support from a broad range of donors; in 2011 it received voluntary contributions from 30 countries and 10 private organizations, totaling $3.1 billion.[21] The Fund was designed to be "a financial instrument, not an implementing agency."[22] Between 2002 and 2011, the Global Fund disbursed $16 billion to principal recipients, of which 56% went to HIV/AIDS, 28% to malaria, 15% to tuberculosis, and 1% to health systems strengthening.[23]

Under the Global Fund's financing model prior to its most recent set of reforms, 'country coordinating mechanisms' (CCMs), comprised of government and civil society stakeholders in eligible recipient countries, developed and submitted funding proposals to the Global Fund. All proposals were next reviewed for 'technical criteria' by the Fund's technical review panel (TRP), and subsequently forwarded to the Fund's board for final approval. If approved by the Board, grants were awarded and funds disbursed to country-based 'principal recipients' (PRs), which are responsible for (1) leading implementation of the programs (typically with assistance from one or more sub-recipients); and (2) reporting on grant results and implementation progress.[24] In each country, an independent local fund agent (LFA) is contracted by the Global Fund to "oversee, verify, and report on grant performance" by the PR.[25]

PBF has traditionally been a key principle of the Global Fund, alongside 'country ownership' and 'value for money'.[26] The Global Fund has expressed several distinct objectives for its PBF mechanism: to "link funding to…country-owned objectives and targets"; to ensure that countries spend on "delivering services for people in need"; to "encourage learning to strengthen capacities and improve program implementation"; to "invest in measurement systems and promote the use of evidence for decision-making"; to oversee and monitor grants; and to reallocate "resources from non-performing grants" to "programs where results can be achieved."[27] These statements reflect different expectations of PBF, which may at times be in conflict. For example, the goal of using PBF to strengthen capacities (e.g. through better performance measurement) may be inconsistent with the goal of "reallocating resources from non-performing grants" to grants where results can be achieved.

Prior to implementation of the New Funding Model in 2013, the duration of a Global Fund grant typically extended over two phases. Phase 1 covered the first two years of grant implementation, while phase 2 generally began at the end of the second year and lasted through the end of the time period included in the approved proposal. The amount allocated and disbursed in phase 2 was intended to be conditional on performance and many other factors in phase 1. Disbursements within each grant were staggered over time (on average every 8 months); each disbursement was assigned a composite performance metric, which the Global Fund calls a 'grant rating'. Hence a given grant would receive multiple grant ratings within each phase. In addition to phase 1 and phase 2 of a grant, there was also the rolling continuation channel (RCC), in which "high-performing grants could be extended beyond their initial term for a maximum of another six years." Participation in the RCC was based on three main criteria: "strong performance (i.e., an 'A' rating in 50% of periodic reviews over 18 months); evidence of impact the grant has made; [and evidence of] sustainability of the activities under the grant."[28]

Using the Grant Rating Methodology, the Global Fund assigned a grant rating at the end of phase 1 as well as for each disbursement for the grant (box 2).[29] In short, this multi-step process generated an overall letter rating from several indicators (steps 1 to 5). This letter rating indicated a range for how much would ultimately be disbursed (steps 6 and 7). Box 2 shows that the Global Fund's performance-based financing system established a long and complex chain between self-reported results of individual indicators and final payment. In particular in steps 5 and 7, Global Fund discretion plays a role in mediating the linkage between measured results and the final disbursement amount.

Under this system, each grant had a number of predetermined indicators and targets. The percentage achieved of the target was calculated for each indicator (step 1). For example, an HIV grant might include indicators for the number of people on ART, number of condoms distributed, number of people counseled and tested, and the number of officials who completed training. For most grants, indicators were primarily inputs and outputs (e.g. the number of health products distributed) rather than health services coverage or health outcomes (e.g. percentage of people sleeping under a bed net) – see appendix 1 for the Global Fund's 'top 10' indicators. The Global Fund's official M&E guidance lists a total of

130 suggested indicators, some of which overlap with the 'Top 10.' Of these suggested indicators, about 58% are categorized as outputs – see table 1. The M&E guidance does not represent the entire universe of indicators included in grants, as the Global Fund's official policy is to "not impose indicators and targets but [use] those defined by countries themselves."[30] Thus, we cannot easily ascertain what kinds of indicators were ultimately used to inform grant scores.

Box 2. Steps in the Global Fund's performance-based financing system

1. Percent target achieved is calculated for each individual indicator
2. Two averages are calculated: Average % target achieved (numeric rating) for all indicators; Average % target achieved for top 10 indicators (Appendix 1)
3. Each numeric average (rating) is each converted to a letter rating. In total two letter ratings are generated (Appendix 2)
4. Overall letter indicator is obtained using two letter ratings
5. Letter grant rating is manually adjusted based on several factors to determine final grant rating (Appendix 3)
6. Letter grant rating is converted to 'Indicative Disbursement Range' (Appendix 2)
7. Final level is manually chosen and not necessarily within the indicative range

Table 1. Number of suggested M&E indicators, by disease and category

Disease	Output	Coverage	Outcome	Impact	TOTAL
HIV	32	9	11	8	60
Tuberculosis	29	0	4	3	36
Malaria	14	0	10	10	34
TOTAL	75	9	25	21	130

Notes: Compiled by authors based primarily on the Global Fund's categorization of indicators[31]

Results achieved for all individual indicators and for 'top 10' indicators were separately averaged to calculate two numeric ratings (step 2). These two numeric ratings were each converted to a letter grant rating using a conversion table; a rating of >100% is assigned A1; 90%-100%, A2; 60-89%, B1; 30-59%, B2; and <30%, C (appendix 2). This generates two letter grant ratings, one for all indicators and one for the top 10 indicators (step 3). The two letter grant ratings were then combined to inform a single letter indicator rating (step 4). Next, the Global Fund Secretariat identified 'management issues' in four functional areas (in monitoring and evaluation, pharmaceutical and health products management, program management, and financial management and systems), as described in Appendix 3, and if any 'major issues' were detected, the single letter indicator rating could be adjusted upwards or

downwards at the discretion of the Fund Portfolio Manager to generate the final grant rating (step 5 and appendix 3).

This final letter grant rating was converted to an 'indicative disbursement range' for the next disbursement period based on a conversion table (step 6 and appendix 2). Here the next disbursement period could be the next disbursement for that grant, or it could be the major disbursement that takes place between phase 1 and phase 2. For the latter, the 'indicative disbursement range' was expressed as a proportion of the amount originally allocated for phase 2 at the initial grant approval. In choosing how much to disburse within the 'indicative disbursement range', the Global Fund Secretariat considered several factors: PR disbursement request; 'grant performance'; 'contextual factors' e.g. political and civil issues or force majeure; 'real budget needs in the context of spending ability'; and 'actions needed to address identified weaknesses in management capacity.' The Secretariat then chose the final funding level (denoted as a percentage of the originally allocated phase 2 amount), which did not need to be within the 'indicative disbursement range' (determined by the final letter grant rating) (step 7).

3. Literature Review of the Global Fund's Performance-Based Financing

There have been a few papers published in the medical literature that have examined the Global Fund's performance-based financing approach – both the determinants of disbursements and the determinants of performance. On our first question, past research has examined the determinants of disbursements, and the extent to which disbursements are linked to the Global Fund's performance metric. Low-Beer et al (2007) [32] find that 25% of grants have inadequate performance as measured by their grant rating, i.e. 25% of grants had not met their stated and self-chosen targets. In an analysis of the first four rounds of Global Fund financing, Lu et al (2006) document a relationship between several 'grant characteristics' and the 'rate of grant implementation' (i.e. disbursements over initial grant commitments). Holding all else equal, smaller grants and grants in politically stable countries achieved higher rates of grant implementation; counter-intuitively, grant implementation also appeared to be more rapid in countries with low income and low health-spending.[33]

On our second question, several papers have examined the predictors of the Global Fund's grant ratings. For example, Radelet and Siddiqi (2007) associate various country-level characteristics with grant scores. Among other findings, their analysis suggests that poor countries received higher grant scores, while grants with public-sector PRs received lower ratings. LFA assignment was also influential; grant scores appeared to be systematically lower in countries where KPMG (an accounting firm) was the designated LFA, suggesting that grant ratings may be vulnerable to nonrandom measurement error.[34] In an analysis of Global Fund tuberculosis (TB) grants, Katz et al. (2010) find that grant performance typically improves in the latter years of grant implementation. While the reported results of TB grants (in aggregate) reached only about 60% of their stated targets in the first 1.25 years of implementation, performance improved rapidly thereafter – by the fifth and final year of

grant implementation, the average program had met and exceeded its stated goals. The authors note that "the increase in performance during the second year of funding coincides with the second year comprehensive evaluation," i.e. the period preceding the grant evaluation and renewal process. In addition, political stability at the country level increased grant performance, while higher disease burdens were associated with more negative grant performance. Confirming previous studies, "type of LFA was found to be a significant factor in determining grant performance."[35]

4. Methods and Data

We pursue two different approaches to investigate our questions: econometric analysis using grant-level data and a case study of selected countries. To construct the database for the grant-level analysis, we obtain two publicly available databases from the Global Fund's website [36] – its grant-level database and its disbursement-level database – along with variables from other datasets. As these databases do not include data on raw indicators used to generate grant ratings, we complement the main cross-country analyses with a case study. For this case study, we manually extract information from available grant scorecards of selected countries.

4.1. Econometric analyses

Data for econometric analyses

The grant-level database contains key dates of the grant.[1] In addition, the disbursement-level database has information for each disbursement made for a given grant including both the size and date of the disbursement, along with the corresponding Global Fund 'grant rating'. As grant ratings were given alphabetic scores, we converted the alphabetic scores to a numeric scale, with 1 corresponding to the lowest score (C) and 5 to the highest score (A1). The following disbursement-level information was summarized separately for phase 1 and phase 2 of each grant: the average rating (over multiple ratings) in the phase; the first and last rating in the phase; and the total, average, and coefficient of variation of the disbursement amount. Table 2 presents a summary of the data used, and appendix 4 contains information on the sources and definitions for country-level variables used.

The data and code that can replicate these analyses will be made available on the Center for Global Development website (www.cgdev.org/publication/data-set-performance-and-payment-global-fund). This study was made possible by publicly available data, a reflection

[1] These include grant agreement sign date, program start date, latest disbursement date, phase 2 approval date, phase 2 sign date by both principal recipient and the Global Fund, grant agreement end date, grant agreement proposal completion date, and grant agreement sign date for RCC by both the PR and the Global Fund

of the Global Fund's commitment to transparency; yet the study is also limited by what data are available. Throughout this process, we have consulted with members of the Global Fund's Strategy, Investment and Impact division.

Table 2. Summary statistics of grant portfolio

VARIABLE	HIV/AIDS		TB		MALARIA	
	Mean	SD	Mean	SD	Mean	SD
Phase 1 disbursements (000s USD)	11,600	12,100	5,171	5,952	11,500	15,600
Phase 2 disbursements (000s USD)	23,700	47,000	6,141	10,400	9,402	14,000
Received phase 2 disbursements	0·81	0·40	0·79	0·41	0·75	0·43
Phase 1 average rating	3·16	0·87	3·24	0·80	2·78	0·81
Phase 2 average rating	3·66	0·82	3·63	0·81	3·43	0·90
Local fund agent						
KPMG	0·15	0·36	0·12	0·32	0·05	0·21
PwC	0·54	0·50	0·48	0·50	0·53	0·50
STI	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
Principal recipient						
CS/PS/TP	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, start year (000s)	542	984	272	733	1,164	1,891
Deaths, start year (0000s)	40	73	24	68	2	5
Program start year	2005	1·93	2006	1·86	2006	1·85
GDP per capita (USD)	1,566	1,792	1,367	1,301	1,043	1,586
THE per capita (USD)	97	111	97	124	60	100
DAH per capita (USD)	5·6	5·9	5·4	6·1	7·2	7·7

Notes: In Global Fund databases, there are 1090 grants and 7232 disbursements recorded from January 1, 2003 to July 5, 2012. In all regression analyses HIV/AIDS grants includes grants with both HIV/AIDS and tuberculosis. Of these grants, only 508 grants have recorded a phase 2 disbursement (including $0 value), of which 440 grants have phase 2 grant ratings. There are 321 grants in the sample which had both a phase 1 grant rating and a phase 2 disbursement (of 206 grants had a disbursement greater than 0) and 383 grants which have a phase 2 grant rating and grant-specific characteristics. This table is calculated for the 508 grants used in the analyses. The large standard deviations of the disbursements are in part driven by zero values. LFA – local fund agent; PwC – Price Waterhouse Cooper; STI – Swiss Tropical Institute; UNOPS – United Nations; PR – principal recipient; CS/PS/TP – civil society, private sector, or third party

Econometric methods

In the regression analysis, we separately analyze the predictors of phase 2 disbursements with two different but related dependent variables. The first dependent variable is whether a grant received any phase 2 disbursement (binary), which measures the extent to which a grant is continued into phase 2. This variable is regressed on phase 1 grant rating, several grant-

specific characteristics (start year of the grant, dummies for PR type, dummies for the LFA, and phase 1 disbursements) and country-specific characteristics (income, government effectiveness, and disease burden in the country as measured by numbers of cases). The equations are estimated separately for HIV, TB, and malaria, and only for completed grants before 2012 (reflecting completed phase 2 disbursements). All regression analyses are done at the grant level, not individual disbursements.

The other dependent variable is the natural log of the phase 2 disbursement amount regressed on the independent variables noted earlier. In using absolute phase 2 disbursement levels as the dependent variable, we assess the extent to which performance competes with other factors in deciding the amount of grant funding released to recipients. Appendix 5 provides justification for our usage of this variable.

In investigating the second question, we use the average grant rating in phase 2 as the dependent variable. As each individual disbursement corresponds to an assigned grant rating, we do not restrict the sample to those grants that ended before 2012. As a measure of relative change in disease burden, we use the proportional change in the number of cases over the phase 1 period. A linear probability model and an ordered probit model are estimated separately

4.2. Analyses of grant scorecards for selected countries

The main set of analyses relied on publicly available spreadsheets from the Global Fund. However, these data do not have information on the individual indicators used to generate the grant ratings. Grant scorecards, which are official documents used to review phase 1 performance, have the advantage of providing information on all individual indicators and their values. Thus, we complement the main analysis with a case study of selected grant scorecards. However, the Global Fund does not publish all of its grant scorecards, and many scorecards are not available in a machine-readable format.

For the case study, we chose the five countries that, as of December 10, 2012, had received the largest amount of funding from the Global Fund for each of the three diseases in the organization's remit. We then selected all disease-specific grant scorecard for the most recent grant round in each country. Most of the scorecards were published in 2010 or 2011. The grants for the selected countries have a combined lifetime budget of approximately $3 billion, and a total phase 2 budget of $844 million. For HIV/AIDS, these 5 countries are Malawi, Ethiopia, Tanzania, India, and Rwanda. For tuberculosis, they are Russia, Bangladesh, India, Indonesia, and Pakistan. For malaria, they are Ethiopia, Uganda, Nigeria, the Democratic Republic of Congo, and Tanzania.

These scorecards are used to assess the linkage between the individual indicators and the final grant rating, as well as the linkage between the final grant rating and the phase 2 amount. These grant scorecards in PDF have two key kinds of data that are not available as a spreadsheet in the public domain: (1) values for multiple individual indicators for each grant;

and (2) final phase 2 amount as a fraction of the originally allocated phase 2 amount. When values are not ostensibly linked according to their respective conversion tables, we can presume that 'manual adjustment' has occurred, i.e. adjustment of the score beyond what would be expected given the conversion table. To our knowledge, the extent of such manual adjustment, even for a sample of countries, has not been quantified in any previous study.

5. Results

5.1. Results from econometric analyses

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,[37,38] 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, civil society grants (a category that also includes private sector and third party grants 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 (appendices 6-8).

We identified no 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[39] 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 is a decrease in prevalence correlated with significantly increased grant ratings—a 10% decrease in prevalence was associated with an increase in grant rating of 0.27 on the numerical scale of 1–5 (C to A1), compared with a mean of 3.6. For HIV/AIDS grants, countries with lower incomes and higher health spending per head tended to achieve higher grant ratings.

Table 3. Predictors of phase 2 disbursements

Variable	Any phase 2 disbursements			Ln(phase 2 disbursements)		
	HIV/AIDS	TB	MALARIA	HIV/AIDS	TB	MALARIA
Average phase 1 ratings	0·098‡	0·003	0·174‡	-0·023	0·111	-0·192
	(0·045)	(0·053)	(0·068)	(0·166)	(0·098)	(0·207)
Ln(phase 1 disbursements)	0·012	0·033	0·079	1·052†	0·729†	0·874†
	(0·045)	(0·041)	(0·053)	(0·135)	(0·152)	(0·127)
LFA: KPMG	-0·172	0·243§	0·054	-0·116	-0·036	0·170
	(0·138)	(0·143)	(0·123)	(0·391)	(0·296)	(0·282)
LFA: PwC	-0·076	-0·013	0·034	-0·361§	-0·059	-0·064
	(0·081)	(0·086)	(0·110)	(0·193)	(0·241)	(0·229)
PR type: civil society, private sector, or third party	0·254‡	-0·110	-0·010	0·762‡	0·904†	0·953‡
	(0·124)	(0·137)	(0·185)	(0·345)	(0·318)	(0·431)
PR type: government	0·138	0·172	0·140	0·453	0·735‡	1·124†
	(0·126)	(0·155)	(0·181)	(0·303)	(0·328)	(0·336)
Number of disbursements in phase 1	-0·022	0·029	-0·028	-0·105‡	-0·022	-0·150§
	(0·024)	(0·026)	(0·030)	(0·052)	(0·063)	(0·077)
Grant start year	-0·131†	-0·157†	-0·151†	-0·194‡	0·318§	-0·204§
	(0·024)	(0·029)	(0·037)	(0·075)	(0·166)	(0·102)
Government effectiveness, start year	0·003	-0·070	-0·166	-0·563‡	-0·401	-0·366
	(0·086)	(0·124)	(0·121)	(0·224)	(0·322)	(0·283)
Ln(DAHpc), start year	0·049	0·056	0·049	0·040	-0·058	-0·185
	(0·037)	(0·038)	(0·041)	(0·111)	(0·103)	(0·115)
Ln(THEpc), start year	-0·152	-0·132	-0·011	0·065	-0·511	-0·105
	(0·112)	(0·113)	(0·140)	(0·208)	(0·367)	(0·269)
Ln(GDPpc), start year	0·149	0·124	0·139	-0·033	0·558§	0·156
	(0·113)	(0·140)	(0·146)	(0·191)	(0·327)	(0·256)
Cases of disease, start year (millions)	-0·004	-0·005	-0·047	0·249‡	0·279‡	0·120§
	(0·056)	(0·082)	(0·029)	(0·121)	(0·117)	(0·061)
Constant	261·854†	314·938†	301·856†	388·022‡	-636·348§	410·125§
	(48·741)	(58·142)	(74·736)	(149·057)	(332·153)	(203·309)
Number of grants	112	79	71	79	51	47
R-squared	0·392	0·509	0·455	0·668	0·718	0·737

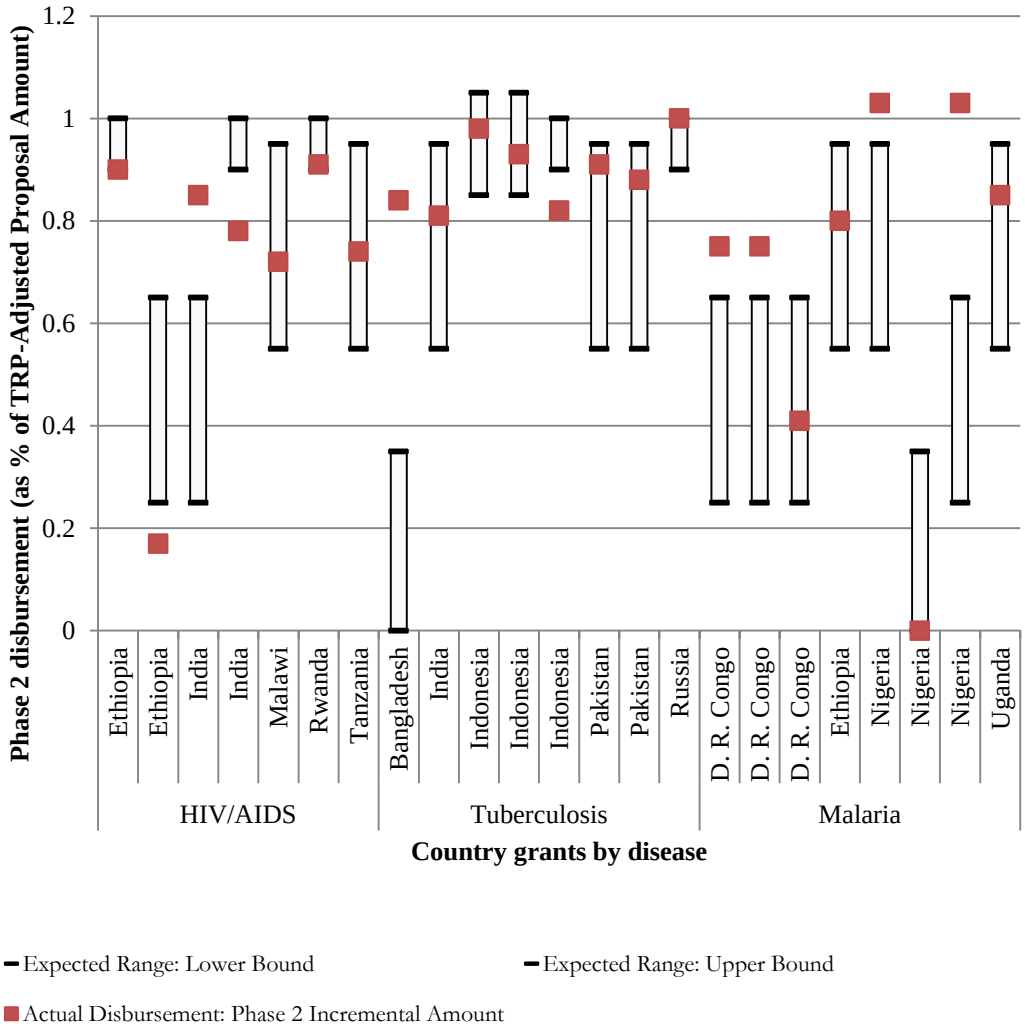
Notes: Significance: † less than 1%; ‡ less than 5%; §less than 10%· Note that the sample is restricted to grants that ended before 2012·

5.2. Results from analyses of grant scorecards

By analyzing information manually extracted from grant scorecards of selected countries, we find that at least 42% of grants have final phase 2 amounts that are outside the expected 'indicative disbursement range' according to the grant rating, suggesting 'manual adjustment' by Global Fund staff (figure 1 and appendix 9). We also find that a third of grant ratings themselves are subject to manual adjustment, as the letter ratings are not within the expected

range given the combined results for individual indicators (appendix 10). These results corroborate the main findings from regression analysis.

Figure 1. Indicative disbursement ranges and disbursement amounts



Note: A malaria grant for Tanzania (TNZ-809-G11-M) which had a negative disbursement is excluded.

We first checked the extent to which the incremental phase 2 amount (as a percentage of the original phase 2 amount) is within the 'indicative disbursement range' that would be expected based on the overall letter grant rating. However, there are different 'indicative disbursement ranges' from Global Fund documents. When using one definition, we find that the incremental phase 2 amount is within the expected disbursement range for only 54% of grants (appendix 9).[40] When another definition is used, only 29% of grants received an incremental phase 2 amount within the expected range. Because of variation across documents and time, we cannot ascertain which definition was used for each grant renewal. However, when applying both definitions to the data, we find that *at most* 58% of the grants

have an incremental phase 2 amount within the expected range given the letter rating. Therefore, at least 42% of grants in the sample had their incremental phase 2 amount manually adjusted, following what the indicative disbursement range would indicate given their grant ratings. (See table 4.)

Next, we examined the chosen grant scorecards to see whether overall grant ratings could be generated from individual indicators. Recall that the overall letter score was determined by the two distinct letter ratings (for the top 10 indicators and for all indicators). For example, a grant with a numeric indicator rating of 80% would be assigned a B1 letter rating, after which the letter rating could be adjusted based on other factors. Using the raw indicator values, we calculate the numeric ratings for all indicators and the top 10 indicators separately, and we check whether these ratings are within the expected numeric range given the overall letter rating. When the numeric ratings are not within the expected range given the final letter score, it indicates that the Global Fund has 'manually adjusted' the letter score based on management or contextual factors. For 67% of the grants, we find that the simple average of all indicators available for the grant is within the expected range given the letter score on the grant scorecard (appendix 10). In other words, at least a third of grants in our sample have seen their grant ratings manually adjusted beyond what would be expected from the conversion table. In appendix 11, we provide examples of individual indicators recorded and measured by the grant scorecards.

As an example, appendix 12 presents a scorecard from Ethiopia's HIV/AIDS grant from Round 8. This scorecard illustrates some of the issues identified in this study. This particular grant received a B2 rating and a 'conditional go' recommendation from the Secretariat, yet was ultimately allocated only 17% of its original phase 2 amount. From an examination of individual indicators, the grant appears to be performing above average: the grant was relatively successful in achieving its targets for number of people receiving ART (76%), number of condoms distributed (120%), and number of patients tested for sexually transmitted infections (120%), although little progress had been made in terms of increasing the number of HIV positive pregnant women receiving a complete course of ARV prophylaxis (20%). The scorecard would suggest that the underperformance of the last indicator was the main reason for committing only 17% of the original phase 2 amount. However, a simple average of all the indicators leads to an average of 96%, and an average of top 10 indicators yields 84%, which is still significantly higher than the overall indicator rating. Thus, for this particular grant, there is no clear relationship between progress toward individual indicators, the ultimate letter grant score, and the final disbursement amount.

Table 4. Predictors of phase 2 ratings

Variable	Linear probability model			Ordered probit model		
	HIV-AIDS	TB	MALARIA	HIV-AIDS	TB	MALARIA
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(phase 1 disbursements)	0·043	0·008	-0·150	0·025	0·007	-0·196
	(0·073)	(0·095)	(0·129)	(0·102)	(0·131)	(0·134)
LFA: KPMG	-0·415	0·104	0·261	-0·583	0·164	0·349
	(0·253)	(0·277)	(0·413)	(0·346)	(0·363)	(0·579)
LFA: PwC	0·026	-0·074	-0·076	0·026	-0·088	-0·103
	(0·155)	(0·192)	(0·224)	(0·211)	(0·231)	(0·268)
PR type: civil society, private sector, or third party	0·440‡	0·165	0·139	0·570	0·152	0·230
	(0·199)	(0·286)	(0·322)	(0·348)	(0·404)	(0·405)
PR type: government	-0·105	-0·095	0·003	-0·258	-0·178	0·0786
	(0·202)	(0·215)	(0·294)	(0·326)	(0·357)	(0·380)
Number of disbursements in phase 1	0·042	0·057	0·000	0·065	0·079	0·004
	(0·040)	(0·041)	(0·072)	(0·053)	(0·058)	(0·078)
Grant start year	-0·059	-0·011	0·089	-0·079	0·001	0·103
	(0·059)	(0·057)	(0·085)	(0·075)	(0·079)	(0·096)
Government effectiveness, start year	0·282	0·366	0·392	0·494†	0·534	0·494
	(0·182)	(0·243)	(0·297)	(0·231)	(0·315)	(0·362)
Ln(DAHpc), start year	-0·189‡	-0·073	-0·022	-0·265‡	-0·112	-0·039
	(0·074)	(0·074)	(0·088)	(0·099)	(0·109)	(0·112)
Ln(THEpc), start year	0·578†	0·143	0·208	0·821‡	0·164	0·280
	(0·188)	(0·238)	(0·322)	(0·283)	(0·292)	(0·362)
Ln(GDPpc), start year	-0·557†	-0·21	-0·474	-0·826‡	-0·261	-0·597
	(0·184)	(0·231)	(0·346)	(0·282)	(0·329)	(0·392)
Proportional change in numbers of cases of disease over phase 1	0·165	-1·641‡	-0·275	0·193	-2·372†	-0·316
	(0·233)	(0·762)	(0·168)	(0·234)	(1·197)	(0·242)
Constant	122·423	27·105	-170·686			
	(118·173)	(115·159)	(168·710)			
Number of grants	137	98	85	137	98	85
R-squared*	0·258	0·164	0·137	0·045	0·028	0·0271

Notes: Significance: † less than 1%; ‡ less than 5%; §less than 10%·. *Columns 4-6 refer to pseudo-R squared values.

6. Discussion and recommendations

The results from both the regressions and the grant scorecard case study suggest that, as expected, different factors determine phase 2 funding. In summary, Global Fund grant ratings in phase 1 are associated with having any phase 2 disbursement for some grants. At least for HIV/AIDS and malaria grants, grant ratings are correlated with whether a grant continues in phase 2, which suggests that the Global Fund is using its authority to reallocate funds from non-performing grants. There are two possible (and not mutually exclusive) reasons for why there were grants that failed to continue into phase 2 (with zero disbursements in phase 2): these were truly non-performing grants; or grants with worse performance were discontinued for political or financial reasons. We also find that phase 2 disbursement levels are not associated with phase 1 grant ratings but that the most important determinant is phase 1 funding. The probability of continuing in phase 2 may be influenced by performance, but disbursement levels are neither correlated with performance measures nor disease burden.

Moreover, the Global Fund's average grant ratings in phase 2 are not correlated with any other grant variables, but are associated with selected country characteristics such as income and levels of health spending. Our case study of selected grants further indicates that the ratings generated from individual indicators are not easily replicated, and that there is high frequency of 'manual adjustment' of both grant ratings and disbursement amounts conditional on the final chosen grant rating.

The fact that these ratings cannot be replicated without the underlying data, let alone the various discretionary factors and decisions involved, makes it clear that grant ratings are very much a 'black box' to the public, and likely even to those most affected, i.e. 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 PBF to improve performance.

PR perceptions appear to confirm the results of statistical analyses. According to a 2013 Aidspan survey, only 34% of PRs feel that "the grant rating system accurately reflects performance."[41] If PRs do not feel that performance is accurately measured or tied to future disbursements, PBF incentives will not have the desired effect in motivating better health outcomes. Further work is needed through qualitative research with principal recipients and Global Fund managers to better understand the kinds of incentives (or disincentives) transmitted from the current system, and the extent to which the current financing system motivates better performance. There are questions on the extent to which national-level incentives can align incentives within the country, and how unintended or perverse outcomes may be generated by a focus on inputs and outputs as performance measures, or via poorly measured indicators.[42]

One major argument by the Global Fund in explaining the system's complexity is that funding is determined by multiple factors, not only performance. We agree that relying on

multiple factors is both reasonable and expected, especially where continued funding is a matter of life and death (i.e. so-called 'ethical commitments' to ensure 'continuity of services'). [43] However, performance-based financing can be compatible with ethical commitments if the direct and explicit linkage occurs for only a portion or tranche of funds. As there are few examples of donor agencies using donor-to-country performance-based financing, the Global Fund should assess the few existing systems in operation today – the Inter-American Development Bank's *Salud Mesoamerica*, the World Bank's Health Results Innovation Trust Fund (HRITF), and the GAVI Alliance's performance-based financing system[44], where payments are explicitly linked to observed performance – but for a portion, not the total financed amount.

Although immunization services are quite different from services for HIV/AIDS, tuberculosis, and malaria the Global Fund should look to its sister organization, GAVI Alliance, to share lessons on optimizing performance-based financing. GAVI approved a new performance-based funding scheme in November 2011 and has begun to roll it out. [45] 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 immunization outcomes. It will be used as a reward, rather than a penalty. Moreover, GAVI also focuses 'performance' measurement on downstream coverage measures, rather than upstream indicators on product purchases or distributions, or trainings conducted. Finally, in the past GAVI relied on problematic self-reported data that led to the perverse outcome of over-reporting by countries.[46,47] However, GAVI has since redesigned its PBF to move towards the use of survey-based estimates in some countries.[48]

Similarly, the Global Fund should shift to key measures of health coverage and health outcomes, and make payments based on individual measures of performance rather than on composite measures of performance. Although the Global Fund recently announced a greater emphasis on these downstream outcomes in its existing performance-based financing system[49], the Global Fund still does not directly link payment to specific performance measures. By moving away from many to fewer indicators, from upstream to more downstream indicators, from linking payments from composite metrics to specific indicators, and from self-reported to robustly measured results, the Global Fund's redesigned performance-based financing system could transmit stronger incentives and generate greater value for money.

Given 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 Global Fund should pilot and gradually scale-up a simplified version of PBF in selected countries, where performance is explicitly linked to a tranche of funds (e.g. 10%-20% of the total grant amount). For this tranche, payments should be based on one or more clear and easy-to-understand measures of performance on core outputs and outcomes, e.g. $400 per additional person-year of ART provided at a minimum quality standard.[50] Finally, the redesigned system should use independent and robust performance measurement,[51] and the Global Fund should track and

evaluate the implementation of such modifications, particularly in 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 which will explicitly take into account disease burden and income levels in allocating absolute levels of funding.[52] Yet its incorporation of performance as a factor into its allocations is secondary compared to its focus on income or disease burden. The decision for funding allocations is a 'repeated game', occurring more than once. By paying more to countries with higher disease burden, the *de facto* incentive is that reporting a higher disease burden will generate greater funding. In contrast, if the Global Fund were to also allocate its funding on performance and results (rather than only on disease burden), then the *de facto* incentives will align performance with payment. The New Funding Model will also have two funding streams, one stream called 'indicative funding' (for which the allocation formula will be applied) along with another stream called 'incentive funding'. The incentive funding stream could be used as the additional portion of funds needed for a redesigned PBF system.

Nevertheless, value for money is neither an automatic nor inevitable result of performance-based financing. Indeed, there may be unintended consequences or perverse incentives of performance-based financing such as an exclusive focus on certain performance measures to the neglect of other unmeasured areas of performance. Understanding these unintended consequences will also require better evaluation and learning.

Appendix 1. The Global Fund's Top 10 Indicators, undated

HIV	Number of people from key populations reached with individual and/or smaller group-level HIV preventive interventions that are based on evidence and/or meet the minimum standards required
	Number and percentage of key populations at risk reached with HIV prevention programs
	Number of injecting drug users (IDUs) on opioid substitution therapy
	Number of people tested and counseled for HIV and who received results *[This indicator refers to the number of HIV testing and counseling sessions provided during a specific period of time, unless specified otherwise, and is Top Ten for disaggregated groups]*
	Number and percentage of pregnant women who know their HIV status results
	Percentage of HIV-positive pregnant women who received antiretrovirals to reduce the risk of mother-to-child transmission
	Number and percentage of eligible adults and children currently receiving antiretroviral therapy
	Number and percentage of orphaned and vulnerable children aged 0–17 years whose households received free basic external support in caring for the child according to national guidelines
TB/HIV	Number and percentage of adults and children enrolled in HIV care who started TB treatment, expressed as a proportion of adults and children in HIV care during the reporting period
	HIV-positive TB patients who are started on or continue previously initiated antiretroviral therapy, during TB treatment, among all HIV-positive TB patients registered during the reporting period (number and percentage)
TB	Number of TB cases (all forms) notified to the national health authorities during a specified period
	Number of new smear-positive TB cases notified to the national health authority during a specified period
	Number and percentage of new smear-positive TB cases successfully treated (cured plus completed treatment) among the new smear-positive TB cases registered during a specified period
	Number of laboratory-confirmed MDR-TB cases enrolled on second-line anti-TB treatment during the specified period of assessment
	Laboratory-confirmed MDR-TB cases successfully treated (cured plus completed treatment) among those enrolled in second-line anti-TB treatment during the year of assessment (number and percentage)
Malaria	Number of insecticide-treated nets distributed to people
	Number and percentage of households in designated target areas that received spraying through an indoor residual spraying campaign in the last 12 months
	Number and percentage of all suspected malaria cases that received a parasitological test
	Number and percentage of confirmed outpatient malaria cases that received first line antimalarial treatment according to national policy *(can be disaggregated by public health facility, community, or private health facility)*
HSS (Top 10 Equivalent)	Annual number of graduates of health institutions/100,000 population
	Annual rate of retention of health service providers at public health facilities
	Percentage of districts submitting timely, complete and accurate reports to the national level
	Number and percentage of health facilities offering specific services
	Average availability of antimalarial, TB and antiretroviral drugs

continued

continued

CSS (Top 10 Equivalent)	Number of community-based organizations and/or networks that have meaningfully participated in joint national program reviews or evaluations in the last 12 months
	Number of community-led advocacy campaigns that saw a targeted policy change or can clearly document improved implementation of an existing (targeted) policy within 2 years of the start of the advocacy campaign
	Number and percentage of community based HIV, TB, malaria and immunization service organizations with referral protocols in place that monitor completed referrals according to national guidelines
	Number and percentage of staff members and volunteers currently working for community-based organizations that have worked for the organization for more than 1 year
	Number and percentage of community-based organizations that have a complete and sound financial management system, which is known and understood by staff and consistently adhered to
	Number and percentage of community based organizations reporting no stock out of HIV, TB, Malaria or immunization essential commodities according to program implementation focus during the reporting period
	Number and percentage of community based organizations that deliver services for HIV, TB, malaria and immunization according to national or international accepted service delivery standards
	Number and percentage of staff members of community-based organisations with written terms of reference and defined job duties
	Number and percentage of community based organizations that submit timely, complete and accurate financial and programmatic reports to the national level according to nationally or internationally recommended standards and guidelines (where such guidelines exist)
	Number and percentage of community based organizations with a developed strategic plan covering 2 to 5 years

Source: The Global Fund. Monitoring and evaluation toolkit, fourth edition.
http://www.theglobalfund.org/en/me/documents/toolkit/

Appendix 2. Conversion tables for the Global Fund's performance-based financing system

The steps here refer to box 2 in the paper.

Step 3. Table to convert numeric rating to letter grant rating

A1	A2	B1	B2	C
>100%	90-100%	60-89%	30-59%	<30%

Source: OPN

Step 6. Table to convert overall letter grant rating to indicative disbursement range for renewals

INDICATIVE DISBURSEMENT RANGES		
Overall Grant Rating		**Cumulative Disbursed Amount** (after the disbursement)
A1	Exceeding expectations	Above 95% of cumulative budget through next reporting period
A2	Meeting expectations	Between 105-85% of cumulative budget through next reporting period
B1	Adequate	Between 55-95% of cumulative budget through the reporting period
B2	Inadequate but potential demonstrated	Between 25-65% of cumulative budget through the reporting period
C	Unacceptable	Below 35% of cumulative budget through the reporting period

Step 6. Table to convert overall letter grant rating to indicative investment range for regular disbursements

Performance Rating	Indicative Investment Ranges
A1	90-100% of TRP-Adjusted Proposal Amount for the next Implementation Period (minus any Board mandated reductions)
A2	
B1	60-89% of TRP-Adjusted Proposal Amount for the next Implementation Period (minus any Board mandated reductions)
B2	30-59% of TRP-Adjusted Proposal Amount for the next Implementation Period (minus any Board mandated reductions)
C	To be discussed individually

Sources: The Global Fund. Grant rating methodology. Presentation prepared for LFA training, November 2010. Accessed 12 October 2012 at http://www.theglobalfund.org/documents/lfa/LFA_GrantRatingMethodology_Presentation_en/; The Global Fund. Core Operational Policy Manual. February 2013.

Appendix 3. Checklist of the most common issues in the four functional areas

Monitoring and Evaluation	Pharmaceutical and Health Products Management
1. Activities deviate from agreed M&E Plan 2. Performance Framework for the period corresponding to next disbursement period not approved and attached to a signed implementation letter. 3. On-site LFA data verification shows average data quality rated B2 or C in the last 6 months 4. Inappropriate impact measurement framework (i.e., without standard indicators, targets, data source and/or corresponding budget) 5. Progress update shows inconsistencies and/or lack of clarity in indicator measurements and reporting (i.e., data do not make sense)	1. PHPM activities being implemented deviate from the approved PSM Plan 2. The Price and Quality Reporting system [formerly the Price Reporting Mechanism (PRM)] not completed through latest Progress Update Period 3. Procurement practices in violation of the Global Fund policies and guidelines 4. Delays in procurement of health products >6 months 5. Inadequate storage and/or distribution arrangements of Pharmaceutical and Health Products
Program Management	**Financial Management and Systems**
1. Unmet Conditions Precedent (CP) or Time-bound Actions (TBA) 2. Little progress on GF-required PR Management Actions (in PU/DR and/or Management Letter) 3. PU/DR submitted more than 60 days after the end of reporting period 4. Period covered by PR financial and programmatic report (PU/DR) ended more than 6 months ago 5. Annual Review overdue by >6 months 6. PR staffing, expertise or capacity does not follow workplan/budget and/or FPM judges this to be inadequate for implementation 7. Poor oversight and monitoring of sub-recipients	1. Detailed budget for the previous period or period corresponding to the next disbursement period not agreed and/or activities deviate from agreed Budget 2. PR has expended grant amounts which are ineligible (i.e., on non-grant activities or otherwise in violation of the terms and conditions of the Grant Agreement) or not properly justified 3. Cash balance not reconciled to bank account with significant (+/-15%) and unexplained differences 4. Audit Report overdue by >6 months 5. Critical issues revealed by Audit Report(s) which are not being addressed by the PR 6. Statement of Sources and Uses of Funds has important deficiencies (e.g. correctness of opening balance, funds in transit, computation of closing balance, etc.) 7. Inadequate explanation of significant variance (+/-15%) between budget and actual expenditures

Source: The Global Fund. Grant rating methodology. Presentation prepared for LFA training, November 2010. Accessed 12 October 2012 at http://www.theglobalfund.org/documents/lfa/LFA_GrantRatingMethodology_Presentation_en/

Appendix 4. Description of variables

Variable	Time	Source
Official Development Assistance for Health, USD (constant 2009)	1990-2012	Institute for Health Metrics and Evaluation (IHME)
Total Health Expenditure, USD (constant 2005)	1995-2009	World Health Organization, National Health Accounts
Gross Domestic Product, USD (constant 2000)	1995-2009	World Bank, World Development Indicators
Population	1995-2009	UN Population Statistics
WB government effectiveness index (Kauffmann/Kraay);	2000-2010	World Bank, World Development Indicators
Malaria prevalence and deaths	1990-2010	World Health Organization
Tuberculosis prevalence and deaths	1990-2010	World Health Organization
HIV prevalence and deaths	1990-2009	UNAIDS

Appendix 5. Choice of dependent variable for first research question

In testing the first question of the linkage between grant ratings and payment, we use two different (but related) dependent variables – one with absolute disbursements and the other as a binary measure of having any disbursement greater than zero.

The binary dependent variable is plausible given the Global Fund's stated objective for PBF to reallocate "resources from non-performing grants" to "programs where results can be achieved." This binary dependent variable does not vary on the denominator of the originally allocated phase 2 amount: A grant with no disbursements in phase 2, regardless of the denominator, is classified as a 0, whereas a grant with any phase 2 amount, regardless of the denominator, is classified as a 1. Hence the robustness of the regressions on this binary dependent variable does not depend on the denominator.

Regarding the dependent variable of absolute disbursement levels, there are at least three lines of arguments that justify its use: (1) plausibility; (2) math; and (3) illustration by simulation.

It is plausible that absolute levels of funding would be linked to both performance and other factors such as disease burden. The Global Fund has stated in its visionary documents that it aspires 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." Thus by using absolute disbursement levels as dependent variable, we assess the extent to which these different factors matter. Such an analysis reflects the extent to which performance-based financing as a principle is at tension with other priorities for funding. The heart of the question we assess with this dependent variable: To what extent does performance and factors such as disease burden matter for having any funding and for funding levels?

Next we demonstrate two mathematical approaches to show how performance would be linked to absolute disbursement levels in part through its relationship through relative disbursement levels. In the first and more intuitive approach, we take the hypothesis that grant ratings are correlated with the relative disbursement level variable (i.e. disbursements as a percentage of original allocations). It therefore holds that grant ratings are correlated with absolute funding levels. Formally, let us denote the grant rating assigned at the end of phase 1 as P, the original allocation as D, and the final disbursement as d. Based on the Global Fund's PBF system (assuming no discretionary adjustments at all and relying only on conversion tables), we expect that there is a correlation between d/D and P. It holds that if d/D and P are correlated, then d must also be correlated with P, albeit imperfectly. (Clearly, in the context of discretionary adjustment described in this paper, the correlation between d/D and P will be weaker or worse, not existent.)

A second approach involves a set of equations to elucidate and explain the previous mathematical correlation. This approach assumes that there are two competing decisions made by the Global Fund – the first decision is setting the total envelope of funds for a grant, i.e. in absolute terms; and the second decision involves the payment by performance. Based on the above plausibility argument, we take as a working hypothesis that disease burden would be expected to be a likely factor in determining total levels of phase 2 funding. Given the way in which the Global Fund's PBF is designed, we assume that relative levels of phase 2 funding are determined systematically by performance with potentially stochastic random error generated by the manual discretion. These two assumptions generate the following equations:

(1) $D_i = f(B_i, X_i)$, that is, D total funding is a function $f(\cdot)$ of B disease burden and X other factors. This equation is an interpretation of the plausibility argument above, i.e. giving "due priority to the most affected countries and communities, and to those countries most at risk." Indeed, Global Fund's new Allocation Formula which was created under the New Funding Model to rationalize allocations by country disease burden and income.

(2) $d2_i/D2_i = g(P1_i)$ where $d2_i$ refers to phase 2 disbursements in country i divided by $D2$ total funding for phase 2, and we let $d2_i/D2_i$ be a function $g(\cdot)$ of only P performance. This equation is suggested by the Global Fund's own description of the performance-based financing model. From our grant scorecard case study, we know that numerous discretionary factors in fact play into this equation in a stochastic (not systematic) way. This equation can be rewritten as $d2_i = g(P_i) \bullet D2_i$. Thus equations (1) and (2) reflect our two competing hypotheses.

(3) Next recognize that $D1_i + D2_i = D_i$ or that $D2_i = D_i - D1_i$.

(4) Combining equations (1), (2), and (3), we solve for $d2_i$:
$d2_i = g(P_i) \bullet D2_i = g(P_i) \bullet (D_i - D1_i) = g(P_i) \bullet (f(B_i, X_i) - D1_i)$

(5) For illustrative purposes, we use a simple linear relationship for the two functions, i.e. $f(B_i, X_i) = (\delta + \beta B_i + \chi X_i)$ and $g(P_i) = (\tau + \pi P_i)$, respectively. Inserting these into equation (4), we see that
$d2_i = (\tau + \pi P_i) \bullet (\delta + \beta B_i + \chi X_i - D1_i)$.
$= \delta\pi P_i + \pi P_i(\beta B_i + \chi X_i - D1_i) + \tau(\delta + \beta B_i + \chi X_i - D1_i)$
This equation shows that performance P varies with phase 2 disbursements $d2$ by a coefficient of $\delta\pi$.

(6) Alternatively in natural logs, equation (5) becomes $\text{Ln}(d2_i) = \text{Ln}(\tau + \pi P_i) + \text{Ln}(\delta + \beta B_i + \chi X_i - D1_i)$, which indicates that $d2$ is therefore correlated with performance P by a coefficient π and a constant.

To demonstrate the second mathematical approach, we present an empirical example using simulation in Stata. The simple Stata code, key regression output, and simulated data are below. In plain language, both the math and the simulation demonstrate that when total allocations are based on burden, and when phase 2 disbursements as a proportion of phase 2 allocations are determined by performance, then we show that there is still a correlation between phase 2 disbursements with performance and burden. The circumstances under which there will not be a correlation detected with this dependent variable is if the correlation between phase 2 disbursements and performance is very weak (which could also be true if relative levels was used), or if there are factors that determine original allocations are not controlled for in the regression.

Stata Code

```
set obs 30
g P = rnormal(2.8,0.7)
g B = rnormal(100,20)
g D = 400*B + rnormal(0,2)
g d2_D2 = 20*P + rnormal(0,1)
reg d2_D2 P
reg  D B
g D1 = 0.4*D + rnormal(0,5)
g D2 = D-D1
g d2 = D2*d2_D2
reg d2 P B
```

Stata Regression Output from Particular Simulation

```
. reg d2 P B

      Source |       SS       df       MS              Number of obs =      30
-------------+------------------------------           F(  2,    27) =  274.30
       Model |  2.6289e+12     2  1.3145e+12           Prob > F      =  0.0000
    Residual |  1.2938e+11    27  4.7920e+09           R-squared     =  0.9531
-------------+------------------------------           Adj R-squared =  0.9496
       Total |  2.7583e+12    29  9.5114e+10           Root MSE      =   69224

------------------------------------------------------------------------------
          d2 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           P |   469344.4   22505.82    20.85   0.000     423166.3    515522.5
           B |    14134.8   775.8784    18.22   0.000     12542.83    15726.77
       _cons |   -1401492     114887   -12.20   0.000     -1637221    -1165763
------------------------------------------------------------------------------

. reg d2_D2 P

      Source |       SS       df       MS              Number of obs =      30
-------------+------------------------------           F(  1,    28) = 3871.99
       Model |  4692.91142     1  4692.91142           Prob > F      =  0.0000
    Residual |  33.9364439    28  1.21201585           R-squared     =  0.9928
-------------+------------------------------           Adj R-squared =  0.9926
       Total |  4726.84786    29  162.994754           Root MSE      =  1.1009

------------------------------------------------------------------------------
       d2_D2 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           P |   20.34992   .3270361    62.23   0.000     19.68002    21.01983
       _cons |  -.9621353   .9102043    -1.06   0.300    -2.826604    .9023336
------------------------------------------------------------------------------
```

Table of Simulated Grant Data

P	B	D	d2_D2	D1	D2	d2
2.892393	85.71783	34285.87	58.08028	13711.93	20573.94	1194940
4.061453	65.60154	26243.2	82.79783	10503.75	15739.45	1303192
2.462569	114.795	45920.07	48.21138	18362.89	27557.18	1328570
2.736956	66.42206	26571.18	54.99616	10628.96	15942.23	876761.3
2.343578	108.2081	43284.37	45.3312	17314.49	25969.88	1177246
3.652366	55.27213	22106.54	71.46767	8844.254	13262.29	947825.1
2.389477	101.7723	40708.58	47.54414	16287.9	24420.68	1161060
3.283344	92.65621	37065.3	66.823	14821.17	22244.13	1486420
1.722188	92.25211	36903.33	33.52766	14765.42	22137.91	742232.3
2.336441	116.1948	46475.07	49.42597	18594.62	27880.46	1378019
2.806271	82.76051	33101.76	56.27078	13236.9	19864.87	1117812
3.20596	80.16537	32066.15	63.92586	12829.7	19236.46	1229707
3.244788	114.7148	45884.77	67.17645	18359.15	27525.62	1849074
2.574883	85.70685	34280.13	51.35563	13718.8	20561.33	1055940
2.529456	93.26333	37307.52	49.80384	14925.6	22381.91	1114705
2.913494	116.8283	46730.72	58.633	18688.89	28041.83	1644177
3.027628	106.0638	42428.44	60.14592	16969.4	25459.04	1531257
1.774651	85.39869	34159.74	35.96058	13668.51	20491.23	736876.4
1.906685	98.50321	39399.46	38.97076	15762.06	23637.41	921167.8
1.692816	127.3262	50931.92	32.96425	20368.35	30563.58	1007505
2.995519	97.03195	38810.34	60.04579	15525.26	23285.08	1398171
3.065402	88.14575	35256.79	61.61655	14095.04	21161.74	1303914
3.319374	111.5555	44620.47	67.90543	17842.72	26777.75	1818355
2.767111	69.63197	27854.28	53.21072	11145.65	16708.63	889078.4
2.140218	104.7324	41897.09	42.56101	16757.92	25139.17	1069948
1.983078	105.5984	42239.73	39.77431	16899.02	25340.71	1007909
2.967441	84.44852	33778.8	58.93708	13509.4	20269.4	1194619
2.186978	117.3288	46933.19	42.40223	18771.58	28161.61	1194115
2.436957	122.4187	48967.25	48.77671	19585.26	29381.98	1433157
4.014994	101.2986	40519.99	79.67892	16203.49	24316.5	1937513

Appendix 6A. Predictors of having any phase 2 disbursements (greater than zero): linear probability model

Independent variable	HIV/AIDS GRANTS			TUBERCULOSIS GRANTS			MALARIA GRANTS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Average phase 1 score	0.072	0.107†	0.099§	0.079	0.028	0.005	0.225†	0.184†	0.137
	(0.046)	(0.037)	(0.05)	(0.06)	(0.05)	(0.05)	(0.04)	(0.05)	(0.08)
Ln(phase 1 disbursements)		0.029	0.002		0.024	0.032		0.033	0.062
		(0.041)	(0.05)		(0.03)	(0.04)		(0.04)	(0.07)
LFA: KPMG		-0.356†	-0.193		0.208§	0.261		0.225§	0.051
		(0.122)	(0.15)		(0.11)	(0.16)		(0.13)	(0.16)
LFA: PwC		-0.113	-0.051		-0.013	-0.007		0.032	0.04
		(0.074)	(0.08)		(0.08)	(0.09)		(0.11)	(0.12)
PR type: civil society, private sector, or third party		0.215‡	0.234§		-0.087	-0.106		-0.044	0.015
		(0.108)	(0.12)		(0.13)	(0.14)		(0.14)	(0.20)
PR type: government		0.049	0.134		0.151	0.173		-0.001	0.192
		(0.109)	(0.12)		(0.13)	(0.16)		(0.12)	(0.20)
Number of disbursements in phase 1		-0.027	-0.025		-0.022	0.029		-0.015	-0.023
		(0.022)	(0.03)		(0.02)	(0.03)		(0.02)	(0.04)
Grant start year		-0.141†	-0.136†		-0.176†	-0.156†		-0.138†	-0.154†
		(0.019)	(0.03)		(0.02)	(0.03)		(0.03)	(0.04)
Gov't effectiveness, start year			0.015			-0.075			-0.158
			(0.09)			(0.13)			(0.16)
Ln(DAHpc), start year			0.053			0.063			0.025
			(0.04)			(0.04)			(0.05)
Ln(THEpc), start year			-0.143			-0.144			-0.045
			(0.12)			(0.12)			(0.17)
Ln(GDPpc), start year			0.139			0.133			0.167
			(0.12)			(0.15)			(0.22)
Disease prevalence, start year, per 10,000			0.00			0.001			0.00
			(0.01)			(0.00)			(0.00)
Deaths, start year, per 10,000			-0.001			-0.008			0.035
			(0.08)			(0.02)			(0.19)
Constant	0.478†	283.675†	272.602†	0.417‡	352.328†	312.540†	0.02	276.016†	306.564†
	(0.148)	(38.921	(52.123)	(0.189)	(42.439)	(59.048)	(0.137)	(56.056)	(89.201)
Number of grants	139	128	107	93	88	79	89	82	63
R-squared	0.019	0.356	0.415	0.019	0.468	0.51	0.147	0.388	0.431

Notes: Significance: † less than 1%; ‡ less than 5%; §less than 10%. The sample is restricted to grants that ended before 2012.·

Appendix 6B. Predictors of having any phase 2 disbursements (greater than zero): probit model

Independent variable	HIV/AIDS GRANTS			TUBERCULOSIS GRANTS			MALARIA GRANTS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Average phase 1 rating	0.204	0.407†	0.449§	0.227	0.135	0.005	0.745†	0.877†	0.988†
	(0.138)	(0.157)	(0.241)	(0.168)	(0.246)	(0.311)	(0.202)	(0.223)	(0.338)
Ln(phase 1 disbursements)		0.167	0.172		-0.012	0.018		0.070	0.284
		(0.159)	(0.215)		(0.156)	(0.206)		(0.173)	(0.198)
LFA: KPMG		-1.470†	-0.659		1.397‡	2.002‡			
		(0.479)	(0.604)		(0.687)	(0.928)			
LFA: PwC		-0.550§	-0.275		-0.080	-0.201		0.362	0.454
		(0.314)	(0.368)		(0.346)	(0.372)		(0.396)	(0.438)
PR type: civil society, private sector, or third party		1.132‡	1.351‡		0.017	-0.049		-0.118	0.277
		(0.467)	(0.622)		(0.483)	(0.729)		(0.487)	(0.681)
PR type: government		0.209	0.619		0.913	1.301		0.244	1.246§
		(0.429)	(0.587)		(0.560)	(0.868)		(0.469)	(0.677)
Number of disbursements in phase 1		-0.105	-0.118		-0.077	0.251§		-0.051	-0.045
		(0.073)	(0.089)		(0.089)	(0.138)		(0.093)	(0.136)
Grant start year		-0.524†	-0.551†		-0.707†	-0.631†		-0.497†	-0.572†
		(0.095)	(0.103)		(0.160)	(0.197)		(0.112)	(0.132)
Government effectiveness, start year			0.282			-0.455			-0.874
			(0.386)			(0.664)			(0.579)
Ln(DAHpc), start year			0.264			0.402§			0.297
			(0.165)			(0.225)			(0.206)
Ln(THEpc), start year			-0.729			-1.252‡			-0.141
			(0.443)			(0.538)			(0.556)
Ln(GDPpc), start year			0.750§			1.128§			0.640
			(0.445)			(0.622)			(0.696)
Disease prevalence, start year, per 10,000			-0.002			0.001			-0.002§
			(0.002)			(0.003)			(0.001)
Constant	-0.101	1,049.174†	1,100.630†	-0.284	1,418.834†	1,261.257†	-1.630†	994.735†	1,135.886†
	(0.425)	(190.245)	(206.333)	(0.543)	(321.835)	(396.754)	(0.530)	(224.544)	(264.195)
Number of grants	139	128	112	93	88	79	89	77	67

Notes: Significance: † less than 1%; ‡ less than 5%; § less than 10%· The sample is restricted to grants that ended before 2012.

Appendix 7. Predictors of phase 2 disbursements (in natural logs)

Independent variable	HIV/AIDS GRANTS			TUBERCULOSIS GRANTS			MALARIA GRANTS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Average phase 1 score	0.120	-0.054	-0.060	0.191	0.028	0.113	-0.286	-0.17	-0.241
	(0.163)	(0.117)	(0.182)	(0.205)	(0.097)	(0.100)	(0.183)	(0.163)	(0.283)
Ln(phase 1 disbursements)		1.069†	0.950†		0.915†	0.723†		0.883†	0.795†
		(0.119)	(0.139)		(0.130)	(0.168)		(0.134)	(0.142)
LFA: KPMG		-0.185	-0.166		-0.291	-0.016		0.232	0.246
		(0.278)	(0.442)		(0.226)	(0.351)		(0.376)	(0.366)
LFA: PwC		-0.322§	-0.300		-0.158	-0.053		-0.048	0.008
		(0.181)	(0.198)		(0.221)	(0.256)		(0.263)	(0.263)
PR Type: Civil Society		0.457§	0.603§		0.749‡	0.918†		0.45	0.733
		(0.243)	(0.357)		(0.329)	(0.336)		(0.310)	(0.456)
PR Type: Government		0.086	0.484		0.455§l	0.735‡		0.476§	0.908‡
		(0.211)	(0.297)		(0.249)	(0.331)		(0.259)	(0.377)
Number of disbursements in phase 1		-0.117‡	-0.112‡		-0.027	-0.022		-0.114	-0.115
		(0.047)	(0.055)		(0.058)	(0.064)		(0.081)	(0.086)
Grant start year		-0.086	-0.203‡		0.153	0.322§		-0.111	-0.282‡
		(0.076)	(0.076)		(0.141)	(0.170)		(0.132)	(0.114)
Gov't effectiveness, start year			-0.34			-0.400			-0.070
			(0.245)			(0.328)			(0.326)
Ln(DAHpc), start year			0.121			-0.053			-0.308‡
			(0.097)			(0.109)			(0.131)
Ln(THEpc), start year			0.045			-0.528			0.041
			(0.220)			(0.422)			(0.322)
Ln(GDPpc), start year			-0.017			0.571			-0.147
			(0.202)			(0.362)			(0.368)
Disease prevalence, start year, per 10,000			-0.012			0.004			0.001
			(0.012)			(0.005)			(0.001)
Deaths, start year, per 10,000			0.201			-0.014			0.234
			(0.164)			(0.054)			(0.403)
Constant	15.551†	172.206	407.460†	14.422†	-305.098	-643.958§	16.129†	224.549	570.519‡
	(0.554)	(151.684)	(151.866)	(0.702)	(281.618)	(341.255)	(0.567)	(264.188)	(227.748)
Number of grants	93	87	75	57	56	51	56	54	43
R-squared	0.006	0.641	0.629	0.018	0.668	0.718	0.037	0.603	0.766

Notes: Significance: † less than 1%; ‡ less than 5%; §less than 10%.

Appendix 8. Predictors of phase 2 scores

Independent variable	HIV/AIDS GRANTS			TUBERCULOSIS GRANTS			MALARIA GRANTS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ln(phase 1 disbursements)	0·06	0·006	0·043	0·009	0·015	0·008	-0·149	-0·151	-0·15
	(0·064)	(0·067)	(0·073)	(0·087)	(0·101)	(0·095)	(0·105)	(0·126)	(0·129)
LFA: KPMG	0·015	-0·519‡	-0·415	0·042	0·048	0·104	-0·093	-0·018	0·261
	(0·223)	(0·232)	(0·253)	(0·237)	(0·251)	(0·277)	(0·270)	(0·367)	(0·413)
LFA: PwC	0·089	0·02	0·026	-0·164	-0·074	-0·074	-0·172	-0·141	-0·076
	(0·143)	(0·139)	(0·155)	(0·172)	(0·193)	(0·192)	(0·202)	(0·211)	(0·224)
PR Type: Civil Society	0·377‡	0·436‡	0·440‡	0·239	0·278	0·165	0·23	0·271	0·139
	(0·188)	(0·186)	(0·199)	(0·250)	(0·274)	(0·286)	(0·280)	(0·307)	(0·322)
PR Type: Government	-0·053	0·001	-0·105	-0·098	-0·049	-0·095	0·05	-0·015	0·003
	(0·158)	(0·191)	(0·202)	(0·211)	(0·214)	(0·215)	(0·231)	(0·289)	(0·294)
Number of disbursements in phase 1	0·064§	0·048	0·042	0·024	0·043	0·057	0·016	0·016	0
	(0·036)	(0·038)	(0·040)	(0·041)	(0·041)	(0·041)	(0·057)	(0·072)	(0·072)
Grant start year	-0·006	-0·100‡	-0·059	-0·009	-0·034	-0·011	0·05	0·045	0·089
	(0·041)	(0·048)	(0·059)	(0·048)	(0·057)	(0·057)	(0·058)	(0·078)	(0·085)
Gov't effectiveness, start year		0·189	0·282		0·475‡	0·366		0·396	0·392
		(0·168)	(0·182)		(0·235)	(0·243)		(0·243)	(0·297)
LN(DAHpc), start year		-0·231†	-0·189‡		-0·071	-0·073		-0·023	-0·022
		(0·061)	(0·074)		(0·077)	(0·074)		(0·087)	(0·088)
LN(THEpc), start year		0·638†	0·578†		0·104	0·143		0·13	0·208
		(0·193)	(0·188)		(0·228)	(0·238)		(0·292)	(0·322)
LN(GDPpc), start year		-0·536†	-0·557†		-0·124	-0·21		-0·268	-0·474
		(0·198)	(0·184)		(0·241)	(0·231)		(0·286)	(0·346)
Change in disease prevalence over phase 1			0·165			-1·641‡			-0·275
			(0·233)			(0·762)			(0·168)
Constant	13·716	206·062‡	122·423	20·57	71·92	27·105	-93·915	-82·775	-170·686
	(81·727)	(96·507)	(118·173)	(95·268)	(114·901)	(115·159)	(115·938)	(156·369)	(168·710)
Number of grants	169	154	137	113	100	98	101	91	85
R-squared	0·079	0·255	0·258	0·044	0·139	0·164	0·053	0·084	0·137

Notes: Significance: † less than 1%; ‡ less than 5%; §less than 10%.

Appendix 9. Selected grant scorecards (GSC): grant ratings to indicative disbursement range

Country grant number		Letter score in GSC	Incremental Phase 2 Amount (IP2A) (%)	Indicative disbursement range* given letter score		Indicative disbursement range† given letter score	
				Lower Bound	Upper Bound	Lower Bound	Upper Bound
HIV/AIDS							
Ethiopia	ETH-708-G07-H	A1	0.9	0.95	1	0.9	1
Ethiopia	ETH-708-G08-H	B2	0.17	0.25	0.65	0.3	0.59
India	IDA-708-G13-H	B2	0.85	0.25	0.65	0.3	0.59
India	IDA-708-G14-H	A	0.78	0.95	1	0.9	1
Malawi	MLW-708-G07-H	B1	0.72	0.55	0.95	0.6	0.89
Rwanda	RWN-708-G09-H	A	0.91	0.95	1	0.9	1
Tanzania	TNZ-809-G12-H	B1	0.74	0.55	0.95	0.6	0.89
Tuberculosis							
Bangladesh	BAN-506-G05-T	C	0.84	0	0.35	0	0.29
India	IDA-607-G09-T	B1	0.81	0.55	0.95	0.6	0.89
Indonesia	IND-809-G10-T	A2	0.98	0.85	1.05	0.9	1
Indonesia	IND-809-G11-T	A2	0.93	0.85	1.05	0.9	1
Indonesia	IND-809-G12-T	A1	0.82	0.95	1	0.9	1
Pakistan	PKS-809-G09-T	B1	0.91	0.55	0.95	0.6	0.89
Pakistan	PKS-809-G10-T	B1	0.88	0.55	0.95	0.6	0.89
Russia	RUS-304-G02-T	A	1	0.95	1	0.9	1
Malaria							
D. R. Congo	ZAR-809-G07-M	B2	0.75	0.25	0.65	0.3	0.59
D. R. Congo	ZAR-810-G08-M	B2	0.75	0.25	0.65	0.3	0.59
D. R. Congo	ZAR-810-G09-M	B2	0.41	0.25	0.65	0.3	0.59
Ethiopia	ETH-809-G10-M	B1	0.8	0.55	0.95	0.6	0.89
Nigeria	NGA-809-G11-M	B1	1.03	0.55	0.95	0.6	0.89
Nigeria	NGA-809-G13-M	C	0	0	0.35	0	0.29
Nigeria	NGA-809-G14-M	B2	1.03	0.25	0.65	0.3	0.59
Tanzania	TNZ-809-G11-M	B1	-2.98	0.55	0.95	0.6	0.89
Uganda	UGD-708-G08-M	B1	0.85	0.55	0.95	0.6	0.89

* refers to reference 26; † to reference 27.

Appendix 10. Replication of selected grant scorecards (GSC): indicators to grant rating

Country	Grant No	Letter score in GSC	Lower Bound: Numeric score from letter score	Upper Bound: Numeric score from letter score	Average of all indicators*	Average, top-10 indicators*	Average, non-top-10 indicators*
HIV/AIDS							
Ethiopia	ETH-708-G07-H	A1	1.00	1.20	1.130	1.200	1.121
Ethiopia	ETH-708-G08-H	B2	0.30	0.59	0.959	0.910	1.200
India	IDA-708-G13-H	B2	0.30	0.59	0.842	0.752	0.893
India	IDA-708-G14-H	A	0.90	1.00	0.938	1.200	0.894
Malawi	MLW-708-G07-H	B1	0.60	0.89	0.703	0.727	0.667
Rwanda	RWN-708-G09-H	A	0.90	1.00	0.983	1.071	0.939
Tanzania	TNZ-809-G12-H	B1	0.60	0.89	0.980	0.898	1.200
Tuberculosis							
Bangladesh	BAN-506-G05-T	C	0.00	0.30	0.365	0.371	0.358
India	IDA-607-G09-T	B1	0.60	0.89	0.964	0.912	1.121
Indonesia	IND-809-G10-T	A2	0.90	1.00	0.904	0.845	1.200
Indonesia	IND-809-G11-T	A2	0.90	1.00	0.935		0.935
Indonesia	IND-809-G12-T	A1	1.00	1.20	1.065	1.107	1.042
Pakistan	PKS-809-G09-T	B1	0.60	0.89	0.857	1.007	0.738
Pakistan	PKS-809-G10-T	B1	0.60	0.89	0.795	0.686	1.068
Russia	RUS-304-G02-T	A	0.90	1.00	1.023	1.060	0.985
Malaria							
D. R. Congo	ZAR-809-G07-M	B2	0.30	0.59	0.508	0.000	1.017
D. R. Congo	ZAR-810-G08-M	B2	0.30	0.59	0.776	0.726	0.792
D. R. Congo	ZAR-810-G09-M	B2	0.30	0.59	0.923	0.998	0.820
Ethiopia	ETH-809-G10-M	B1	0.60	0.89	0.768	0.722	0.823
Nigeria	NGA-809-G11-M	B1	0.60	0.89	0.647	0.932	0.387
Nigeria	NGA-809-G13-M	C	0.00	0.30	0.211	0.376	0.000
Nigeria	NGA-809-G14-M	B2	0.30	0.59	0.328	0.518	0.139
Tanzania	TNZ-809-G11-M	B1	0.60	0.89	0.640	0.835	0.250
Uganda	UGD-708-G08-M	B1	0.60	0.89	0.707	0.943	0.000

Note: * indicates that when an individual indicator was greater than 120%, it was capped at 120% per Global Fund documentation.

Appendix 11. Examples of indicators from grant scorecards

Non-top 10 indicators

- HIV/AIDS - Number of radio programmes aired on the 10 radio-networks per year
- HIV/AIDS - Percentage of young people aged 15-24 who both correctly identify ways of preventing sexual transmission of HIV and reject major misconceptions
- HIV/AIDS - Number of trainees using e- learning modules
- HIV/AIDS - Number of Red Ribbon clubs for mobilizing HIV positive youth formed among in-community
- TB - Number of training institutes refurbished with infrastructure and equipment
- TB - Number of warehouses refurbished for the appropriate drug storage
- TB - No. of advocacy materials produced and distributed (Flip Charts, Flash Charts, Bill Board, Cinema Slides, Leaflets, Pamphlets, TV, Radio Spots, Street Dramas, Folk Songs etc.)
- Malaria - Percentage of people who know the causes of malaria
- Malaria - Number of health zones having received at least one supervision visit from the provincial level during the quarter
- Malaria - Number of radio spots aired on ITN usage

Better Indicators

- HIV - # and % of people receiving ARV
- HIV - Number of HIV-positive women receiving a course of anti-retroviral prophylaxis to reduce the risk of mother-to- child transmission.
- HIV - Number of people counseled and tested
- TB - No. of all new smear-positive TB cases detected* (cumulative)
- TB - Number of MDR-TB patients provided with DOTS + treatment in civilian sector
- Malaria - Number and proportion of houses in areas at risk of malaria transmission that were sprayed with insecticides in the last 12 months
- Malaria - Number of people with simple malaria/fever receiving antimalarial treatment in the 119 targeted health zones

Appendix 12. Grant scorecard for HIV/AIDS in Ethiopia

Grant No	Indicator	Top 10?	Target	Actual	%, actual	%, capped at 120%
ETH-708-G08-H	Indicator 1.1 - # and % of HIV positive pregnant women receiving complete course of ARV prophylaxis	1	25,000	4,910	19.64%	19.64%
ETH-708-G08-H	Indicator 2.1 - # of patients who received diagnosis and treatment for STIs.	1	30,000	53,947	179.82%	120.00%
ETH-708-G08-H	Indicator 2.2 - # of patients who received prophylaxis and treatment for OI	0	33,000	115,523	350.07%	120.00%
ETH-708-G08-H	Indicator 3.1 - # and % of people receiving ARV	1	275,000	207,733	75.54%	75.54%
ETH-708-G08-H	# of condoms distributed to end users	1	45,000,000	56,521,779	125.60%	120.00%

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