

Explaining Variation in Grants by the Global Fund to
Fight AIDS, Tuberculosis and Malaria:
Statistical Insights from a Principal-Agent Perspective

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Abstract

What explains the substantial variation in grants awarded by the Global Fund to Fight AIDS, Tuberculosis and Malaria? The Global Fund is an international institution that has disbursed over US \$19 billion in grants for programs combating infectious diseases since its creation in 2002. Yet the size of these grants varies by several orders of magnitude across countries. When calculated as spending per capita of those living with the disease, the Global Fund has approved individual grants spending as little as US \$0.73 per HIV-positive person in Nigeria, to over US \$55,000 in Bosnia-Herzegovina. The Fund has two main bodies that could be responsible for this distribution in grants: the Technical Review Panel (TRP), in which applications are evaluated by individual health experts; and the Foundation Board (FB), in which state and non-state representatives approve the TRP's recommendations. Because the FB never exercises its right to overturn expert recommendations, it should be primarily the TRP's technocratic preferences about grants that determine variations in funding, rather than the political preferences of Fund members in the FB. I utilize a purpose-built new database containing all Global Fund grants up to July 2010 to evaluate this expectation. My statistical analysis suggests that the health experts' technocratic preferences about aid distribution are only of secondary importance when confronted with the strategic considerations of the biggest donor countries.

1 Introduction

The vast inequality between the health standards of developed and developing countries is one of the great challenges of our time (Cooper, Kirton and Schrecker 2007). Communicable diseases such as HIV/AIDS, diarrheal disease, malaria, and tuberculosis have profound negative effects on all levels of society, from family cohesion, labor, and agricultural production, to trade, education systems, public services, and national security (Skolnik 2008, pg. 197). The Global Fund to Fight AIDS, Tuberculosis and Malaria¹ is one of the most important international institutions created to combat these diseases. In its eight-year history, the Global Fund has approved over \$20 billion² in grants for almost 700 programs in 140 countries, and in doing so has been responsible for a third of all international funding to fight HIV/AIDS, two-thirds for tuberculosis, and half for malaria. So important has the Fund become in combating infectious diseases that economist Jeffrey Sachs calls it “the most successful innovation in foreign assistance of the past decade” (Sachs 2010). Yet the amount of money the Global Fund has approved for individual grants varies wildly: while Grant 91 spent \$36,810 per person living with HIV/AIDS in Kazakhstan, a comparable person in South Africa received as little as \$14 from Grant 1420.³

What can account for this significant variation in the size of grants? Surveying the current scholarship on the Global Fund, no clear answer emerges. Some authors look to the Fund’s formal decision-making body, the *Foundation Board* (FB), and indicate that the political preferences of its largest donors⁴ decisively influence grant distribution (Huckel Schneider 2008; Barnes and Brown 2009). Others argue that a grant’s fate is in fact decided

¹The terms “Global Fund to Fight AIDS, Tuberculosis and Malaria”, “Global Fund”, and “Fund” are used interchangeably in this paper.

²All monetary figures in this paper refer to 2009 US dollars.

³This is not simply the result of differences in drug prices: the same antiretroviral drugs actually cost *less* in Kazakhstan during the respective time period.

⁴While other global health institutions such as the *World Health Organisation* (WHO) are only open to state members, the Fund’s Foundation Board is comprised of donor and recipient states, and non-state actors such as the *Bill & Melinda Gates Foundation*. The Global Fund is arguably the largest and most prominent international institution that allows for private, non-state actors to have full participation rights in its decision-making processes (Rittberger, Nettesheim and Huckel 2007).

by the health experts serving on the Fund's *Technical Review Panel* (TRP), who supposedly evaluate proposals on the basis of soundness of approach and technical feasibility (Brown 2009). To what extent is the Global Fund really at the command of its powerful donor states, and how much autonomy and influence do the Fund's experts possess?

To answer these questions and explain the substantive variation in grant size, I draw on principal-agent theories of international institutions. The Global Fund's policy process constitutes a principal-agent relationship, in which an agent (the Technical Review Panel) acts on behalf of a collective principal (the Foundation Board). In this asymmetric relationship formal authority is located on the side of the principal, but the informational advantage is on the side of the agent (Miller 2005). As Max Weber observed, the power in such a relationship often lies with the expert (Weber 1958), but is this also the case for the Global Fund? Is the variation in Global Fund grants indeed determined by the expert agents on the TRP and their preferences? Or can the political principals assert themselves, control their agent, and make grant distribution a function of their own interests?

Thus, I examine two hypotheses about variation in grant size. Firstly, Global Fund grants could be determined by the principals, and be a product of the negotiations among stakeholders on the Foundation Board. Here, the 'G6' states (France, Germany, Italy, Japan, United Kingdom, and United States) have an exceptionally strong bargaining position because they contribute over 70% of all funds. Consequently, it should be their interests that determine grant distribution: When the G6 states have a greater financial and geopolitical interest in a recipient country, it should receive a disproportionately larger amount of funding per capita (Alesina and Dollar 2000). Secondly, Global Fund grants could be determined by the experts in the Technical Review Panel and its technocratic review process. Because of their 'day jobs' as independent academics, health professionals and practitioners from the field, the experts' preferences should be markedly different from those of the political principals. They should prefer applications that have good chances of success, and approve those asking for a larger amounts of funding per capita.

2 Variation in Global Fund Grants

In its intended role as a financing mechanism, the Global Fund does not engage in programs on the ground in affected countries, nor does it provide expertise, technical assistance and training, or develop rules and regulations on the international level. Thus, financial grants are the sole institutional outputs of the Global Fund, and constitute my dependent variable. The funding process shows significant variation in how much money is allocated to individual applications and programs.

The Global Fund is extremely transparent about its operations, making data easily available. It publishes its membership, Board decisions, recommendations by the TRP, progress reports, performance reviews, and other documents. My research is based on three datasets offered on the Fund website, containing all financial contributions, approved grants, and actual grant disbursements since 2002.⁵ All datasets are current as of July 2010.

My dependent variable is the size of individual financial grants, which I calculate as the amount of money that a specific grant would spend on a single infected person, if that grant were equally distributed among all sufferers of the targeted disease in the recipient country in one year. For each individual grant, I divided the total approved grant amount (as provided by the Global Fund) by the estimated number of infected persons in the country in the respective round of funding. Since the size and spread of infection numbers are crucial for the analysis, estimates were triangulated from multiple sources such as the World Health Organization, UNAIDS, Roll Back Malaria Partnership, or national Health Ministries, whenever these were available. The reason for calculating spending on a per capita basis is that this ensures comparability across cases without being disturbed by total population size, and that it constitutes the most accurate measure of the substantive impact of grants. After all, grants are not spent indiscriminately on the recipient country's population, but rather on those actually affected by a disease. I take into account all successful grants⁶ in

⁵Online at <http://www.theglobalfund.org/en/commitmentsdisbursements/>

⁶A country can only apply for funding once per year per disease, meaning that recipients have no data points in those years where they decided not to apply, or where their application was rejected.

the Fund's history. Naturally, this way of constructing my dependent variable treats very different grants as functionally equal—some grants might request funding for educational measures, some for medical infrastructure, some for direct treatment, with very different costs involved in achieving the respective goals. Nonetheless, calculating aid on a per capita basis can account for the often vast differences in recipients' total population and numbers of sufferers, which would otherwise distort the findings. For this reason, aid per capita has been commonly used as a measure in the development literature and by international organizations and donor states (see for example Alesina and Weder 2002; Bulir and Hamann 2008; McGillivray 1989). Furthermore, grants for HIV/AIDS, tuberculosis, and malaria are treated as functionally equal, since I contend that the grant process should reveal the systematic favoring of certain countries, regardless of what disease they apply for.

Table 1 (Appendix, pg. 27) shows that the size of Global Fund grants per capita of infected persons⁷ varies enormously: the largest per capita grants spent \$63,876 per person infected with HIV/AIDS in Bosnia and Herzegovina, \$67,595 per malaria-infected person in Sri Lanka, and \$83,614 on HIV/AIDS in East Timor. In comparison, the smallest per capita grants included \$0.14 per HIV-infected person in Kenya and \$0.73 in Nigeria, and \$0.91 per malaria infection in Kenya. Not listed are countries with sizable infected populations that did not receive funding at all, despite repeated applications—Brazil and Panama are the most prominent cases for HIV/AIDS.

[Insert Table 1 here]

The question that naturally arises is whether these differences are not simply due to differences in the costs of treatment. HIV/AIDS treatment costs for first-line anti-retrovirals (ARVs) in the world's poorest countries range between \$30–700 per person per year, and between \$200–1,500 for second-line ARVs (World Health Organization 2009).⁸ However,

⁷Infected populations of less than 100 were counted as 100.

⁸First-line treatment is begun immediately after diagnosis, and consists of a cocktail of drugs to be taken once or twice daily. If the virus does not respond adequately to the drugs, or the patient shows severe side effects, second-line treatment is begun. The latter is more expensive due to the higher drug complexity. Figures only include the cost of drugs, not of related treatment costs such as hospitalization.

due to the globalized market in generic drugs, these costs are not substantially different for countries in Eastern Europe, for example. And even if drug prices in Bosnia & Herzegovina in 2010 were 10,000 times higher than those in Kenya in 2002, this would still only explain around 2 percent of the variation between those two countries' grants in Table 1. It seems clear that some countries are receiving far less money than would be required to fully finance treatment for all those infected with a disease, and other countries' approved grants are much higher than would be expected based on the size of their infected population and treatment costs alone.

3 The Existing Literature

Despite its central role in the issue area of global public health, its innovative governance structure, and its easily accessible data, the Global Fund remains rarely analyzed by Political Scientists. The reason for this might be the Fund's short eight-year history, or its location in the issue area of global health, which has received little attention when compared to international financial regulation or environmental regimes. To date, only a handful of articles have been written specifically about the Global Fund. Huckel Schneider (2008) investigates whether the Fund's governance is perceived as legitimate by stakeholders, while Brown (2009) makes a case for increased participation of non-state actors in order to improve global public health provision. A working paper by Barnes and Brown (2009) provides the most critical assessment of Global Fund decision-making to date: The authors examine what role the Technical Review Panel plays, and find that its review process and the resulting patterns in approvals might not be as apolitical as believed. Their paper does not systematically test competing explanations, however, and makes no use of quantitative methods.

Of the number of edited volumes on global public health published in recent years (Buse, Hein and Drager 2009; Cooper, Kirton and Schrecker 2007; Cooper and Kirton 2009; Hein,

Bartsch and Kohlmorgen 2007; Kirton 2009; Zacher and Keefe 2008), only Hein, Bartsch and Kohlmorgen (2007) include a dedicated chapter on the Global Fund (Bartsch 2007). The Fund is repeatedly mentioned in passing when health initiatives led by the G8 are described (Kirton and Mannell 2007; Kirton and Kokotsis 2007; Schrecker, Labonte and Sanders 2007), but even in a book in which the authors state that the Global Fund is “perhaps one of the most important new health initiatives”, its discussion barely fills two pages (Zacher and Keefe (2008), pg. 102–103).

Alternatively, the Fund has received considerable attention in the medical literature (Feachem and Sabot 2006; Lu et al. 2006; Nahlen and Low-Beer 2007; Radelet and Siddiqi 2007), where forays have also been made into analyzing Global Fund grants using quantitative methods. Cohen, Singh and O’Brien (2008) investigate a range of independent variables in order to determine the precise timing of Fund grant disbursements for malaria. While the study is the most detailed quantitative effort to date, it does not explain grant size, but rather the rate and timing of a grant’s disbursements. The authors also understandably neglect explanatory factors related to Fund decision-making, instead relying on measures such as the number of health practitioners in the recipient country.

4 The Process of Global Fund Decision-Making

4.1 Global Fund Operations

The foundations for the Global Fund were laid at a G8 summit in Okinawa in 2000. Because donor countries asserted that the lack of institutional accountability within the existing United Nations framework discouraged the provision of financial assistance, a new independent institution was to be created. The Global Fund was incorporated in January 2002 in Geneva as a foundation under Swiss law, and approved its first grants in April 2002 (Cooper, Kirton and Schrecker 2007; Edele 2006). To date, the Fund has received US \$21 billion in pledges, of which public actors continue to contribute more than 95%, despite

the fact that significant funds have been made available by non-state actors. The Bill & Melinda Gates Foundation's pledge of US \$650 million, for example, is larger than that of state donors such as Sweden, Norway, or the Netherlands (see also Moran 2007).

On the spending side, the Global Fund operates by means of yearly rounds of calls for proposals. Funding applications must be submitted by pre-organized in-country partnerships known as *Country Coordinating Mechanisms* (CCMs), which are responsible for dividing responsibilities for administration, implementation, and reporting. The Global Fund Secretariat performs an initial screening of all funding proposals, which are then evaluated by the Technical Review Panel, and ultimately approved by the Foundation Board.

To ensure that funding is used as declared in proposals, audits are conducted by 'Local Funding Agents' within each country, often private consultancy and accounting firms such as PricewaterhouseCoopers. In the past, several grants have been suspended by the Foundation Board: most notably in the case of Uganda, where local audits revealed financial irregularities, but also in Myanmar, where the government imposed severe mobility restrictions on aid workers.

4.2 The Principal: Foundation Board

The Fund's state and non-state members are its formal political principals. They act through their representatives on the Foundation Board, which has the final say over all Global Fund policy decisions, operational guidelines, budgets, Technical Review Panel appointments, and relations with external actors. Quotas for membership on the Board are laid out in the Global Fund By-Laws (Global Fund to Fight AIDS and Malaria 2009a). In all, the Board is composed of 20 rotating voting members: seven representatives from developing countries; eight representatives from donor states; and five representatives of non-state actors.

The structure of the Global Fund Foundation Board has evolved over time by means of the right of constituent groups to organize their own rules of procedure for electing Board

members. State membership on the Board rotates within regional groupings, with one recipient state member coming from each of the WHO's world regions, plus an additional seat for an African state. On the donor side each delegation represents one of the following states or groupings of states: European Commission, Belgium, Finland and Portugal; France and Spain; Germany, Canada and Switzerland; Italy; Japan; 'Point Seven' (Norway, Denmark, Ireland, Luxembourg, Netherlands, Sweden); United Kingdom and Australia; and United States. Note that it seems to matter little which of the countries in any given group formally sits on the Board—each Board member can be accompanied to all meetings by a delegation of up to 20 other people, which can, and almost always do include, delegates from the states not officially represented in any given round.

The Global Fund is arguably the largest and most prominent international institution that allows for non-state actors to have full participation rights in its decision-making processes. The Fund makes frequent reference to this fact in publications, and uses it to distinguish itself from other global public health organizations, where the possibilities for participatory governance are more limited (Brown 2009; Rittberger, Nettesheim and Huckel 2007).

Five of the 20 voting members of the Foundation Board are private actors. These are broken down into the following constituencies: one developing-country NGO; one developed-country NGO; one business sector representative; one representative of a private foundation; and one representative of an NGO who is a person living with a disease or comes from a community afflicted by it. Non-state constituencies represented on the Board are responsible for creating their own procedures for the nomination and selection of Board members. The representative is normally chosen by and from each constituency's larger delegation (Huckel Schneider 2008).

4.3 The Agent: Technical Review Panel

While state and non-state members hold ultimate authority over Global Fund policymaking, they have delegated substantial authority to the Technical Review Panel. The TRP is

a permanent body of the Global Fund, comprised of experts on global public health serving in their individual capacity. Besides following its Terms of Reference, the TRP does not take directions from any other Fund body. The Board's formal influence over the TRP is thus restricted to the selection of candidates. Furthermore, the Foundation Board cannot approve a proposal without receiving a TRP recommendation, which makes the TRP into an agent with a high degree of autonomy, and a high potential to influence the decision-making process.

The TRP currently consists of 44 experts on issues of global public health from 31 countries. With seven members, the United States provides the most experts, and European and North American members consistently make up more than 50% of the Panel. 22 TRP members are designated as 'cross-cutting experts', with the remainder being equally split between specialists on each of the Fund's three diseases. Experts can serve on the TRP for a maximum of four rounds of funding, after which they must be replaced. Although constituency groups can propose candidates for the TRP, individuals are free to apply directly to the Fund to be appointed to the Panel. The Foundation Board decides on all TRP applications on the basis of recommendations from the Fund's Executive Director and an advisory committee. Candidates given the Board's approval then meet over a two-week period in Geneva⁹ to review all pending applications, after which the TRP dissolves.

The Fund's by-laws task the TRP with reviewing all proposals against the following criteria: soundness of approach; feasibility; and potential for sustainability and impact. To be reviewed favorably by the TRP, the applicant—in most cases, the Country Coordinating Mechanism—has to meet minimum standards with regard to its operability, transparency, and multi-stakeholder structure; the recipient country cannot exceed a certain maximum income (countries classified as 'high-income' cannot apply); and the applicant may have to demonstrate that a certain percentage of the funding for the proposal could be generated from domestic sources (Huckel Schneider 2008). Applications are assessed by two-person

⁹For the 2010/2011 round of funding, this takes place in October 2010.

teams of first and second reviewers, who then present their conclusions to the TRP plenary. Recommendations are made by consensus, and if no consensus can be reached, by majority vote (Global Fund to Fight AIDS and Malaria 2009*b*). Proposals deemed adequate are then forwarded to the Board for a final decision. The Foundation Board has never rejected a TRP-endorsed application, nor overturned a non-recommendation by the TRP, although the Global Fund has processed over 1,600 applications and approved almost 700 (Barnes and Brown 2009; Garmaise 2009). The Board's usual procedure is to approve all TRP recommendations in any given round 'en bloc', without getting into a discussion about the merits of individual proposals, or the countries submitting them.

5 Explaining Global Fund Grants

How could the relationship between a political principal and a technical agent influence the distribution of grants in the case of the Global Fund?

Over the last decade, principal-agent theory has seen increasing use in International Relations (Copelovitch 2010; Hawkins et al. 2006), and it is a theory with old roots in other areas of Political Science and Economics.¹⁰ The principal-agent approach explains how and why a principal—a state, or a group of states as a collective principal in an international institution—delegates authority to an agent. There are several reasons why such delegation would be useful: to gather information or utilize external expertise; to create a neutral dispute settlement mechanism; to monitor compliance with agreements; or even to pass the blame and evade the negative political consequences of decisions (Haas 1992; Koremenos 2008). The main risk for the principal in this type of arrangement lies in the inability to completely monitor the agent (perfect monitoring would be prohibitively expensive), which inevitably leads to some degree of 'agency slack', and to outcomes that might not be in the principal's direct interest.

¹⁰Indeed, Bendor, Glazer and Hammond (2001) begin their overview of principle-agent theory with the observation that "even God delegates" when he sent angels to the Isrealites.

Miller (2005) identifies six ‘canonical’ features that qualify an arrangement as a principal-agent relationship: 1) the agent takes an action that determines some payoff to the principal; 2) there is an informational asymmetry in favor of the agent; 3) the two players have differing preferences; 4) the initiative lies with a unified principal in offering a ‘contract’ to the agent; 5) backwards induction based on common knowledge between both players; 6) and bargaining power lies entirely with the principal, who always has the last word. In the case of the Global Fund, the FB is the collective political principal, which employs the TRP as its technical agent. The principal’s power over the agent is the probability of individual experts being removed from the TRP in subsequent rounds of funding, similar to how an unsuccessful elected official will be removed by the public at the next election.

The Global Fund fulfills these criteria of a principal-agent relationship: The TRP’s recommendations have an impact on how the principals’ funds are distributed (1). The political actors are informationally disadvantaged over the health experts, both in terms of ‘raw’ expertise and knowledge about the precise details of all applications (2). Experts and Board members may have conflicting goals or ideas about which applications are the ‘right’ ones to approve (3). The most powerful donor states can be assumed to have sufficiently homogeneous preferences, and to be able to influence the FB as a whole, which has authority over the TRP (4). The political principals, despite the information asymmetry, know whether or not they like the results of the agent’s recommendations. They then try to use backwards induction to determine what ‘contract’ to offer the agent—i.e. how to get the experts to recommend the ‘right’ grants (5 & 6).¹¹

How could the principals on the Foundation Board ensure that their agents on the TRP act in their strategic and political interest? Most previous applications of principal-agent theory suggest incentives as a solution. Weingast’s research into congressional oversight in the US (Weingast and Moran 1983; Weingast 1984) showed that principals tried to ensure compliance by offering adequate incentives to the agent, such as budget adjustments, bureau-

¹¹See Downs and Rocke (1994) for a similar principal-agent relationship between a country’s chief executive and its electorate in the question of war and peace.

cratic appointments, or the threat of hearings (Miller 2005). The Global Fund’s principals can only employ one type of incentive, and that is (re-)appointment to the TRP, from which an expert earns prestige and money¹², and a say in the global fight against infectious diseases. These incentives are strong enough to create a large pool of candidates for TRP positions¹³, which allows the principals to select those experts whose known preferences match their own (Barnes and Brown 2009). Furthermore, experts who continuously recommend the ‘wrong’ applications (i.e. those by countries which are of lesser strategic interest to the donors) could be punished by not being re-appointed to serve another round. Since 54% of all TRP members served two or less rounds, with 37% being replaced after only one round, it must be considered a possibility that the principals employ these incentives to control the TRP.

5.1 Testing the Principal-Agent Framework

The Global Fund appears to be a prime example for an international institution in which the political principals have largely, if not completely, given authority about institutional outputs to an autonomous agent. This means that variation in these outputs—the Global Fund’s grants—could be determined by the preferences of TRP experts (1). If, however, the principals succeed in controlling the agent through adequate rewards and punishments, grants should be determined by the political preferences in the Foundation Board, regardless of formal processes (2).

1) Because of the TRP’s autonomy in evaluating applications, and the Board’s practice of accepting all recommendations without discussion, overall grant distribution could reflect the preferences of the health experts in the TRP. The preferences of experts differ from political preferences in that they are not based on the experts’ personal cost-benefit calculations, but on technocratic public health considerations (Haas 1992). If the consensus or majority position of health experts determines TRP recommendations, and if the Technical Review

¹²Note that most, if not all, TRP experts are already highly regarded in their field, and a \$9,000 allowance might or might not make up for the time commitment and pressure of the review process.

¹³The Fund does not publish the number of applicants. An external source reports that 700 applications were filed for nine open seats on the TRP in Round 2 (RTI International 2004).

Panel as a largely autonomous agent decisively influences grant distribution, then countries with greater chances of successful implementation should have higher per capita grants approved. The experts should prefer applications from countries with a sound public health infrastructure, an effective government, low corruption, and a good human rights record, among other factors.

I consider the technocratic preferences explanation falsified if grant size per capita is not related to measures capturing the chance of successful implementation in the recipient country. The independent variables I will test include: control of corruption; government effectiveness; respect for human rights (the World Bank's 'Voice and Accountability', and Freedom House scores); public health spending as a percentage of GDP and per capita; adult literacy rate; and whether or not an application has been filed by a multisectoral group of actors. The higher these variables, the higher per capita grant size should be.

2) Previous research on other international institutions suggests that the outputs of international institutions closely mirror the preferences of their most powerful actors (Börzel 2009; Mearsheimer 1995), and that the preferences of the largest donors carry the most weight, even where formal rules give equal voting weights to all members (Brown 2009; Copelovitch 2010). Thus, the preferences of the six largest donors to the Fund—in descending order: United States, France, Japan, Italy, Germany, and United Kingdom¹⁴—should be reflected in the distribution of grants. More concretely, if these 'G6' are the most powerful actors in the Foundation Board, and if the Foundation Board as the principal decisively influences grant distribution, then countries of greater interest to the G6 should receive larger per capita grants. Simply put, donor states can be assumed to support high per capita grants in recipient states in whose economic, social, and political development they have a greater stake. Their preferences about grant distribution will be grounded in an evaluation of costs and benefits to themselves. The G6 will prefer to approve higher per capita grants for countries with open, trade-intensive markets, low inflation, and stable political systems,

¹⁴The six states together have contributed over 70% of all financial pledges to the Fund, with the United States alone contributing 30%.

among other factors.

I consider the political preferences model falsified if grant size per capita is not related to measures capturing the relationship between G6 donor states and recipient country. The independent variables include: volume of trade between G6 and recipient; volume of bilateral development aid between G6 and recipient; net inflows of foreign direct investment; recipient's trade intensity¹⁵; recipient's political stability and regulatory quality (promotion of private sector development); whether the recipient is a former colony of a G6 state; and whether a G6 state has a sizable amount of troops stationed in the recipient country. The higher these variables, the higher per capita grant size should be.

GDP per capita at purchasing power parity will be included in all regression models as a control variable. The variables operationalizing the two different sets of preferences are summarized in Table 2 (Appendix, pg. 28).

[Insert Table 2 here]

6 Results

To test the competing explanations outlined in the previous section, I created a new dataset containing information about 693 individual grants targeting the Global Fund's three diseases in 125 states from 2002 to 2010. This sample constitutes the universe of all approved grants on HIV/AIDS, tuberculosis, and malaria up to July 2010. The unit of analysis is the country-year, meaning that for a grant approved in a specific year, the independent variables have the correct values for that year and the country in question. Table 3 (Appendix, pg. 29) provides summary descriptive statistics of all included variables.

[Insert Table 3 here]

¹⁵The 'G6 trade intensity' variable measures what percentage of the grant recipient's GDP is accounted for by trade with the G6.

The relationships between these variables are explored using OLS regression models. Because of the large variation in the dependent variable (the maximum is almost 600,000 times higher than the minimum), grant size per capita was logged. First, three models were run explaining per capita grant size for HIV, tuberculosis, and malaria, respectively. Following this, a fourth model explained all per capita grant amounts by the same set of independent variables, regardless of what disease was targeted.

Table 4 (Appendix, pg. 30) gives the results of models 1 to 4, which illustrate the effects of the technocratic preferences of the Technical Review Panel as an agent.

[Insert Table 4 here]

All models exhibit a modest fit of the sample data, with a maximum explained variation of 42% for tuberculosis grants. Several variables show promising statistical significance. Firstly, the World Bank measure of ‘control of corruption’ has a statistically significant positive relationship with the dependent variable—holding other technocratic variables constant, a country with lower corruption will receive higher per capita grants. Secondly, and somewhat puzzlingly, the opposite is true for the World Bank measure of ‘government effectiveness’, with higher effectiveness reducing the grant amount. Six other independent variables have little or no significant effect on per capita grant size: the World Bank’s ‘Voice and Accountability’ (which captures democratic participation, freedom of expression, freedom of association, etc.); Freedom House sub-category scores for ‘political rights’ and ‘civil liberties’; a recipient’s expenditure on public health as a percentage of GDP and per capita; and whether or not the proposal has been filed by a coalition of public and private actors. Adult literacy rates, which had been hypothesized to make successful program implementation more likely and thus have a positive influence, indeed showed high statistical significance and were found to be positively related to per capita grant size. Lastly, the models show that technocratic preferences explain more of the variation in grants for tuberculosis and malaria than of those for HIV/AIDS, but there is not much difference between the diseases when it comes to the statistical significance of variables.

Table 5 (Appendix, pg. 31) shows models 5 to 8, which are based on variables capturing the political preferences of the principals in the Foundation Board.

[Insert Table 5 here]

The variable measuring trade—i.e., exports and imports—between a recipient country and the G6 exhibits high statistical significance in the majority of models. However, countries that are more important trade partners of the G6 actually receive *smaller* grants per capita. On the other hand, if trade with the G6 accounts for a higher percentage of a recipient’s GDP (measured in the G6 trade intensity variable), it will generally receive more grant money per capita. Several other macroeconomic measures of potential interest to the G6 do not show statistical significance, among them the amount of foreign direct investment, inflation in consumer prices, and whether or there is a sizeable contingent of G6 troops stationed in the recipient country. Positively related to higher per capita grants is a country’s per capita development aid received from the G6, which indicates that the G6 might be more willing to support those with Global Fund grants that they also deem worthy of bilateral aid. Lastly, neither political stability nor regulatory quality have a significant effect on the dependent variable, but former colonies of a G6 state (i.e. former French, German, Italian, or British colonies) get significantly smaller per capita grants approved.

Taken together, these results are somewhat ambiguous. Compared to the expert preferences model, a similar number of variables exhibit high statistical significance, and the models explain more of the variation in the dependent variable. However, not all variables point in the hypothesized direction: countries of higher strategic importance to the G6—as evidenced by more bilateral trade and total ODA, and their status as former colonies—actually seem to have smaller per capita grants approved than those who are not.

Next, those variables showing the greatest significance from both explanatory strands were combined to produce models 7 to 10 (Table 6, Appendix, pg. 32). Furthermore, dummy variables for a recipient’s geographic location¹⁶ were included, in order to highlight possible

¹⁶The World Health Organization’s classification was used for world regions.

systematic differences between world regions. This final analytical step generates four main results.

[Insert Table 6 here]

Firstly, the variables chosen to represent the preferences of principal and agent, and the added control variables, perform well in explaining variation in the dependent variable. All models explain more than 50% of the variation in per capita grant size, with an adjusted R^2 of 0.59 for HIV grants, 0.73 for tuberculosis, 0.68 for malaria, and 0.52 for all diseases combined. This is all the more interesting as none of the variables used to explain Global Fund grants are intrinsically linked to public health provision: Some relatively simple variables of governance quality and economic performance, coupled with basic geographic information, explain 73% of all variation in per capita tuberculosis grant size, for example.

Secondly, there is not much variation in the results across diseases, but very much so across regions. The direction of all significant variables is identical for the three diseases and the combined model: a higher literacy rate and multisectoral proposals leads to higher per capita grant amounts, as do higher trade intensity and higher development aid from the G6. If recipients register higher imports and exports to the G6, or are their former colonies, grants per capita become significantly smaller, regardless of whether the grant targets HIV, tuberculosis, or malaria. A recipient's world region, on the other hand, impacts very significantly on the approved grant sizes. Applicants from Africa (and especially Southern Africa), Latin America and the Caribbean receive per capita grants that are far smaller than those approved for Asia and Eastern Europe, even when controlling for a multitude of factors such as in model 10.¹⁷ Interestingly, this 'regional effect' is very pronounced for HIV and malaria grants, but far less so for tuberculosis grants, which seem to be distributed more equally across the globe. The regional variables also show that per capita grant size does not grow proportionally to a country's burden of disease. In other words, those hit hardest by infec-

¹⁷These findings prove robust in verification models regressing total and per capita grant size on world region, while controlling for population size, infected population size, and GDP per capita.

tious diseases receive comparatively little financial resources per sufferer, while countries in Eastern Europe and parts of Asia see far larger per capita grants approved, although they are already comparatively well-equipped to deal with the epidemics.

Thirdly, all models provide evidence that agent preferences do not influence the dependent variable as much as the principal's preferences. When controlling for other factors, technocratic variables are 95% statistically significant only in five out of 16 cases, while political variables are significant 12 out of 16 times. One notable exception to this is the technocratic variable for 'multisectoral proposal', which shows that for HIV and tuberculosis, proposals made by a coalition of public and private actors get higher per capita grants approved. The rate of adult literacy, which had a good track record in previous models, loses most of its significance. In comparison, variables capturing principal preferences consistently perform well, with G6 trade, development aid per capita, and status as a former G6 colony being very highly significant. Taken together, the results support the hypothesis that the evaluation and approval of grants by the Global Fund might not be an 'apolitical' process (Barnes and Brown 2009). Political variables unrelated to an applicant's burden of disease, current public health provision, or chances of successful program implementation, still impact significantly on per capita grant size. This provides evidence that the preferences of the principals in the Foundation Board, and the powerful G6 donor states, do indeed play a role in grant distribution, despite the formal division of labor between the Board and the Technical Review Panel.

Fourthly, the statistical analysis reveals counter-intuitive directional effects of some highly significant variables. While almost all political variables are significant, at least half of them act in an unexpected way: those recipients trading more with the G6, and those being former colonies, all see smaller per capita grants approved instead of larger ones. But verifying earlier regressions, those receiving more development aid, and those for whom trade with the G6 is more important, are both at an advantage when it comes to per capita grant size. One possible interpretation of these seemingly conflicting results is to take a closer look at the

principal's preferences. The initial hypothesis assumed that the G6 donors would be more willing to approve large per capita grants for countries in which they have a greater strategic and economic interest, and concluded that the dependent variable should increase when all political variables increase. However, the statistical evidence points to G6 interests being more subtle: nations with a high trade volume and former colonies could be considered as being more able to help themselves, and therefore be less deserving of high per capita grants. On the other hand, those for whom trade with the G6 is especially important, and those receiving higher amounts of bilateral aid, could be considered as being more dependent on the G6 and more deserving of high per capita grants.

Lastly, what is the magnitude of these results? What difference does it really make for the size of a grant whether one applicant receives more bilateral aid than another? These questions are not easy to answer, since per capita grant size is logged in the original analysis because of its non-normality. Running composite model 10 with a non-logged dependent variable reduces significance across the board, but gives some indication of the magnitude of effects.¹⁸ Looking only at those coefficients that are still statistically significant, we find that a country that scores one point higher on the World Bank's 'control of corruption' variable (on a scale from -2.5 to +2.5) receives Global Fund grants that are \$2296 higher per infected person. Holding all other variables constant, one dollar more per capita in bilateral aid from the G6 donors corresponds to \$23 more in per capita grant size. Being situated in Western and Southern Africa means receiving \$178 and \$669 less per capita from the Global Fund, but recipients in Eastern Europe and central Asia see a full \$6058 more grant money approved per infection. And having the unlucky distinction of being a former G6 colony means per capita grants that are \$1408 lower, holding other variables constant.

¹⁸Table omitted for space reasons, data available on request.

7 Conclusion

Who controls the Global Fund to Fight AIDS, Tuberculosis and Malaria, and what explains variation in its funding behaviour across cases? In this paper, I address these questions using a principal-agent framework, in which decisions about grants are influenced either by the strategic and political preferences of the six most powerful donor states, or by the technocratic preferences of the independent health experts on the Technical Review Panel. Since the principals never formally overturn the agent's recommendations, the expected outcome would be that variation in per capita grant size could be explained by variables related to how experts gauge an application's chance of success. My analysis finds technocratic variables do influence per capita grant size, but less so than political variables. This supports the hypothesis that the distribution of funds is actually more a function of the strategic preferences of the principals than of the preferences of the expert agents. However, the effect is multi-dimensional and does not point to a simple favoring of good trading partners. Also, my research so far can only suggest that the principals are able to assert themselves and control their agent in the Fund's decision-making process, but not *how* they do this. The most likely explanation is that they 'stack the deck' by selecting experts whose preferences are known and similar to the G6, and that they use their informal bargaining power to skew the distribution of grants even where the formal process does not allow for it.

Future research will move in two main directions. Firstly, the selection of variables capturing both actors' preferences needs to be verified through qualitative research. If the technocratic variables in this paper do not adequately capture expert preferences in the evaluation of applications, then those variables' comparatively poor performance in the statistical analysis matters little in reality. Similarly, state preferences might need to be refined, and evaluated for each donor state separately, instead of assuming homogenic preferences. Indeed, the degree of preference heterogeneity between G6 states could constitute a key factor determining in which their interests matter (i.e. when the G6 are unified), and in which they do not (Copelovitch 2010). Secondly, additional data on applications that were

ultimately rejected, instead of concentrating on those that were successful, will improve the reliability and explanatory power of the statistical analysis.

At the very least, my paper shows that this understudied area of international institutions presents a fascinating case that can increase our understanding of global public health provision, intra-institutional policy processes, and common agency problems in general.

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Table 1: Variation in Grant Size, sorted by Grants per Capita in US \$

Country	Year	Disease	Amount (US\$)	Cases	Grant/Capita
Timor-Leste	2006	HIV	8,361,394	100	83,614
Sri Lanka	2009	Mal	21,630,381	320	67,595
Bosnia & Herzegovina	2010	HIV	17,611,621	276	63,876
Macedonia	2004	HIV	5,904,367	100	59,044
Bosnia & Herzegovina	2006	HIV	11,042,257	200	55,211
Croatia	2003	HIV	4,944,324	<100	49,443
Maldives	2007	HIV	4,142,457	<100	41,424
Kazakhstan	2003	HIV	22,085,999	600	36,810
Macedonia	2008	HIV	7,444,775	213	34,897
Azerbaijan	2008	Mal	3,371,973	<100	33,720
Montenegro	2006	HIV	3,252,686	<100	32,527
Montenegro	2010	HIV	3,109,374	<100	31,094
Georgia	2007	Mal	2,958,186	<100	29,582
:	:	:	:	:	:
Ghana	2003	Mal	8,849,491	3,552,869	2.49
India	2004	HIV/TB	14,819,772	6,176,118	2.40
China	2008	TB	5,313,263	2,335,473	2.28
India	2002	TB	8,655,033	4,309,186	2.06
Thailand	2004	HIV	1,236,108	610,000	2.03
Uganda	2003	Mal	23,211,300	12,343,411	1.88
Cote d'Ivoire	2004	HIV	1,023,534	550,000	1.86
Kenya	2003	HIV	2,650,813	1,600,000	1.66
Tanzania	2008	Mal	20,707,304	13,174,496	1.57
Madagascar	2002	Mal	2,000,063	1,543,130	1.30
Kenya	2003	Mal	4,640,447	5,090,639	0.91
Nigeria	2002	HIV	1,687,599	2,300,000	0.73
Kenya	2002	HIV	220,875	1,600,000	0.14

Table 2: Independent Variables & Sources

Explanation	Variable	Source
Technocratic Preferences	Control of corruption	World Bank
	Government effectiveness	World Bank
	Voice & accountability	World Bank
	Freedom House scores	Freedom House
	Health expenditure	WHO
	Adult literacy rate	UN Development Programme
	Multisectoral proposal	own research
Political Preferences	Trade G6-recipient	IMF
	Trade intensity	WTO
	Foreign Direct Investment	World Bank
	Inflation	IMF
	Bilateral aid	OECD
	Stationed G6 Troops	Ministries of Defense
	Political stability	World Bank
	Regulatory Quality	World Bank
Former G6 colony	CIA World Fact Book	
Control	GDP/capita (PPP)	IMF

Table 3: Descriptive statistics

Variable	<i>n</i>	Mean	SD	Min	Max
<i>Dependent Variables</i>					
Grant amount (millions)	693	27.5	45.5	0.2	435
HIV Grant size / infected	283	3,023	9,923	0.14	83,610
TB grant size / infected	218	736	1,894	2	23,730
Malaria grant size / infected	179	1,939	7,170	0.9	67,590
All grants size / infected	673	2,019	7,551	0.14	83,610
All grants size / infected (log)	673	2.3	0.9	-0.9	4.9
<i>Independent Variables</i>					
Control of corruption	504	-0.7	0.5	-1.9	1.5
Government effectiveness	503	-0.7	0.5	-2.5	1.2
Voice and accountability	504	-0.6	0.7	-2.1	1.1
Freedom House political rights	684	18.4	10.7	0	39
Freedom House civil liberties	684	29.3	12	0	54
Health expenditure (% of GDP)	687	5.6	2.2	2	12
Health expenditure / capita	687	156	159	11	956
Adult literacy rate (%)	678	72	21	19	99.8
Multisectoral proposal (dummy)	618	0.1	0.3	0	1
Imports from G6 (log)	547	6.7	2.6	-1.2	13.4
Exports to G6 (log)	553	6.9	2	2.4	12.5
G6 imports + exports (log)	547	7.6	2.1	2.8	13.8
G6 trade / GDP	534	0.2	0.4	0.0	4.3
Inflation (%)	677	8	7	-12	51.5
G6 ODA (log)	642	5.1	1.4	0.6	9.6
G6 ODA / capita (log)	642	2.5	1.2	-2	6.1
G6 ODA / total ODA (%)	631	41	18	0	98
G6 ODA / GDP (%)	659	3.4	6.4	0.1	78.4
Foreign direct investment (log)	669	5.2	1	0	6.2
Stationed G6 troops (dummy)	693	0.2	0.4	0	1
Political stability	503	-0.7	0.8	-3.2	1.1
Regulatory quality	503	-0.6	0.6	-2.8	1.5
Former G6 colony (dummy)	693	0.6	0.5	0	1
<i>Controls</i>					
GDP / capita at PPP (log)	674	7.7	0.9	5.5	9.6

Table 4: OLS regressions, agent preferences

	Model 1 (HIV)	Model 2 (TB)	Model 3 (Malaria)	Model 4 (all)
Control of corruption	0.59** (0.23)	0.92*** (0.15)	0.62* (0.28)	0.72*** (0.13)
Government effectiveness	-0.79** (0.26)	-1.41*** (0.17)	-0.42 (0.33)	-0.90*** (0.15)
Voice & accountability	0.1 (0.33)	0.22 (0.20)	-0.19 (0.34)	0.12 (0.18)
FH political rights	-0.02 (0.02)	-0.03* (0.01)	0.02 (0.02)	-0.01 (0.01)
FH civil liberties	0.02 (0.02)	0.03* (0.01)	-0.02 (0.02)	0.005 (0.01)
Health spending (% GDP)	-0.01 (0.04)	0.01 (0.03)	-0.01 (0.05)	-0.01 (0.02)
Health spending/capita (log)	-0.24 (0.16)	-0.18 (0.11)	0.08 (0.2)	-0.1 (0.09)
Adult literacy rate	0.01* (0.004)	0.01*** (0.003)	0.01** (0.004)	0.01*** (0.002)
Multisectoral proposal	0.023 (0.23)	0.19 (0.17)	0.11 (0.29)	0.06 (0.14)
GDP/capita (PPP) (log)	0.47** (0.16)	0.47*** (0.1)	0.43* (0.19)	0.43*** (0.09)
Constant	-0.77 (1.17)	-1.76* (0.72)	-2.18 (1.36)	-1.37* (0.67)
N	191	142	116	464
Adj. R^2	0.11	0.42	0.26	0.22

† $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 5: OLS regressions, principal preferences

	Model 5 (HIV)	Model 6 (TB)	Model 7 (Malaria)	Model 8 (all)
Imports + exports (log)	-0.14** (0.05)	-0.24*** (0.02)	-0.1 (0.07)	-0.17*** (0.03)
G6 trade intensity	0.14 (0.14)	0.33*** (0.09)	-0.09 (0.36)	0.22* (0.1)
Inflation	-0.01 (0.009)	0.008† (0.004)	-0.001 (0.01)	-0.003 (0.005)
G6 ODA/capita (log)	0.21** (0.07)	0.09* (0.04)	0.05 (0.11)	0.12** (0.04)
FDI in recipient (log)	0.04 (0.07)	-0.006 (0.03)	-0.05 (0.10)	-0.003 (0.04)
G6 troops	-0.02 (0.15)	0.07 (0.09)	0.12 (0.22)	0.04 (0.1)
Political stability	0.18† (0.1)	-0.03 (0.05)	-0.16 (0.13)	-0.01 (0.06)
Regulatory quality	-0.27† (0.16)	0.03 (0.09)	0.02 (0.22)	-0.06 (0.1)
Former G6 colony	-0.61*** (0.14)	-0.30*** (0.06)	-0.71*** (0.19)	-0.52*** (0.09)
GDP/capita (PPP) (log)	0.42*** (0.11)	0.58*** (0.06)	0.64*** (0.14)	0.58*** (0.07)
Constant	0.04 (0.92)	-0.5 (0.49)	-1.73 (1.27)	-0.92 (0.56)
N	165	125	102	407
Adj. R^2	0.42	0.69	0.32	0.40

† $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 6: OLS regressions, combined principal and agent preferences

	Model 7 (HIV)	Model 8 (TB)	Model 9 (Malaria)	Model 10 (all)
Control of corruption	0.22 (0.21)	0.17 (0.15)	0.56† (0.29)	0.29† (0.15)
Government effectiveness	-0.07 (0.23)	-0.18 (0.15)	-0.6* (0.29)	-0.23 (0.15)
Adult literacy rate	0.003 (0.003)	0.006* (0.002)	0.008† (0.004)	0.005† (0.002)
Multisectoral proposal	0.42* (0.17)	0.52*** (0.14)	0.26 (0.23)	0.34** (0.12)
Imports + exports (log)	-0.19*** (0.03)	-0.19*** (0.03)	-0.008 (0.05)	-0.14*** (0.03)
G6 trade intensity	0.23† (0.13)	0.21* (0.09)	-0.51† (0.27)	0.15 (0.1)
G6 ODA/capita (log)	0.21*** (0.06)	0.11** (0.03)	0.17* (0.08)	0.16*** (0.04)
Former G6 colony	-0.42** (0.14)	-0.28** (0.09)	-0.46** (0.16)	-0.36*** (0.09)
West Africa	-0.89*** (0.22)	0.28† (0.16)	-0.88*** (0.25)	-0.53*** (0.15)
Southern Africa	-1.31*** (0.23)	-0.06 (0.14)	-1.71*** (0.26)	-1.01*** (0.16)
East Africa	-0.93*** (0.21)	-0.03 (0.14)	-1.45*** (0.24)	-0.75*** (0.15)
North Africa & Middle East	-0.16 (0.24)	0.24 (0.15)	-1.03*** (0.28)	-0.27† (0.16)
South Asia	0.07 (0.26)	-0.02 (0.15)	-0.25 (0.28)	0.002 (0.16)
Latin America & Caribbean	-0.55* (0.22)	0.27† (0.15)	-0.27 (0.3)	-0.15 (0.16)
Eastern Europe & Central Asia	0.18 (0.22)	0.13 (0.15)	1.02** (0.32)	0.32* (0.15)
East Asia & Pacific	0.16 (0.23)	-0.24 (0.15)	0.26 (0.3)	0.16 (0.16)
GDP/capita (PPP) (log)	0.27* (0.12)	0.44*** (0.08)	0.15 (0.12)	0.26** (0.08)
Constant	2.29** (0.8)	-0.32 (0.54)	0.93 (0.81)	1.05* (0.53)
N	160	119	97	403
Adj. R^2	0.59	0.73	0.68	0.52

† $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$