



Does Global Health Funding Respond to Recipients’ Needs? Comparing Public and Private Donors’ Allocations in 2005–2007

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Summary. — Adding to official development assistance (ODA), private foundations have emerged as important donors to the global health agenda. Amid this increasing funder diversity and growing global health budgets, responsiveness to recipients’ needs is a central concern. Merging datasets on ODA flows in 2005–07, over 2,800 foundation grants, disease burden, and perceived priorities in 27 low- and middle-income countries, this study offers the first comprehensive national-level analysis of global health aid responsiveness. The analysis shows that national patterns of disease burden explain neither public nor private aid flows during this period. While ODA committed during these years was weakly yet significantly correlated with health priorities, private grants’ responsiveness was even weaker and did not achieve ODA significance levels either.

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1. INTRODUCTION

Over the past five decades, bilateral as well as multilateral donors’ approaches to and rationales for funding health related development challenges have varied significantly. Aid policy during the 1960s focused on macroeconomic growth and public sector capital investment projects, while the 1970s saw a move toward human development initiatives. Structural adjustment of the 1980s refocused the aid community’s attention on economics, this time with an emphasis on privatization and deregulation, only to be replaced in the new millennium by a return to human development with public–private partnerships taking center stage (Périn & Attaran, 2003). During the 1990s, globalization and the framing of health as a global public good with the potential to impact the national security and economic and political interests of both developed and developing countries (Archibugi & Bizzarri, 2005; Barrett, 2004; MacKellar, 2005) increasingly turned health policy making into a supranational, rather than domestic, process (McMichael & Beaglehole, 2000).

At the turn of the millennium, awareness that the WHO’s ambitious proclamation of ‘Health for All by 2000’ would not be achieved, coupled with disillusionment of the effectiveness of aid to low- and middle-income countries, prompted a renewed prioritization of health. Official development assistance (ODA) for health given by member countries of the Organization for Economic Cooperation and Development (OECD) has since doubled in real terms from 2000 to 2005 (Kates & Lief, 2007). US Government funding for HIV/AIDS programs in 2007 alone was around \$2.3 billion, about eight times more than in 2000 (Ravishankar *et al.*, 2009). In addition, major multilateral and bilateral funding mechanisms, such as the US President’s Emergency Plan for HIV/AIDS

(PEPFAR) and The Global Fund for AIDS, Tuberculosis, and Malaria (GFATM) were established in 2003 and 2005, respectively, to respond to growing political recognition of health needs of low- and middle-income countries. At the same time, sources of aid diversified further through increased involvement of non-state donors: “From the [Bill and Melinda] Gates Foundation [BMGF] to the Clinton Global Initiative to the Millennium Project to the Make Poverty History Campaign to the Global Fund to Fight AIDS, Tuberculosis, and Malaria, there is now a flurry of global activities that tackle ‘banner’ diseases” (Pearlman & Roy, 2009, p. 18). Ravishankar *et al.* (2009, p. 2122) also observe that “[t]he role of NGOs in terms of spending funds from the public and private sectors has expanded tremendously, as has direct bilateral assistance to governments in low-income and middle-income countries. The shift is not only towards a smaller relative role for the UN system and the World Bank, but also for the changed status of these organizations.” Also during this decade, high level policy initiatives such as the Paris Declaration and the Disease Control Priorities Project have called for aid alignment with national priorities and

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disease burdens to meet a common goal of achieving important and sustainable gains in the health of people living in low- and middle-income countries (Jamison *et al.*, 2006; OECD, 2005; Shiffman, 2006). Based on “disability-adjusted life-year” (DALY) calculations designed to measure morbidity and mortality, the *Global Burden of Disease Estimates* from 2002 was the first global attempt to inform related policy-making (Murray & Lopez, 1996; Pearson & Rawlings, 2005). Although the DALY methodology is not without critics (Arnesen & Nord, 1999), its applicability for defining and comparing disease burden across diseases and countries is apparent, and some authors have argued that the prioritization of maternal, newborn, and child health (Powell-Jackson, Borghi, Mueller, Patouillard, & Mills, 2006) and HIV/AIDS (Shiffman, 2006) provide evidence that in some areas needs do indeed trigger international financial flows. However, existing data on health expenditures equally suggests persistent imbalances and inconsistencies both globally and at the national level. Benatar, Gill, and Bakker (2009: 349) find that “[a]lmost 90% of world expenditure on health is spent on people bearing less than 10% of the global burden of disease, and 90% of expenditure on medical research is spent on diseases that account for a mere 10% of the global burden of disease.” Among the first publications to focus on allocations to developing country recipients specifically, MacKellar’s (2005) research identified wide gaps between health needs in developing countries and international funding priorities. Shiffman’s (2006) work provided further evidence that development assistance for communicable diseases and measures of disease burden are largely unaligned, and Wecker has argued that attention to diarrheal diseases, a major killer of infants, had waned dramatically since the 1980s partly as a result of changing donor priorities, which has allowed them to creep back (quoted in: Mason, 2009). At the same time, HIV/AIDS receives a seemingly disproportionate share of funding (Shiffman, 2006). This is illustrated by AIDS-related mortality figures in Nigeria and Ethiopia—Africa’s two most populous countries—in 2007 (237,000) which were “less than half the 540,000 children under 5 [in the same countries] who died of pneumonia and diarrhea” (Dugger, 2009). Yet in the same year, the US government’s budget for HIV/AIDS related interventions in Nigeria and Ethiopia “was more than the \$646 million it is spending on maternal and child health in all the world’s countries combined” (Dugger, 2009). An additional complication arises when considering that a recent World Bank report alerts that seven out of ten Bank-financed HIV/AIDS projects fail to reach their objectives while nine out of ten projects targeting diseases, such as malaria, tuberculosis, and leprosy performed satisfactorily or better (IEG, 2009).

Clearly then, donor allocations cannot be informed primarily by concerns about existing needs and the desire to improve health status in recipient countries in the most effective manner. Ravishankar *et al.* (2009, p. 2121) hypothesize “that country allocation of DAH [development assistance for health] is driven by many considerations, including income, burden of disease, political stability, and historical and political relations between specific donors and recipient countries,” thus echoing some of the arguments made by Shiffman (2006). Yet this does not imply that these factors have equal weight. Indeed, Périn and Attaran (2003) were among the first to argue that aid allocation for health is predominantly a political process determined by donor ideologies. Crane and Dusenberry (2004) emulated this point and emphasized religious underpinnings in the context of family planning and HIV prevention. More recently, Pearlman and Roy (2009, p. xiv) have reiterated this argument: “The practice of international health is political

rather than technical, political rather than bureaucratic, political rather than academic. [...] The choice between interventions is presented as a question of efficacy that can be measured and scientifically evaluated. But the world is not that simple. Choices are often based on ideology, values, and national and organizational interests.” An important process in this context is the manipulation of recipient agendas by donors (Walt, Pavignani, Gilson, & Buse, 1999) that may result from one party controlling significant resources while the other party is in serious need (Sewell, 1992). Reflecting these concerns and based on their finding that “the focus on [...] quick results [by donors] discourages investment in health systems,” Sridhar and Rajaie (2008) hypothesize that either different governance structures of the World Bank, national governments, the BMGF, and the Global Fund or ostensible comparative advantages between these agencies could explain differences in priority-setting processes.

That decision making structures matter is considered by other authors as well. Within private foundations, “the focus has been on amounts of money raised for high-visibility health problems. A large share of the new donor funding is being provided through Eichler and Levin, 2009, p. 42). The channels earmarked for specific diseases or interventions” (The BMGF specifically has been characterized as “emphasiz[ing] breakthrough technologies and cost-effective interventions instead of investing in health-system strengthening and in addressing the underlying causes of disease” (Pearlman and Roy, 2009, p. 174). Another foundation has been singled out as pursuing a specific accomplishment in the health field to celebrate an important anniversary: “Rotary International had been looking for a global target to be achieved by the centennial of its foundation in 2005” (De Quadros, 2009, p. 62). Measurability plays an important role in this content because it facilitates resource mobilization as well as the production of easily attributable success stories (Esser, 2009), which causes Eichler *et al.* (2009, p. 4) to argue rather bluntly that “[y]ou get what you pay for. And it is easier to pay for what you can easily measure.” Finally, where shifts in donor priorities can neither be traced compellingly to shifts in recipient needs nor to provider interests, Shiffman (2006) argues that processes of socialization occurring within the global policy environment could provide an alternative explanation for these shifts.” Taking a social constructivist perspective and fielding the example of emerging health alliances during the past 10 years, he posits that the decisions of one actor influences the decisions of other donors, ultimately creating a kind of global peer pressure¹.

Although at least in part still hypothetical, this literature has nonetheless contributed in important ways to a deeper understanding of aid allocation. Yet the question remains *to what extent* both epidemiological profiles and subjective perceptions in recipient countries matter to different types of funders, if at all. Previous research into this aspect either did not break data down to the country level (Sridhar & Rajaie, 2008) or suffered from methodological problems. The authors of a recent BMGF-funded study that looks at both public and private sources Ravishankar *et al.* (2009, p. 2113) argue that “[t]otal DAH received by low-income and middle-income countries was positively correlated with burden of disease.” They also find that “[t]he correlation between health aid and disease burden has risen from 0.6% to 0.8% between 1997 and 2007” (2121). However, the absence of *per capita* calculations in their approach constitutes a major limitation; asserting a direct correlation between DAH and DALYs without adjusting for population size is problematic since more populous countries are likely going to have larger disease burdens as well. What follows is that the statistical analysis offered by Ravishankar

et al. is prone to type-I errors, that is, detecting correlations where, in reality, there are none. Covering the period from 2005 until 2007, our research design merges datasets on ODA and private funding to nine major areas of health in 27 developing countries with disease burden indicators and data on recipients' priority areas. While methods to measure country-specific disease burdens are widely used, public perceptions of health related challenges in local contexts are a relatively new area of measurement. The Kaiser/Pew Global Health Survey *A Global Look at Public Perceptions of Health Problems, Priorities, and Donors* (Kaiser Family Foundation, 2007) is the first attempt that allows for a comparative analysis of felt needs with indicators driven by epidemiological rather than opinion data. On this basis, our study develops the first country-specific analysis of public and private donors regarding their responsiveness to two different conceptualizations of recipient needs, and thus offers a fresh look at the responsiveness of development aid more broadly.

2. METHOD

The Kaiser/Pew Global Health Survey (Kaiser Family Foundation, 2007) served as the benchmark for country selection as it covered 27 developing countries for which all other data sources also provided detailed information. The survey is based on face-to-face interviews of sample sizes between 500 and 3142 people with national representation except Bolivia, Brazil, China, India, Pakistan, South Africa, and Venezuela in which largely urban populations were sampled. Participants were surveyed between April and May 2007 and the responses were ranked on a scale from 1 to 9 (1 being highest priority) for current global health priorities comprising Access to Care, Build/Improve Facilities, Chronic Disease, Clean Water, HIV/AIDS, Hunger/Malnutrition, Immunizations, Prenatal Care, and TB/Malaria/Other Infectious Diseases according to the percentage of people who cited each issue as "one of the most important" public health priorities for government to address. The limitation of the ranking is that it is relative. For instance, gaining top priority for an issue in a country can range between obtaining near universal support at 95% (HIV/AIDS in Ethiopia) to much more dispersed results like 43% (Immunizations in China) of the response. Nonetheless, this survey represents the first comprehensive look at the perceived global health priorities of people living in low- and middle-income countries. In addition to our country-level analysis, we also form regional clusters as another analytical dimension. Regions are broken down into sub-Saharan Africa, Latin America, Asia, and the Middle East. Sub-Saharan Africa includes Ethiopia, Ghana, Kenya, Mali, Nigeria, Senegal, South Africa, Tanzania, and Uganda. Latin America includes Argentina, Bolivia, Brazil, Chile, Mexico, Peru, and Venezuela. Asia includes Bangladesh, China, India, Indonesia, Malaysia, and Pakistan. The Middle East includes Egypt, Jordan, Lebanon, Morocco, and Turkey².

Official development assistance committed during 2005–07 was obtained from the OECD online Creditor Reporting System (CRS) of total ODA including bilateral and multilateral sources (SourceOECD, 2009). Commitments only were chosen to represent the priorities as postulated by donor agencies, unadulterated by extraneous factors such as budgeting shortfalls that may impact disbursements but may have little to do with the intended level of priority (cf. Sridhar & Rajaie, 2008). US private foundations' grant authorizations made during the period from 2005 until 2007 were obtained from the Foundation Center website (Foundation Directory Online,

2008a), which provides a detailed overview of large-scale non-governmental giving from US-based accounts. Based on a ranking of all US-based foundations and their cumulative funding of global health issues in the first of the 3 years studied (2005), the top five foundations in global health in terms of their individual grants were identified (Foundation Directory Online, 2008b). These are the BMGF, the Ford Foundation, the David and Lucille Packard Foundation, the William and Flora Hewlett Foundation, and the Susan Thompson Buffett Foundation. Taken together, these five sources account for 95%, 92%, and 89% of total funding by US foundations during 2005–07, respectively (see Table 1). Multi-year grants were included in the analysis in their entirety whereas grants with a regional focus—instead of a country—were excluded. Since ODA data are often also multiyear commitments, multi-year grants were taken as a lump grant and not imputed over the years of the grant in order to capture the signaling function of the commitment at a given point in time.

All grants ($n = 2,847$) from these top five foundations ($n = 5$) in terms of health commitments for countries included in the study ($n = 27$) were searched for "health", "hunger", "nutrition", then read individually and placed in most relevant Kaiser category. "Reproductive health" grants in the Foundation Center database (a separate keyword in the foundation center database) were categorized as "Prenatal Care" unless more appropriate in another category (for instance, HIV/AIDS). Because of the difficulty of capturing solely Prenatal Care in both ODA and Private Foundation Data, Prenatal Care is characterized as a more general "Reproductive Health Care." For this reason, in this analysis, Prenatal Care is likely to be overestimated in terms of funding and is better seen as a proxy variable. A similar challenge, hunger and malnutrition are, in practice, linked across several disease categories, for instance HIV/AIDS, yet such multiple attribution cannot be accounted for in this type of analysis (cf. Anabwani & Navario, 2005). ODA and private grant and loan commitments for 2005, 2006, and 2007 were grouped into categories consistent with the Kaiser/Pew Survey (see Figure 1). The purpose codes Basic Health Care (12220) and Infectious Disease Control (12250) were searched individually for reference to immunization, vaccination and relegated accordingly.

DALY data for the 27 countries were obtained through the Global Burden of Disease Estimates (WHOSIS; cf. WHO, 2002) database. All categories in the WHOSIS database were included except Injuries. With the exception of "Access to Care" and "Build/Improve Facilities" which had no direct attributable DALYs and were, therefore, excluded, estimated disease burden was attributed to each of the categories found in the Kaiser/Pew Survey. Clean Water comprised all DALYs attributable to diarrheal disease. Chronic disease included all DALYs attributed to non-communicable disease. Immunizations included all DALYs attributable to the childhood cluster diseases (poliomyelitis, measles, pertussis, tetanus, and diphtheria). HIV/AIDS included all DALYs attributable to HIV/AIDS and STDs. Prenatal Care included perinatal conditions and maternal conditions. TB/Malaria/Other Infectious Diseases included communicable diseases including tuberculosis, malaria, intestinal nematode infections, dengue, hepatitis, meningitis, trachoma, tropical cluster diseases (Chagas disease, lymphatic filariasis, etc.), Japanese encephalitis, leprosy, and respiratory infections. Hunger and Malnutrition comprised all nutritional deficits including Vitamin A, iodine, iron and protein³. We collapsed the aid variable into ordinal categories and used Spearman's ρ to test the relationship. It is worth noting that because of the reverse demarcation of priorities (1—not 9—being the highest), a negative algebraic sign

Table 1. Top 5 private US foundations awarding international health grants in 2005 with 2006, 2007 totals

Foundation name	International grants awarded for health 2005 (USD)	No. of grants	International grants awarded for health 2006 (USD)	No. of grants	International grants awarded for health 2007 (USD)	No. of grants
The Bill and Melinda Gates Foundation	895,011,143	145	1,536,990,217	136	1,619,838,672	212
The Ford Foundation	23,910,827	125	29,780,425	136	35,105,892	138
Rockefeller Foundation	22,389,260	75	15,921,769	34	14,393,835	55
The David and Lucille Packard Foundation	17,937,038	34	22,535,408	52	26,370,722	57
The William and Flora Hewlett Foundation	12,624,000	38	20,342,417	34	18,434,500	35
Top five total	971,872,268	417	1,625,570,236	392	1,714,143,621	497
Percent total ^a	95%	70%	92%	38%	89%	44%
Total giving top 50 foundations	1,019,535,087	594	1,767,606,650	1043	1,928,962,978	1,126

Source: See text.

^a2005 Data are only top 10.

Access to Care	12181: Medical education/training 12182: Medical research 12220: Basic health care (non-immunizations) 12261: Health education
Build/Improve Facilities	12230: Basic health infrastructure 12191: Medical services
Chronic Disease	no applicable category
Clean Water	14010: Water resources policy/admin. mgmt 14015: Water resources protection 14020: Water supply & sanit. - large syst. 14030: Basic drinking water supply and basic sanitation 14040: River development 14050: Waste management/disposal 14081: Educ./training: water supply & sanitation
HIV/AIDS and STIs	13040: STD control including HIV/AIDS 16064: Social mitigation of HIV/AIDS
Hunger and Malnutrition	12240: Basic nutrition 52010: Food security programs/food aid
Immunizations	12220: Basic health care (immunizations) 12250: Infectious disease control (immunizations)
Prenatal Care	13020: Reproductive health care
TB/Malaria/OID	12262: Malaria control 12263: Tuberculosis control 12250: Infectious disease control (non-immunizations)

Figure 1. Kaiser categories and corresponding ODA purpose codes.

denotes a positive correlation. Pearson's r and Spearman's ρ were calculated using SPSS 16.0 to analyze correlations between official development assistance and private foundation giving to disease burden (r) and perceived priority (ρ). Significance was determined at 95% and 99% confidence intervals (2-tailed). Since the application of Spearman's ρ to denote correlation between one ordinal and one interval-ratio set of data may seem problematic, we also converted aid figures into ordinal variables by forming nine categories for ODA amounts and five for private grants and then recalculated the coefficient. This produced virtually identical results, rendering Spearman's ρ remarkably robust with only one ordinal variable. In addition, we calculated Pearson's r . While producing lower values of the statistic overall, this computation rendered substantially similar results.

3. RESULTS

Alignment of donor aid commitments and private funding by the leading five US-based private foundations during

2005–07, public priorities in 27 recipient countries, and country-level disease burden varied greatly across regions. Looking first at total international funding to countries included in the study, India and China received by far the highest total amounts of health aid from both types of funders. Ethiopia was the third most-funded recipient country and first among the nine African countries sampled. Bangladesh, Kenya, Nigeria, Tanzania, South Africa, and Indonesia follow on ranks 4–10. With an increase from over \$2.6bn to just shy of \$4.7bn, the nine countries in sub-Saharan Africa also represent the greatest absolute expansion in ODA health funding during the 3-year period covered. The greatest relative increase can be registered for the seven countries located in Latin America; however, funding for health purposes also fluctuated most within this region, with Mexico experiencing the sharpest decline in health ODA received among all 27 countries included in the study, from over \$265m in 2005 down to \$13m in 2007. The only regional group to undergo a decline in health-related ODA during 2005–07, the five Middle Eastern countries saw their share reduced from just under \$1bn in 2005 to \$620m in 2006 and still only \$725m in 2007.

For the five foundations whose grants were analyzed for this study, Nigeria was the most prominent target country, receiving almost \$100m over a 3-year period. India, Kenya, and Ghana follow on ranks 2–4. However, private grants for health projects located in India nonetheless also registered the sharpest absolute decline, from over \$44m in 2005 to under \$17m in 2007. Conversely, Pakistan experienced the greatest relative expansion, seeing private health aid increase from \$1.3m in 2005 to over \$21m in 2007. In absolute terms, this ranking is led by private grants for aid projects in Nigeria where overall private funding jumped from \$9.3m in 2005 to just under \$60m 1 year later. Notably, whereas ODA for health purposes committed to the Asian region during 2005–07 was 40% higher than commitments to Africa, private foundation giving actually showed a reverse pattern, with African countries receiving over 60% more than private grants authorized for projects located in Asia. No grants from foundations covered in the analysis were given to Bolivia, Jordan, Lebanon, or Venezuela (see Table 2).

Regarding the responsiveness of ODA and private funding to national disease burdens, our calculations rendered weak statistical correlations for both sources and all 3 years reported, none of which were estimated to be significant at the .95 confidence level. With respect to perceived priorities, we found stronger correlations between ODA and priorities as reported by the Kaiser/Pew Global Health Survey, which were also estimated to be highly significant. Lower indicators of association resulted for private foundation giving and national

Table 2. Regional distribution of health-related funding including official development assistance and top five US private foundations

Region/ country/ disease-specific category	Official development assistance, 2005 USD ('000)	US private foundation aid, 2005 USD ('000)	Total donor aid, 2005 USD ('000)	Official development assistance, 2006 USD ('000)	US private foundation aid, 2006 USD ('000)	Total donor aid, 2006 USD ('000)	Official development assistance, 2007 USD ('000)	US private foundation aid, 2007 USD ('000)	Total donor aid, 2007 USD ('000)	Total donor aid, cumulative USD ('000)
<i>Asia</i>										
India	1,057,392	44,572	1,101,964	2,181,906	28,180	2,210,086	2,782,211	16,602	2,798,813	6,110,863
China	1,278,361	4,871	1,283,232	1,113,198	2,546	1,115,745	1,179,993	22,473	1,202,466	3,601,443
Bangladesh	718,248	98	718,346	581,656	40,468	622,124	501,240	5,750	506,990	1,847,460
Indonesia	494,600	2,236	496,836	472,133	2,796	474,930	219,012	2,080	221,092	1,192,858
Malaysia	746,079	670	746,749	365	852	1,217	1,935	811	2,745	750,711
Pakistan	173,570	1,300	174,870	355,287	1,150	356,437	188,690	21,533	210,223	741,531
<i>Latin America</i>										
Argentina	37,717	0	37,717	343,316	306	343,622	399,635	50	399,685	781,024
Peru	43,312	0	43,312	119,997	599	120,596	261,547	2,005	263,552	427,460
Brazil	92,075	1,645	93,719	223,061	4,395	227,456	64,406	3,416	67,822	388,997
Bolivia	81,472	0	81,472	159,400	0	159,400	115,085	0	115,085	355,957
Mexico	265,267	1,288	266,554	67,336	6,420	73,756	13,002	1,864	14,866	355,177
Chile	27,147	0	27,147	671	14,517	15,188	141,525	425	141,950	184,285
Venezuela	16,341	0	16,341	1,428	0	1,428	2,487	0	2,487	20,256
<i>Middle East</i>										
Morocco	218,679	0	218,679	353,367	0	353,367	272,946	170	273,116	845,161
Turkey	333,197	0	333,197	47,242	575	47,817	144,001	600	144,601	525,614
Egypt	133,576	1,087	134,663	69,079	1,518	70,597	200,420	346	200,766	406,026
Jordan	149,740	0	149,740	107,880	0	107,880	71,415	0	71,415	329,035
Lebanon	99,291	0	99,291	41,870	0	41,870	36,399	0	36,399	177,560
<i>Sub-Saharan Africa</i>										
Ethiopia	415,032	3,306	418,337	740,187	21,061	761,248	982,439	20,651	1,003,089	2,182,675
Kenya	354,548	24,633	379,181	515,059	13,227	528,286	839,085	40,530	879,615	1,787,081
Nigeria	471,775	9,310	481,084	465,333	59,366	524,699	570,251	29,866	600,117	1,605,900
Tanzania	439,484	572	440,056	388,773	8,158	396,931	746,043	4,216	750,259	1,587,246
South Africa	216,897	5,472	222,369	371,520	3,672	375,191	654,228	7,773	662,000	1,259,560
Uganda	357,246	1,992	359,238	318,097	4,669	322,766	379,879	2,034	381,914	1,063,918
Ghana	143,610	1,262	144,872	232,591	38,795	271,386	242,311	12,424	254,735	670,993
Senegal	121,121	3,984	125,105	161,188	0	161,188	139,605	4,715	144,319	430,613
Mali	116,539	0	116,539	118,323	5,056	123,379	124,721	1,496	126,217	366,134

Notes: Official Development Assistance (ODA) and Private Foundation are analyzed in US 2005/06/07 dollars from aid committed in 2005/06/07. ODA data were obtained from the Creditor Reporting System (2008) through Source OECD for the years 2005/06/07 at a country level ($n = 27$). Total Donor Aid is the sum of ODA and Private Foundation Giving for the designated categories. Disability-adjusted life-years (DALYs) were obtained from the WHO Global Burden of Disease Estimates (2002). Percent Disease Burden was calculated as a percentage of total DALYs; percentage totals will not add to 100% due to the exclusion of DALYs due to injuries. Perceived Priorities represent the perceived priority of people surveyed within each country, are ranked (1–9, 1 the highest priority), and were obtained from the Kaiser/Pew Global Health Survey (2007). Attributable DALYs were not assigned to Access to Care or Build/Improve Facilities. Countries in Eastern Europe, although included in the Kaiser/Pew Global Health Survey, did not have sufficient ODA to include in the analysis.

Table 3. Comparing the correlation of official development assistance and private foundation giving to disease burden and perceived priorities for 2005/06/07 aid

Donor aid	DALYs		Perceived priorities	
	Pearson's coefficient	Spearman's ρ (\$/rank)	Spearman's ρ (categories/rank)	Pearson's coefficient
<i>Official development assistance (commitments)</i>				
2005	0.015	-0.194**	-0.198**	-0.14*
2006	0.126	-0.202**	-0.195**	-0.114
2007	0.088	-0.21**	-0.213**	-0.189**
<i>Private foundation grants</i>				
2005	0.059	-0.144*	-0.146*	-0.063
2006	0.067	-0.12	-0.122	-0.026
2007	0.02	-0.063	-0.059	-0.073

Notes: The correlation technique for disability-adjusted life years was standard Pearson's correlation; technique for perceived priorities (an ordinal rank) was Spearman's ρ . Since the application of Spearman's ρ to denote correlation between one ordinal and one interval-ratio set of data may seem problematic, we also converted aid figures into ordinal variables by forming nine categories for ODA amounts and five for private grants. In addition, we report Pearson's r for completeness. Each observation for disability-adjusted life-years represents the attributable disease burden to Clean Water, Chronic Disease, Immunizations, HIV/AIDS and STIs, Malnutrition, Reproductive Health, and TB/Malaria/Other Infectious Disease and the committed ODA and US private giving in 2005–07. Each observation for perceived priorities represents the rank in perceived priority (1–9, 1 the highest) for Access to Care, Build/Improve Facilities, Clean Water, Chronic Disease, Immunizations, HIV/AIDS and STIs, Malnutrition, Reproductive Health, and TB/Malaria/Other Infectious Disease and the committed ODA and US private giving in 2006 at country level ($n = 27$). Official Development Assistance (ODA) and Private Foundation are analyzed in US 2005–07 dollars from aid committed in 2005–07. ODA data were obtained from the Creditor Reporting System (2008) through Source OECD for the years 2005–07 at a country level ($n = 27$). Disability-adjusted life-years were obtained from the WHO Global Burden of Disease Estimates (2002). Perceived Priorities were obtained from the Kaiser/Pew Global Health Survey (2007).

* Significance at the 5% level (2-tailed).

** Significance at the 1% level (2-tailed).

priorities, and only one of the coefficients—that is, private grants awarded in 2005—was estimated to be significant at the .95 confidence level (see Table 3).

The absence of strong correlations between funding streams and disease burden also hints at a similarly weak correlation between priority ranks and disease burden. This was indeed the case. For instance, despite contributing 24% and 12%, respectively, to disease burdens in sub-Saharan Africa and Asia, tuberculosis, malaria, and other infectious disease were ranked among the lowest priorities by respondents in the 15 countries included from these two regions. At the other end of extremes, HIV/AIDS was ranked the most important health priority in Asia even though this category contributed to only 3% of the total disease burden. Still, following Clean Water, HIV/AIDS was the next most highly funded health category in Asia overall and the most highly funded one by the five private foundations included in the study (see Table 4).

In order to examine to what extent funding by both types of sources was aligned with disease burden at the country-level, we also created an index of *per capita* disease burden for each country by dividing the total disease burden for each country by the national population as specified in the Global Burden of Disease Estimates. The total amount of aid given to that country was then divided by this index. We did not find strong evidence of responsiveness at this level either. Among the sub-Saharan countries included in the study, Mali had the highest DALYs-per-capita index (0.68) but received the lowest relative amounts of aid within the sub-Saharan sample from each type of source. Only Venezuela—whose DALYs-per-capita index score was less than 25% of Mali's—received less funding *per capita* and disease burden. The highest private flows, relative to disease burden, went to Kenya, which ranks seventh out of nine countries in terms of *per capita* disease burden. Kenya also came out second in the ODA ranking, topped only by Ethiopia, which in terms of *per capita* disease burden ranks fifth within the sub-Saharan sample. The situation was similar for the six Asian and five Middle Eastern countries sampled. China, with a DALYs-per-capita index score of 0.15, received eleven times the amount of grant and loan commitments com-

pared to Pakistan, which bears twice the *per capita* disease burden. Egypt and Lebanon ranked at the top of their region's *per capita* disease burden index but together received less funding than Turkey, ranked fourth out of five. Cross-regional comparisons complement this picture further; although Bolivia had a slightly higher *per capita* burden than Bangladesh, the latter country received more than five times the financial aid on a *per capita* basis than the Andean state (see Table 5).

4. DISCUSSION

The results described in the previous section allow us to revisit the alternative drivers of health aid allocation already discussed above, with a view to assessing their relative explanatory power. To begin with, Ravishankar's *et al.* (2009, p. 2113) hypothesis “that country allocation of DAH is driven by many considerations, including income, burden of disease, political stability, and historical and political relations between specific donors and recipient countries” finds some support. While our study does not test the relevance of donor incomes to this context, we do observe that private foundations seem to prefer politically stable recipient countries (see Table 2). At the same time, countries that have been relatively stable in the recent past—at least when compared to some countries included in the sub-Saharan sample—but during the period of 2005–07 were led by interventionist and redistributive governments were either shunned completely, as in the case of private foundations, or received markedly less ODA (both in absolute terms and when compared on the basis of *per capita* disease burden). This supports arguments about the highly politicized nature of health aid allocation as fielded by both Périn and Attaran (2003) and Pearlman and Roy (2009). The finding also resonates with the literature on aid distribution more generally (Barnebeck Anderson, Hansen, & Markussen, 2006).

Conversely, we find very little evidence for disease burdens as allocative drivers. Rather, the focus in 2005–07 seems to indeed have “been on [...] high-visibility health problems” (Eichler *et al.*, 2009, p. 4). Despite being more of a logical

Table 4. Regional view of official development assistance, US private foundation giving, disability-adjusted life-years, percent disease burden, and perceived priority, 2005–07

Region/country/ disease-specific category	Official development assistance, 2005 USD (‘000)	US private foundation aid, 2005 USD (‘000)	Total donor aid, 2005 USD (‘000)	Official development assistance, 2006 USD (‘000)	US private foundation aid, 2006 USD (‘000)	Total donor aid, 2006 USD (‘000)	Official development assistance, 2007 USD (‘000)	US private foundation aid, 2007 USD (‘000)	Total donor aid, 2007 USD (‘000)	Total donor aid, cumulative USD (‘000)	Disability- adjusted life- years	Percent disease burden	Perceived priority
<i>Asia</i>													
Clean Water	2,760,521	0	2,760,521	2,266,470	0	2,266,470	2,227,549	0	2,227,549	7,254,539	27,803	4%	4
Prenatal Care	145,321	11,702	157,023	955,128	35,880	991,007	612,408	11,873	624,281	1,772,311	65,887	10%	3
HIV/AIDS	379,548	16,191	395,740	222,462	8,106	230,568	1,018,270	29,746	1,048,016	1,674,324	16,574	3%	1
Access to Care	309,758	24,996	334,754	466,560	16,016	482,576	328,721	3,133	331,853	1,149,184	–	–	8
Hunger and Malnutrition	464,486	300	464,786	173,721	14,967	188,688	239,431	9,701	249,132	902,606	14,865	2%	5
TB/Malaria/OID	256,502	120	256,622	297,381	0	297,381	193,903	14,406	208,308	762,312	73,651	12%	9
Build/Improve Facilities	98,854	145	98,999	240,316	0	240,316	48,457	0	48,457	387,772	–	–	2
Immunizations	46,975	0	46,975	73,178	0	73,178	187,705	0	187,705	307,858	17,178	3%	7
Chronic Disease	0	0	0	0	535	535	0	120	120	655	315,922	50%	6
<i>Latin America</i>													
Clean Water	379,238	0	379,238	389,885	0	389,885	811,026	0	811,026	1,580,149	1,442	2%	4
Access to Care	71,892	441	72,333	364,781	1,206	365,987	20,925	200	21,125	459,445	–	–	3
Hunger and Malnutrition	27,830	0	27,830	76,165	5,800	81,965	35,801	150	35,951	145,746	981	1%	1
HIV/AIDS	50,082	550	50,632	29,596	335	29,931	46,063	2,740	48,804	129,366	1,339	2%	7
Build/Improve Facilities	21,091	25	21,116	10,334	0	10,334	54,661	25	54,686	86,136	–	–	2
TB/Malaria/OID	4,356	0	4,356	39,910	599	40,509	12,781	1,695	14,476	59,342	3,783	5%	9
Prenatal Care	6,412	1,916	8,328	4,538	18,140	22,678	16,417	2,949	19,366	50,372	6,269	9%	5
Immunizations	2,430	0	2,430	0	156	156	14	0	14	2,600	172	0%	6
Chronic Disease	0	0	0	0	0	0	0	0	0	0	46,326	64%	8
<i>Middle East</i>													
Clean Water	870,600	0	870,600	509,932	168	510,100	587,895	0	587,895	1,968,595	970	3%	5
Access to Care	16,133	150	16,283	22,456	0	22,456	52,313	0	52,313	91,052	–	–	3
TB/Malaria/OID	10,174	0	10,174	48,381	0	48,381	22,428	0	22,428	80,983	2,559	8%	9
Prenatal Care	5,988	605	6,593	6,283	1,625	7,908	28,482	626	29,108	43,609	2,811	9%	6
Build/Improve Facilities	7,211	0	7,211	14,850	0	14,850	11,095	0	11,095	33,156	–	–	2
HIV/AIDS	10,859	332	11,191	1,355	300	1,655	19,247	490	19,737	32,583	212	1%	7
Hunger and Malnutrition	2,929	0	2,929	14,604	0	14,604	1,711	0	1,711	19,244	804	3%	1
Immunizations	588	0	588	1,577	0	1,577	2,002	0	2,002	4,167	383	1%	8
Chronic Disease	0	0	0	0	0	0	0	0	0	0	20,511	64%	4
<i>Sub-Saharan Africa</i>													
Immunizations	2,878,989	0	2,878,989	2,318,706	0	2,318,706	2,331,423	0	2,331,423	7,529,117	37,998	5%	9
HIV/AIDS	952,388	11,237	963,625	1,302,363	45,306	1,347,669	2,426,739	43,954	2,470,693	4,781,988	38,849	20%	1
Clean Water	555,623	0	555,623	839,157	9,502	848,659	1,250,045	0	1,250,045	2,654,327	11,153	6%	5
TB/Malaria/OID	410,124	4,075	414,199	354,583	59,362	413,945	400,554	9,499	410,052	1,238,197	46,146	24%	7
Hunger and Malnutrition	315,283	19,815	335,098	239,340	607	239,947	262,951	20,735	283,686	858,731	5,136	3%	2
Access to Care	188,069	3,593	191,662	343,854	22,773	366,627	141,584	36,126	177,710	735,999	–	–	6
Prenatal Care	32,772	11,596	44,368	129,770	16,452	146,221	52,421	13,330	65,751	256,340	16,674	9%	3
Build/Improve Facilities	63,525	0	63,525	49,768	0	49,768	40,393	0	40,393	153,686	–	–	4
Chronic Disease	0	214	214	0	0	0	0	60	60	274	36,909	19%	8

Notes: Official Development Assistance (ODA) and Private Foundation are analyzed in US 2006 dollars from aid committed in 2006. ODA data were obtained from the Creditor Reporting System (2008) through Source OECD for the year 2006 at a regional level. Total Donor Aid is the sum of ODA and Private Foundation Giving for the designated categories. Disability-adjusted life-years (DALYs) were obtained from the WHO Global Burden of Disease Estimates (2002). Percent Disease Burden was calculated as a percentage of total DALYs; percentage totals will not add to 100% due to the exclusion of DALYs due to injuries. Perceived Priorities represent the perceived priority of people surveyed within each country, are ranked (1–9, 1 the highest priority), and were obtained from the Kaiser/Pew Global Health Survey (2007). Attributable DALYs were not assigned to Access to Care or Build/Improve Facilities. Eastern Europe, although included in the Kaiser/Pew Global Health Survey, did not have sufficient ODA to include in the analysis.

Table 5. *Index comparing aid allocations per capita disease burden*

Region/country	<i>Per capita</i> disease burden index (DALYs/population)	Private foundation giving <i>per capita</i> disease burden	Official development assistance <i>per capita</i> disease burden	Total aid <i>per capita</i> disease burden
<i>Asia</i>				
Pakistan	0.30	80,214	2,399,941	2,480,155
India	0.29	312,697	21,072,588	21,385,285
Bangladesh	0.26	180,153	7,005,819	7,185,972
Indonesia	0.21	33,295	5,550,546	5,583,842
China	0.15	194,365	23,224,577	23,418,942
Malaysia	0.15	15,945	5,116,888	5,132,834
<i>Latin America</i>				
Bolivia	0.27	0	1,316,327	1,316,327
Brazil	0.21	45,630	1,831,690	1,877,320
Peru	0.19	13,527	2,206,758	2,220,285
Argentina	0.17	2,147	4,711,418	4,713,565
Venezuela	0.16	0	124,328	124,328
Mexico	0.15	63,427	2,290,278	2,353,705
Chile	0.14	106,626	1,208,473	1,315,099
<i>Middle East</i>				
Egypt	0.19	15,197	2,075,615	2,090,812
Lebanon	0.18	0	978,437	978,437
Morocco	0.17	983	4,888,448	4,889,431
Turkey	0.16	7,216	3,220,820	3,228,036
Jordan	0.16	0	2,079,964	2,079,964
<i>Sub-Saharan Africa</i>				
Mali	0.68	9,571	525,268	534,839
Nigeria	0.56	174,888	2,675,215	2,850,103
South Africa	0.56	30,327	2,227,754	2,258,081
Uganda	0.53	16,275	1,974,970	1,991,245
Ethiopia	0.53	85,551	4,062,437	4,147,988
Tanzania	0.46	28,183	3,427,179	3,455,363
Kenya	0.42	185,926	4,052,694	4,238,620
Senegal	0.39	22,505	1,091,611	1,114,116
Ghana	0.35	151,466	1,785,105	1,936,571

extension than an actual finding from our analysis, it also seems that measurability of outputs (Esser, 2009)—a necessary yet insufficient condition for the subsequent attribution of successful intervention to specific agencies or foundations—may well constitute another important component of the equation to explain prioritization among public and private donors.

The above pattern is substantiated further by the dearth of funding for the prevention and treatment of chronic diseases (see Table 4) even though these diseases comprised the highest contributor to overall disease burden in all regions except sub-Saharan Africa, where chronic disease was a close second at 19% to HIV/AIDS (which accounted for 20%). This finding confirms the concern that “[a]bout half of the global burden of disease is attributable to chronic conditions and exceeds the burden of communicable diseases in all countries except the poorest” (Eichler *et al.*, 2009, p. 32). However, whereas the OECD dataset does not even include codes applicable to this category (explaining the absence of ODA commitments to this group of diseases), it should be noted that private foundations did in fact make small investments in this area. For 2005, the Foundation Center database recorded a total of \$214,000 spent on such diseases in Kenya and South Africa. In 2006, private donors allocated \$465,000 in this category to a Chinese project and \$70,000 to a Pakistani scheme. An additional \$120,000 was granted to China during the following year, together with \$50,000 for a project in Nigeria and \$10,000 in support of a Kenyan program. While far from sufficient, these figures may nonetheless be a reason for hope.

5. CONCLUDING REMARKS

We would like to see this study being used as a starting point for follow-up investigations of two types of agencies, namely donors and ministries in recipient countries, in order to contribute to a better understanding of decision making dynamics within organizations pivotal for the improvement of health systems and outcomes in developing countries. For instance, while our study considers official aid commitments as well as private funding from the top five US-based private foundations, we do not account for in-country funding sources. Inclusion of such data strikes us as a promising extension of this research in that it would add to the existing literature assessing the degree of “crowding out” of national funding by international aid (Lu *et al.*, 2010; Sridhar, 2009; Waddington, 2004; cf. Michaud & Murray, 1994). To illustrate, large amounts of international aid targeted at a specific disease may drive up public prioritization as people become more aware of the issue. This argument has been particularly salient in the context of funding for HIV/AIDS and its critique (Shiffman, 2008). At the same time, the only way to test Sridhar and Rajaie’s (2008) hypothesis that either the governance structures of donor agencies or their internal perception of comparative advantages might explain differences in priority-setting would be to actually engage with these organizations in depth and for a substantial amount of time. Moving beyond generalized statements or even conspiracy theories, this approach would focus on uncovering the actual political economies at

different levels of policy making through embedded observation (cf. Esser, 2009; Sridhar & Rajaie, 2008). It then seems to us that such inquiries into formal as well as informal processes of prioritization require a research design which is quite

different from the currently dominant macro-level large-*n* studies of development assistance for health, and that the emerging literature on political ethnographies (cf. Schatz, 2009) is likely to lead the way.

NOTES

1. Donor partnerships such as the GFATM as well as World Bank-led investment alliances command considerable amounts of money and can provide an important opportunity for donor coordination. At the same time, such alliances have raised concerns over “revertalizing” health systems and further complicating the administrative requirements of international health assistance (Buse & Harmer, 2007, p. 263). Investment alliances in particular are monitored with skepticism regarding their ownership structures and the role of private companies with little healthcare knowledge beyond their domestic markets (Attaran et al., 2006; Lethbridge, 2005).

2. Although Eastern and Central European countries were included in the Kaiser/Pew Survey, no official development assistance for health was reported for this region and it was therefore omitted from the analysis.

3. One might argue that international aid in absolute terms is a limited variable since some interventions may cost more than others but also lead to greater gains in DALYs. To this effect, a comparison of the cost-effectiveness of interventions would be necessary as this would enable comparisons based on the cost per DALY averted.

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APPENDIX A. SUPPLEMENTARY DATA

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.worlddev.2010.12.005](https://doi.org/10.1016/j.worlddev.2010.12.005).

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