

Research Article

Donor and Domestic Financing of Primary Health Care in Low Income Countries

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Keywords: allocative efficiency, donor financing, Ethiopia, health care financing, health system strengthening, national health accounts, Nigeria, primary health care

Abbreviations: CMA, Commission on Macroeconomics and Health; CRS, creditor reporting system; DALY, disability adjusted life year; GAVI, The Global Alliance for Vaccines and Immunizations; Global Fund, Global Fund for AIDS, TB and Malaria; HEP, health extension program; HLTF, High Level Task Force on International Financing for Health Systems; HSS, health system strengthening; IHME, Institute for Health Metrics and Evaluation; LG, local government; LIC, low income country; MDG, millennium development goal; MDG-DRG, millennium development goal - debt relief gains; NGO, non-governmental organization; NHA, national health accounts; NSHDP, National Strategic Health Development Plan; OECD, Organization for Economic Cooperation and Development; PEPFAR, President's Emergency Plan for AIDS Relief; PHC, primary health care; SWAp, sector wide approach; STI, sexually transmitted infection; WHR:2008, World Health Report, 2008

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Abstract—This paper evaluates resource commitments to primary health care (PHC) by donors and selected governments between 1990–2011. Donor commitments to financing PHC are assessed by reclassifying OECD/CRS data on health assistance into spending on ‘PHC Service Delivery’ versus spending on ‘Health System Strengthening’. Domestic spending on PHC is assessed using a case study approach and National Health Accounts for two major recipients of donor assistance, Ethiopia and Nigeria. Results are generally consistent with three simple hypotheses that guide the inquiry. *First*, though donor funding for health among LICs has mushroomed over the last decade, it remains a miniscule share of per capita spending targets prescribed by international forums to attain universal access to basic/essential PHC services. Relative to levels of domestic *public* spending in LICs, however, donor funding has considerably more significance as a potential lever to improve PHC efficiency. *Second*, as reflected in on-going debate in the literature, donor spending on broader ‘health system strengthening’ has not kept up with mushrooming financing of disease control programs. *Third*, at country level, where the ‘rubber meets the road’, allocative efficiency of donor and domestic spending on health is highly conditional on contextual factors, especially political will to improve financing and delivery of PHC services, and the process of managing and implementing public spending on PHC.

INTRODUCTION

When the *World Health Report 2008* (WHR2008) advocated a “renewal” of political commitment to primary health care (PHC), consistent with the principles of the Declaration of Alma-Ata, it acknowledged that health financing requirements would be daunting in low income countries (LICs).¹ Benchmark costs to assure equity of access to an internationally recommended preventive and PHC services—according to the ‘High Level Task Force on Innovative International Financing for Health Systems’ (HLTF)—were estimated to be \$56 per capita (in 2005 US\$ terms), or \$84 when adjusted

for inflation and converted to 2012 US\$ terms.² Since total health expenditures (THE) in LICs amounted to \$31 per capita in 2012, this implies a gap of \$53 per capita, or 63% of the HLTF benchmark (more on this later).³

According to the World Health Report 2008 (WHR2008), almost 60% of projected increases in health spending in LICs by 2015 will derive from out-of-pocket payments, much of it for episodic, unregulated care from private providers, with another 8–10% mobilized by private pre-paid insurance. This reality is behind public efforts to incrementally expand and consolidate prepayment and risk pooling schemes such that more effective, strategic purchasing can engage both public and private providers to supply quality PHC services.⁴ In the near term, the onus to mobilize resources to improve financing and delivery of PHC should fall largely on public finance. Yet, the public sector in LICs represented only about one-third of THE in 2012, or about \$12 per capita, on average.³

The long term sustainable solution is to increase domestic financing for health, leveraging increases in fiscal space associated with improved levels of economic growth by many LICs over the past ten years.⁵ For these countries, donors can and should do more to help put health financing on a more sustainable basis by leveraging the increases in fiscal space that are possible through growth and to increase the overall efficiency of spending on health.

A fundamental problem, however, is we don't know much about levels, trends and allocation of donor and government financing of PHC. Thousands of articles have pondered the virtues of PHC and many have substantiated its positive impacts on health outcomes. Yet, even WHR2008, representing the latest effort to call attention to the global cause of PHC, made no attempt to quantify resources going to PHC at the global, regional or national levels. Nor did it cite studies or evidence to this effect.

The reasons why analysis of donor and government spending on PHC is so limited in LICs are not hard to discern. Most important, data sources required to shed light on basic financing of health care, much less PHC, are limited at global and country levels. Attempts to systematically compare domestic spending on PHC across countries are therefore rare. Nor have standardized, generally accepted definitions of PHC been agreed upon for resource tracking. Meaning of the term can also vary widely from a narrow focus on health services provided by frontline workers to expansive definitions embodying broad health entitlements, community mobilization and intersectoral interventions.⁶ To complicate matters, political will to measure and disseminate data on PHC spending tends to be weak in LICs, perhaps because governments

risk exposure to criticism when public expenditures on PHC are poorly targeted to those most in need—as is often the case.⁷

Despite such obstacles, this paper seeks to advance our understanding of donor and domestic spending on PHC by undertaking a three-part analysis. Part 1 of the paper assesses global trends in donor spending based on a working definition of PHC. Given recent discussion on the role of funding for health system support versus health system strengthening, we also analyze the data on donor spending to see if we can discern trends in favor of health systems support versus health system strengthening.⁸ *Our aim is to shed light on the composition, adequacy, and allocation of donor funding for PHC over the last two decades.* Part 2 examines donor funding for PHC in the context of two important LICs, each with a very different development finance profile and different approaches to strengthening PHC: Ethiopia and Nigeria. To this end, for both Part 1 and Part 2 we make use of OECD's 'Creditor Reporting System' (CRS), to track 'donor commitments' to health in the form of official and private flows of funds, including loans and grants from donor governments, multilaterals and non-governmental charitable organizations, to developing countries.

Part 3 then turns to the issue of what is happening to overall sources of financing for PHC, including not only donor but domestic sources of financing. The data for this section come from National Health Accounts (NHA) from Ethiopia and Nigeria. The central issue we want to examine is what patterns can we detect in the spending data from these two countries that suggests certain factors are more favorable to effective PHC delivery. We elect to use a simple two country case study approach for this section as systematic analysis of domestic spending on PHC across several countries is virtually impossible in view of piecemeal, irregular and inconsistent NHA data for LICs.

By triangulating information presented in Parts 1, 2, and 3 of this paper, we aim to answer three simple questions: *First*, though donor assistance for health among LICs has greatly increased over the last decade, has the level of spending on PHC increased and if so, at the same pace?⁹ *Second*, can we discern any evidence of changes in the level of donor financing for health system support (i.e., providing inputs to help the health system function) versus health system strengthening (i.e., helping to improve the effectiveness of the system)? *Third*, through the lens of our two focus countries, what can we learn about the trends in both domestic and donor financing for PHC?^{10,11}

PART 1: DEFINITIONS, DATA AND METHODOLOGY

A broad literature suggests that a well-functioning PHC system emphasizes provision of preventive and curative ambulatory services by frontline health workers in close proximity to where the poor live; disease-oriented interventions in the service of local (and national) public health goals; community-oriented interventions to tap intersectoral inputs that impact health (improved sanitation, safe drinking water); and health promotion. For a review see Reference 8. In the spirit of Alma Ata, a well-functioning PHC system is regarded as the foundation for countries that successfully finance and provide quality health services for their entire population.¹²

Our *working definition* of PHC focuses solely on inputs that are under the control of health systems per se, while acknowledging that intersectoral interventions, such as safe drinking water, sanitation, and adequate nutrition are crucial as well. In LICs where the contribution of communicable diseases to mortality and morbidity is relatively high and health expenditures are relatively low, our definition of PHC therefore includes:

- Appropriate treatment of common diseases and injuries, including provision of essential drugs,
- Basic and essential services and commodities for women, mothers and children,
- Prevention, detection and treatment of HIV/AIDs, TB and Malaria,
- Basic and essential surgical care, especially 'first-line' surgical care pertaining to burns, wounds, and fracture management, as well as to deal with complications during birth;
- Public health measures, preventive health care, promotion and education about healthy behaviors, warning signs of illness, good nutrition, and the importance of immunization.

To achieve the above, health expenditures are required for basic infrastructure, personnel, basic commodities and basic PHC services, in other words the 'nuts and bolts' of health system operation. In a district-based health system, such expenditures tend to be centered on health posts, health centers, and district hospitals, the latter serving as first referral hospitals, especially for complications related to deliveries. *We refer to such expenditures as being most relevant to 'PHC delivery.'*

Well-functioning PHC systems also require 'system-wide' investments to assure effective priority setting; sound management, administrative and financial planning; up-to-date 'health management information systems' for resource

tracking; and appropriate regulatory and accountability mechanisms. *For our purposes, we refer to such expenditures as being most relevant to 'Health System Strengthening' (HSS) in support of 'PHC Delivery.'*

Our *working definition* of HSS is considerably narrower than broad discussions of HSS often found in the literature, where just about any public expenditure aiming to improve health care in LICs could be interpreted as strengthening health systems. This prompts the question: what constitutes a reasonable share of expenditures on '*HSS in support of PHC Delivery*' relative to '*PHC Delivery*'—as defined above. Since no norm or benchmark has been established to address this question, we revisited a major study by the World Bank that estimated input costs of well-functioning, district-based PHC systems in sub-Saharan Africa.¹³ Published in 1994, the Bank study estimated that about 23% of the total spending envelope to provide a basic package of PHC services through district-based health centers and first-referral hospitals was needed for HSS expenditures (as defined above).¹⁴ Similarly, cost estimates from the 'High Level Task Force on Innovative International Financing for Health Systems' (HLTF) suggest that between 18–28% of additional resources should be devoted to shoring up HSS—corresponding roughly to the definition above—to achieve the MDGs in LICs by 2015.^{15,b} *Accordingly, for purposes of this paper, we assume that about 20% of total donor spending on PHC is a reasonable benchmark for HSS in support of 'PHC Delivery.'*

To assess donor financing of PHC, we rely on OECD's 'Creditor Reporting System' (CRS), which has tracked donor commitments to health since 1990.¹⁶ Commitments examined in this paper have been grouped according to 15 'health functions,' most of which are reasonably aligned with our working definition of PHC Delivery and HSS. Advantages of using CRS data are that 'health functions' can be clustered to quantify spending on different definitions of PHC; commitments by individual donors can be identified by 'health function'; and funds committed to individual recipient countries can be identified by 'health function.'¹⁷ While OECD's CRS system is well-known, many complexities are involved in its use, as noted in Appendix 1 and the literature.¹⁸

To quantify levels and trends in donor commitments to PHC, we began by grouping the 15 CRS "health functions," as defined in Appendix 2, into two broad clusters. As reported in Table 1, the first cluster, labeled "Donor Commitments for PHC Service Delivery," is then disaggregated into four definitions of PHC, ranging from a relatively narrow definition of PHC to increasingly broader, more inclusive definitions. They are:

Donor Commitment Definitions and Classifications		% Share of Total Donor Commitments for Health			Average Annual per Capita \$ Donor Commitments for LICs excl. China & India (2004 Constant Dollars)		
		1990-1998	1999-2004	2005-2011	1990-1998	1999-2004	2005-2011
Total Donor Commitments		100	100	100	1.21	1.92	3.70
• Donor Commitments for PHC Service Delivery		60	70	80	.73	1.35	2.96
• Donor Commitments for Health System Strengthening		40	30	20	.48	.57	.74
Breakdown of Donor Commitments for PHC Service Delivery							
PHC Definition #1 ^a	<i>Basic health care & infrastructure</i>	22	21	19	.27	.40	.63
PHC Definition #2 ^b	<i>Definition #1 + reproductive health care & family planning</i>	40	33	28	.48	.64	.93
PHC Definition #3 ^c	<i>Definition #1 + #2 + control of infectious diseases, malaria & TB</i>	48	45	45	.58	.87	1.49
PHC Definition #4 ^d	<i>Definition #1 + #2 + #3 + STI control & HIV/AIDS</i>	60	70	80	.73	1.35	2.96
Breakdown of Donor Commitments for Broader Health System Strengthening (HSS)							
Health Policy, Administration & Management ^e	<i>Health sector policy & planning; aid to health ministries; institution capacity building and advice,</i>	29	18	12	.35	.34	.42
Medical Services, Training & Research ^f	<i>Laboratories, specialized clinics and hospitals (incl. equipment & supplies); ambulances; control of non-infectious diseases; drug and substance abuse control; general medical research (excl. basic health research), education & training for tertiary services</i>	7	6	5	.08	.12	.20
Population Policy & Administration ^g	<i>Census, vital registration, demographic R&A; reproductive health R&A, Education and training of HR for Pop & RH services</i>	4	6	3	.05	.11	.12

TABLE 1. Donor Commitments to PHC for All Recipient Countries, Global Trends from 1990–2011. *Note.* LICs, low-income countries; PHC, primary health care. ^aIncludes CRS codes: 12220, 12230, 12240, 12261, 12281. ^bAdds CRS codes: 13020, 13030. ^cAdds CRS code: 12250. ^dAdds CRS code: 13040. ^eCRS code: 12110. ^fCRS codes: 12181, 12182, 12191. ^gCRS code: 13010, 13081

- *PHC Definition # 1:* makes use of ‘health function’ codes that pertain to basic, district level delivery of PHC health services and public health programs targeting prevention.
- *PHC Definition # 2:* adds to definition #1 donor commitments to reproductive health and family planning, vitally important to reducing ‘Disability Adjusted Life Year’s’ (DALYs) associated with neonatal and maternal mortality.
- *PHC Definition # 3:* adds to definition #2 donor commitments to control infectious diseases within

communities (excluding STI control & HIV/AIDS) through integrated public health programs as well as related vertical programs.

- *PHC Definition # 4:* adds to definition #3 donor commitments to ‘STI control & HIV/AIDS,’ largely through vertical programs.

An advantage of using increasingly ‘inclusive’ definitions of PHC is they permit comparisons of funding across definitions and allow choice should a particular PHC definition be preferred. PHC Definition #4 is our most inclusive definition

of PHC and, in its totality, is equivalent to ‘Donor Commitments for PHC Service Delivery.’

The second broad cluster in Table 1, “Donor Commitments for Broader Health System Strengthening” (HSS) is also disaggregated into sub-categories based on CRS codes. Two of these categories, ‘Health Population & Administrative Management’ (CRS code: 12110) and ‘Population Policy & Administration’ (CRS code: 13010, 13081) are likely to have an impact on PHC by supporting broader, cross-cutting functions that bear on the management, administration and implementation of national health systems. In contrast, the category ‘Medical Services, Training and Research’ (CRS codes: 12181, 12182, 12191) pertains more to secondary and tertiary level services likely to have less direct impact on PHC outcomes.

While there is no pretense that the functional categories used by CRS to classify donor expenditures on PHC map directly onto our working definitions of PHC or HSS, they are at least broadly consistent with our definitions and, in our judgment, sufficient to shed light on spending patterns.

PATTERNS OF DONOR SPENDING ON PHC, 1990–2011

Table 1 shows that roughly 60% of total donor commitments for health went to ‘PHC Service Delivery’ between 1990–98 (PHC Definition #4), rising to 70% between 1999–2004, and 80% between 2005–11. This could be interpreted as a positive trend, assuming such spending was effectively targeted to improve access to services that benefit PHC. Over the same period, there was a corresponding drop in donor commitments for HSS from 40% of total donor commitments between 1990–98 to 30% between 1999–2004, and 20% between 2005–11. The latter figure of 20% for 2005–11 slips further to 15% if we remove spending on ‘Medical Services, Training and Research’ from our HSS estimate. This suggests that donor spending on HSS, in support of PHC Delivery, has not only declined rather dramatically over time but, more recently, is below the 20% benchmark proposed in this paper. It is possible that some funding for HSS has piggy-backed on the increased share of donor funding going to ‘PHC Service Delivery,’ but the sliding, downhill trend of financing for HSS in Table 1 raises questions about the overall adequacy of donor commitments to strengthen HSS (more on this later).

According to PHC Definition #1, donor commitments to ‘basic health care and infrastructure’ have remained at about one-fifth of total donor commitments (TDC), falling slightly between 1990–98 to 2005–2011. Commitments according to PHC Definition #2—which add funding for reproductive

health and family planning—show a sharper decline as a share of TDC, falling from 40% of TDC between 1990–98 to 28% between 2005–11. Commitments according to Definition #3 are restored to about 45% of total donor commitments for each time period between 1990–2011, attributable largely to spending on ‘selective PHC’ by various bilaterals and multilaterals such as the Global Fund.

It could be argued that PHC Definitions #2 or #3 are best aligned with Alma Ata’s vision of PHC (which highlighted limitations of top-down, single cause programs), especially when compared to PHC Definition #4 which includes spending on ‘STI Control and HIV/AIDs.’ The latter incorporates spending on a major vertical component that is more relevant to some LICs than others, relies on expensive screening and drug treatments, and has yet to be meaningfully integrated in basic PHC approaches. Yet, the scourge of STDs and HIV/AIDS is a communicable disease, requires prevention to curtail its spread, wreaks havoc at community level, and requires ‘selective’ PHC services in response. For definitional reasons, therefore, we are inclined to employ PHC Definition #4 when quantifying total donor commitments to ‘PHC Service Delivery.’

Closer inspection of spending according to PHC Definition #4, however, reveals an upward trend in donor commitments to PHC that is known to be largely attributable to spending by PEPFAR, the Global Fund, and selected bilateral donors to combat STDs and HIV/AIDS. As a share of total donor spending on PHC Delivery plus HSS, spending on ‘STI control and HIV/AIDS’ grew from 12% of total donor spending between 1990–98, to 25% between 1999–2004, and 35% between 2005–11 (derived by subtracting shares for PHC Definition #4 from #3). And yet, at mid-point in the last decade, HIV/AIDS/TB accounted for 7.9% of the burden of disease in LICs compared with 33% attributable to lower respiratory infections, diarrheal diseases, malaria, neonatal infections, birth asphyxia and birth trauma, and premature or low birth weight.¹⁹ The imbalance between the share of donor spending to combat ‘STI Control and HIV/AIDs’ and the share of HIV/AIDS/TB in the disease burden in LICs suggests allocative inefficiencies in donor spending on PHC may be present. The force of this conclusion is somewhat attenuated, however, by the prospect that countries benefiting from large infusions of financing for specific diseases like HIV/AIDS have been able to leverage these monies for some general health system strengthening and meeting broader healthcare needs. And increasingly, the Global Fund and GAVI recognize that the funding they provide can and should be used to strengthen the entire health system (more on this later).

To better assess the significance of growing health aid over time, we first ‘normalize’ donor commitments by

population growth, as reported in Table 1. The resulting per capita donor commitments pertain to the combined population of low and lower-middle income countries, with China and India excluded, resulting in a population base of about 1 billion. China and India have been excluded to avoid diluting the per capita aid allocations by countries with huge populations that receive a relatively small share of global health aid. Focusing on the period 2005–11, and according to our most inclusive PHC Definition # 4, *average* annual donor commitments to health amounted to \$3.70 per capita between 2005–11, with \$2.96 going to ‘PHC Service Delivery’ and \$.74 to ‘HSS.’

DONOR SPENDING RELATIVE TO INTERNATIONAL BENCHMARKS

We further ‘normalize’ the per capita donor commitments reported in Table 1 by expressing them as a percentage of (i) benchmark costs to finance universal coverage of PHC services in LICs by the ‘High Level Task Force on Innovative International Financing for Health Systems’ (HLTF), (ii) benchmark costs to finance a more basic, reduced package of PHC services in LICs by the ‘Commission on Macroeconomics and Health’ (CMH), (iii) total health expenditures per capita in LICs, and (iv) public health expenditures per capita in LICs. Results are presented in Table 2.

The HLTF benchmark of \$84 for 2012, has been revised upwards from the original benchmark of \$54 (2005 dollars) to adjust for inflation, whereas the CMH benchmark of \$71 for 2012 has been revised upward from the original benchmark of \$38 (2002 dollars).² HLTF serves as our preferred benchmark because it includes a wider range of services more in keeping with WHR2008, including the cost of health promotion for MDGs 4,5 and 6, two interventions that address chronic diseases (tobacco control and salt reduction in processed food), and essential drugs for chronic diseases, like some cancers, neglected tropical diseases, mental health and general care. In contrast, the CMH benchmark applies to a narrower set of services with assumed coverage levels of only 70–80% for most services and 90% coverage for immunizations, antenatal care and skilled birth attendance by 2015.

As reported in Table 2, the magnitude of donor commitments to health and PHC (2005–11 average) is small relative to the 2012 HLTF benchmark. Total donor commitments were only 4.2% of the HLTF benchmark, with donor spending on ‘PHC Service Delivery’ and HSS being only 3.5% and .9%, respectively. Estimates relative to the CMH benchmark are somewhat higher, simply due to its more limited scope of service coverage. Relative to total per capita spending on health in LICs, Table 2 shows total donor

commitments are about 12%. If we combine per capita donor commitments to health in LICs as reported by CRS, specific to the year 2011 (\$4), with average *total* health spending per capita in LICs (\$31), the resulting amount represents only 40.5% of the \$84 HLTF benchmark and 49.3% of the \$71 CMH benchmark. On a more positive note, Table 2 shows that per capita donor commitments to PHC Delivery plus HSS represent almost one-third of *public* expenditures per capita on health.

We conclude that despite the rapid rise in *absolute* donor commitments for health at global level, they remain a small share of the spending benchmarks set out by the international community. On the other hand, donor commitments represent an impressive share of total public spending on health per capita in LICs, where they might have more significance as a lever to improve efficiency of government spending on PHC. This leads to the second concern addressed in this paper, synergy and complementarity of donor and domestic spending on PHC among countries receiving aid.

PART 2: CASE STUDIES ON DONOR SPENDING ON PHC IN ETHIOPIA AND NIGERIA

To assess factors bearing on the allocative efficiency of public spending on PHC at country level, we employ a case study approach of Ethiopia and Nigeria. These countries have been selected for several reasons. First, they were among the top 13 recipients of aid among 139 countries receiving net ‘official development assistance’ in 2012.^c Combined, they received almost \$1 billion in *health aid* in 2011 (as measured in 2004 constant dollars), with Ethiopia receiving \$411 million in 2011, Nigeria \$528 million. Second, national health plans in each country espouse improvements in financing and providing PHC as a cornerstone of strategies to combat communicable diseases and attain the health-related Millennium Development Goals. Third, with a combined population of about 270 million, improving PHC performance in both countries could be expected to boost health outcomes of sub-Saharan Africa as a whole. Fourth, the two countries appear to be on different trajectories with respect to attaining the health MDGs. According to Table 3, Ethiopia out-performs Nigeria on several PHC-related indicators, even though its capita income and per capita spending on health was only one-quarter that of Nigeria’s, on average, between 2000–11.^d Data not reported here further show that for all PHC-related outputs listed in **Table 3**, the *rate* of improvement was far greater in Ethiopia than Nigeria from 2000 to 2012. This prompts the question: to what extent might important contextual factors be impacting the

	HLTF Benchmark Per capita (2012)	CMH Benchmark Per capita (2012)	Total Health Expenditure Per capita (2012)	Public Health Expenditure Per capita (2012)
Expenditure Benchmark				
- HLTF benchmark per capita, 2012, \$US	\$84			–
- CMH benchmark per capita, 2012, \$US		\$71		
- Average total health expenditures per capita, 2012, \$US*			\$31	
- Public expenditures on health per capita, 2012, \$US*				\$12
Average Donor Commitments per capita, 2005–11, as % of 2012 Expenditure Benchmarks				
Total donor commitments	4.2	5.2	11.9	30.8
- ‘PHC Service Delivery’	3.5	4.2	9.5	24.7
- ‘Health System Strengthening’	.9	1.0	2.4	6.2
- PHC Definition #1	.8	.9	2.0	5.3
- PHC Definition #2	1.1	1.3	3.0	7.8
- PHC Definition #3	1.8	2.1	4.8	12.4
- PHC Definition #4	3.5	4.2	9.5	24.7

TABLE 2. Average Donor Commitments Per Capita to PHC between 2005–2011 as a Percentage of Per Capita Expenditure “Benchmarks” in 2012. *Source: Adapted from Ref. 3

allocative efficiency of both donor and government spending on PHC in the two countries?

ETHIOPIA AND NIGERIA AS *RECIPIENTS* OF DONOR SPENDING ON PHC

We begin with a brief review of donor spending on PHC, as *received* by each of these countries. To do so, we make use of the same data set and functional classification as employed in Part 1 of this paper, specific to the years 2000 and 2011. CRS data from 2000 onwards are desirable because (i) they permit more disaggregated measurement of HSS spending than was possible for Table 1 and (ii) they are known to be more reliable than during earlier years. Calculations by the authors reveal the correspondence between yearly donor commitments and actual disbursements are about 98% for 2000 and 102% for 2011, considerably better than for the 1990–98 period in Table 1.

- Contrary to findings in Part 1 for all LICs, shares of spending on ‘PHC Service Delivery’ increased in both countries between 2000 to 2011—according to PHC Definitions 1, 2 and 3. According to PHC Definition #1, however, the increases were considerably larger for the most basic definition of PHC for Ethiopia than Nigeria, where spending on basic health care and infrastructure grew from 7% to 36% of total donor spending on health from 2000 to 2011, compared with only 2.5% and 9%, respectively, for Nigeria.
- Donor spending on ‘STI Control and HIV/AIDS’ (PHC Definition #4), emerged as a dominant

spending category in both Ethiopia and Nigeria, consistent with findings reported previously for all LICs. In Ethiopia, its share of total donor spending on health was 23% in 2000, growing to 35% by 2011 (derived by subtracting the share of donor funding according to PHC Definition #4 from #3). And yet, Ethiopia’s burden of disease attributable to HIV/AIDS/TB was 10.3% in 2010 versus nearly 50% being attributable to other communicable diseases. In Nigeria, the share of donor spending on ‘STI Control and HIV/AIDS’ was large, at 67% of the total donor envelope in 2000, declining to 57% by 2011. This compares with

Indicator	Ethiopia	Nigeria
Population (millions)	94	173
Average per capita income, 2000–11 (\$US)**	233**	971**
Per capita expenditure on health (\$US)	18	94
Health Outcomes		
Infant Mortality Rate	44	74
Under 5 Mortality Rate	64	117
Maternal Mortality Ratio	460	585
PHC-Related Health Outputs		
Immunization, DPT (children 12–23 months)	61	41
Immunization, Measles (children 12–23 months)	61	42
Contraceptive prevalence rate	29	18
Pregnant women receiving prenatal care	43	66
Adolescent fertility rate (15–19 yrs. of age)	78	120
Prevalence of HIV/AIDS (15–49 years of age)	1.3	3.1

TABLE 3. Basic Indicators for Ethiopia and Nigeria, 2012. Source: Adapted from Ref. 3. **per capita average for 2000–11

crude estimates of Nigeria's burden of disease attributable to HIV/AIDS/TB of less than 5%, though absolute numbers of new HIV/AIDS cases rank second in the world due to Nigeria's large population size.

- Perhaps the most interesting insight from Tables 4 and 5 concerns the per capita donor funding. Ethiopia and Nigeria received fairly similar amounts of per capita donor funding in 2000 (Nigeria was an early recipient of HIV/AIDS funding and so on PHC Definition #4, they had quite a bit more than Ethiopia in 2000). However, by 2011, Ethiopia has clearly benefited more relative to Nigeria. Using PHC Definition #1, Ethiopia's per capita aid goes from \$0.10 in 2000 to \$1.65, which translates into a 16.5 fold jump. The same indicator for Nigeria goes from \$0.06 to \$0.29, which is about a five-fold increase. And on this indicator alone, Ethiopia's per capita aid is about 5.7 times the amount in Nigeria in 2011.
- Donor spending on HSS declined in both countries, the downward trend being much steeper in both countries than was observed for all LICs, reported in Part 1. In Ethiopia, a larger share of donor spending on health went to HSS in 2011 (11%) than in Nigeria (4%), though both figures are considerably below the 20% benchmark proposed in this paper.

Relative to the HLTF and CMH benchmarks, donor commitments to health in Ethiopia and Nigeria are small, as noted for all LICs in Part 1, but are more significant relative to each country's per capita public expenditures on health (Table 6). This applies particularly to Ethiopia, with donor commitments to health representing 51% of public health expenditure per capita versus 11.1% for Nigeria. The important question now is: are donor and government spending on PHC in the two countries being managed and allocated in ways that are having a significant impact on their PHC outputs and outcomes? The short answer is yes but understanding why is complicated.

Context Matters

Ethiopia was one of the first African countries to embark on developing a government-led 'Poverty Reduction Strategy Paper', complete with spending priorities and a 'medium-term expenditure framework' targeting PHC.²⁰ Government and donors have pursued aid harmonization with jointly agreed health sector targets as well as 'basket funding' that merges funding by government and several donors to mutually compatible ends. This applies to the country's Health Sector Development Plan spanning 2013–18, as well as its Millennium Development Goal Performance Fund. Accordingly, a substantial share of donor aid for health in Ethiopia

is under the management of government, aligned with government's national health development plan, and focused on promoting and protecting basic health services.

A commonly advocated motto behind donor and government health spending in Ethiopia is 'One Plan, One Budget, and One Report.' With organizational arrangements in place to foster 'aid harmonization,' as in Ethiopia's Sector Wide Approach (SWAp), most of the country's ten multilateral and 22 bilateral donors, as well as 50 international NGOs, appear to support a government-led health strategy, with concentrated efforts to support and build PHC capacity, and to identify funding gaps in national spending plans.²¹ This facilitates judgments about the likely adequacy of donor/government funding of PHC components.

As the preferred pathway toward achieving 'Universal Health Coverage' in the country, there is also widespread agreement to scale up PHC by financing and delivering a basic package of PHC services at district level (Woredas). To this end, government and donors have supported Ethiopia's Health Extension Program (HEP) to rejuvenate, expand and improve PHC services among the country's 770 districts (each Woreda has an average population of about 120,000). Since 2004, HEP is responsible for constructing 16,000 health posts and employing 38,700 health extension workers. Improving *equity* of access to PHC has been a core building block of HEP and a major theme of the country's last four national health plans. According to World Bank Indicators, the gini coefficient of inequality was .30 in Ethiopia in 2005 compared with .49 in Nigeria in 2010.

Finally, funding channels for donor aid are managed in a relatively coherent and transparent manner in Ethiopia (compared to most LICs), with both earmarked and unearmarked domestic and donor funds channeled by the Federal Ministry, in the form of block grants and other flows, to Ethiopia's nine semi-autonomous regions, and then down to the Woreda level. Even so, some donor funding operates outside of government oversight—referred to as 'Channel 3' funding and relying on donors to report such funds via resource mapping. PEPFAR funding for 'STI Control and HIV/AIDS' is a notable contributor to Channel 3 funding, with budgeting and reporting being separate from government institutions.

In Nigeria, the situation is far different. PHC is supposed to be the cornerstone of Nigeria's health system but has struggled to gain financial backing during the last few decades.²² Policy makers envisioned that a National Primary Health Care Development Fund would provide grants to strengthen PHC by states and Local Governments (LGs) authorities, conditional on financing from a National Health

Functional Codes Used to Classify Commitments	% Share of Total Donor Commitments for Health		Average Annual per Capita \$ LICs excluding China & India (2004 Constant Dollars)		
	2000	2011	2000	2011	
Total Donor Commitments	100.0	100.0	1.39	4.59	
• Donor Commitments for PHC Service Delivery	58.6	89.1	.81	4.09	
• Donor Commitments for Health System Strengthening	41.4	10.9	.58	.50	
Breakdown of Donor Commitments for PHC Service Delivery					
PHC Definition #1	<i>Basic health care & infrastructure (excl. PHC related health ed. & personnel development)</i>	7.4	36.0	.10	1.65
PHC Definition #2	<i>Definition #1 + reproductive health care & family planning</i>	28.4	44.2	.39	2.03
PHC Definition #3	<i>Definition #1 + #2 + control of infectious diseases, malaria & TB</i>	35.4	53.9	.49	2.48
PHC Definition # 4	<i>Definition # 1 + #2 + #3 + STI Control & HIV/AIDS</i>	58.8	89.1	.82	4.09
Breakdown of Donor Commitments for Health System Strengthening (HSS/PHC)					
Health Policy & Admin. Management	<i>Health sector policy, planning & programs; public health administration aid to health ministries,</i>	37.9	6.8	.53	.31
Medical Services, Training & Research	<i>General medical research (excl. basic health research), education & training for tertiary services; labs, specialized clinics, etc.</i>	2.5	1.0	.03	.05
Population Policy & Administration	<i>Census, vital registration, demographic R&A; reproductive health R&A, Education and training of HR for Pop & RH services</i>	.7	.5	.01	.02
Health Education	<i>IEC for improving KAP; public health awareness campaigns</i>	.1	2.3	.00	.11
Personnel Dev. For Health + Reproductive Health	<i>Education and Training of staff or basic health services, including MNCH</i>	.2	.3	.00	.01

TABLE 4. Donor Commitments to PHC for Ethiopia, 2000 and 2011

Bill submitted to Parliament in 2006. The Bill finally passed in 2011, but the President did not sign it into Law; a revised version of the bill was subsequently passed in 2014 and awaits signature. In 2012, government launched a national initiative to ‘Save One Million Lives,’ targeted at women, children and the poor, to signal renewed commitment to strengthening Nigeria’s health services but, again, funding remains an issue. Aid harmonization efforts are weak with efforts to do better in sync with IHP+ and the government’s

National Strategic Health Development Plan 2010–15 (NSHDP). The NSHDP is supposed to serve as the one reference plan for all health investments by government and development partners in the future. Yet a sizable portion of donor funding for health appears to be off-budget and not under government oversight.

Also important in Nigeria is the way that different levels of government spend on health, and PHC in particular. The Federal Government channels resources for health through

Functional Codes Used to Classify Commitments	% Share of Total Donor Commitments for Health		Average Annual per Capita \$ LICs excluding China & India (2004 Constant Dollars)		
	2000	2011	2000	2011	
Total Donor Commitments	100.0	100.0	2.31	3.22	
• Donor Commitments for PHC Service Delivery	82.8	95.7	1.91	3.08	
• Donor Commitments for Health System Strengthening	17.2	4.3	.40	.14	
Breakdown of Donor Commitments for PHC Service Delivery					
PHC Definition #1	<i>Basic health care & infrastructure (excl. PHC related health ed. & personnel development)</i>	2.5	9.0	.06	.29
PHC Definition #2	<i>Definition #1 + reproductive health care & family planning</i>	12.6	19.0	.29	.61
PHC Definition #3	<i>Definition #1 + #2 + control of infectious diseases, malaria & TB</i>	15.1	39.0	.35	1.26
PHC Definition #4	<i>Definition #1 + #2 + #3 + STI Control & HIV/AIDS</i>	82.8	95.7	1.91	3.08
Breakdown of Donor Commitments for Health System Strengthening (HSS/PHC)					
Health Policy & Admin. Management	<i>Health sector policy, planning & programs; public health administration aid to health ministries,</i>	15.6	1.3	.36	.04
Medical Services, Training & Research	<i>General medical research (excl. basic health research), education & training for tertiary services; labs, specialized clinics, etc.</i>	.7	1.6	.02	.05
Population Policy & Administration	<i>Census, vital registration, demographic R&A; reproductive health R&A, Education and training of HR for Pop & RH services</i>	.9	.8	.02	.03
Health Education	<i>IEC for improving KAP; public health awareness campaigns</i>	.0	.2	.00	.01
Personnel Dev. For Health + Reproductive Health	<i>Education and Training of staff or basic health services, including MNCH</i>	.0	.4	.00	.01

TABLE 5. Donor Commitments to PHC for Nigeria, 2000 and 2011

its Federal Ministry of Health, 36 State Ministries of Health, and Departments of Health in 774 Local Governments (LG), each LG responsible for about 220 thousand people, on average. Once funds are dispersed, the federal government does not have a constitutional mandate to compel other tiers of government to spend in accordance with its priorities. Responsibility for PHC lies largely with Departments of Health in the LGs, and while State Governments contribute to LG resources, the release of funds held by states is often low or inconsistent. Moreover, LGs

are known to have inadequate capacity to manage and account for spending.²³ Donor spending does find its way to LG levels but is largely off-budget and thus difficult to track. For these and other reasons, government and donor officials in Nigeria are increasingly advocating ‘PHC Under One Roof’ as a way of harmonizing financing priorities, management, and implementation, right down to local government area. Piloting ‘PHC Under One Roof’ is apparently underway in a few states, with impact yet to be determined.

	HLTF Benchmark Per Capita (2012)	CMH Benchmark (2012)	Total Health Expenditure Per capita (2012)	Public Health Expenditure Per capita (2012)
Ethiopia				
Expenditure Benchmark				
- HLTF benchmark per capita, 2012, \$US	\$84			
- CMH benchmark per capita, 2012, \$US		\$71		
- Average total health expenditures per capita, 2012, \$US*			\$18	
- Public expenditures on health per capita, 2012, \$US*				\$9
<i>Average Donor Commitments per capita in Ethiopia, 2011, as % of 2012 Expenditure Benchmarks</i>				
Total donor commitments to health	4.2	4.9	19.7	51.0
- 'PHC Service Delivery'	3.8	4.5	17.9	45.4
- 'Health System Strengthening'	.4	.5	1.9	5.6
- PHC Definition #1	1.3	1.5	5.9	18.3
- PHC Definition #2	1.6	1.8	7.3	22.6
- PHC Definition #3	2.0	2.4	9.5	27.8
- PHC Definition #4	3.8	4.5	17.9	45.4
	HLTF Benchmark Per Capita (2012)	CMH Benchmark (2012)	Total Health Expenditure Per capita (2012)	Public Health Expenditure Per capita (2012)
Nigeria				
Expenditure Benchmark				
- HLTF benchmark per capita, 2012, \$US	\$84			
- CMH benchmark per capita, 2012, \$US		\$71		
- Average total health expenditures per capita, 2012, \$US*			\$94	
- Public expenditures on health per capita, 2012, \$US*				\$29
<i>Average Donor Commitments per capita in Nigeria, 2011, as % of 2012 Expenditure Benchmarks</i>				
Total donor commitments health	3.1	3.7	2.8	11.1
- 'PHC Service Delivery'	2.9	3.4	2.6	10.6
- 'Health System Strengthening'	.2	.3	.2	.5
- PHC Definition #1	.3	.4	.3	1.0
- PHC Definition #2	.9	1.1	.8	2.1
- PHC Definition #3	1.6	1.8	1.4	4.3
- PHC Definition #4	2.9	3.4	2.6	10.6

TABLE 6. Average Donor Commitments Per Capita to PHC between 2005–2011 as a Percentage of Per Capita Expenditure “Benchmarks” in 2012. *Source: Adapted from Ref. 3

PART 3: DOMESTIC AND DONOR SPENDING ON PHC, INSIGHTS FROM NATIONAL HEALTH ACCOUNTS

Thus far our focus has been on donor spending on PHC. We now examine trends in overall spending from both donor and domestic sources on health and PHC. To do this, we have to switch data sources as the CRS only tracks donor spending and not domestic spending. To get a picture of overall spending on health and PHC, we turn to National Health Accounts (NHA). For Ethiopia, National Health Accounts have been consulted for the years 1998, 2000, 2004–05, 2007–2008, 2010–11; for Nigeria 1998, 2003–04, 2006–09. Designed to track resource use *within* countries, they are used here to

shed light on the allocative efficiency of donor and government spending with respect to advancing PHC. Problematic, however, is that NHA terminology does not allow quantification of spending on PHC according to the same definitions used earlier in this paper to describe donor commitments for health. NHAs for the two countries are also afflicted by definitional and measurement changes. Accordingly, our analysis concentrates on comparable NHA data corresponding to the period 2007–08. For the reasons above, we draw inferences for PHC from overall trends in health financing rather than having specific data on PHC spending.

One key metric to guide understanding of domestic financing for PHC from the NHA data is the ratio of

government expenditures on health as a share of *total government expenditures*. This benchmark was established in the Abuja Declaration of 2001 and indicated that countries should endeavor to publicly finance health so that it represents at least 15% of total government expenditures.¹² In Ethiopia, the ratio was 11.1% in 2011 whereas in Nigeria only 7% of total annual government expenditures went to health as a share of total health spending in 2011.

Our second impression from the NHA data is that only 4.8% of total health expenditure (THE) in Ethiopia originates from government as a financing source, whereas 50.0% of THE originates from donors as a financing source (Table 7). Yet, the federal government is responsible for 34.7% of THE as an Executing Agent. The imputed contribution of donors to the federal government, as an executing agent, is therefore around 29.9% of THE (see Table 7).^c This partly explains the high level of government expenditures on health as a percentage of total government expenditures.

Channeling donor funding through federal executing agents in Ethiopia makes sense in view of the strong role played by the federal government in allocating public spending on health alongside the country's nine semi-autonomous states. Federal responsibilities include paying salaries of frontline health personnel as well as managing a drug procurement and distribution system that supplies health posts and health centers throughout the country. As noted previously, the Federal government also presides over the country's 'Sector Wide Strategy' (SWAp) that aims to harmonize donor spending in ways that complement the government's strategy to improve performance of PHC. Overall, the data in Table 7 suggest that about 60.8% of *total* donor funds for health flow through government executing agents (29.9 for Federal + 0.5 for Regional/district as a share of total donor financing, 50.0) with about 11.1% flowing through international and local NGOs, and 4.7% being executed by donors themselves.

The converse appears to be the case at federal government level in Nigeria. About 9.5% of THE originates from the federal government as a financing source, whereas only 4.8% of THE originates from donors as a financing source. And the imputed contribution of donors to the federal government, as an executing agent, is only .5% of THE (Table 7). Donor contributions appear more notable at state and local government levels, however, with imputed values of 1.2% of THE going to states as executing agents and .9% of THE going to local governments as executing agents. Even so, local governments, responsible for PHC, receive less than the state level.

Our third impression from the NHA data, based on analysis of spending by function from Ethiopia NHA data

only, donor spending in Ethiopia is particularly strongly aligned with 'Prevention and Public Health,' responsible for between 80–92% of such spending in 2004/05 and 2007/08, versus donor spending of only 3–9% on curative care. Government goes much in the opposite direction, particularly in 2004/05 when 58% of government spending was for curative care. Government spending on curative care goes down in the NHA data in 2007/08 to 28% but the share of curative care spending by households goes up dramatically to 62% signaling potential challenges in terms of financial access.

We conclude that the allocative efficiency of donor spending on PHC, once received by recipient countries such as Ethiopia and Nigeria, is likely to be highly conditional on how it is managed and implemented by executing agents responsible for improving PHC outcomes. Raising more donor and domestic resources for PHC is certainly important, but what happens when the funding enters into the domestic system is hugely important as well. By triangulating information on donor flows with NHA data on government allocations as well as an assessment of *contextual factors* in Ethiopia and Nigeria, we suggest that allocative efficiency of public spending on PHC benefits can be differentiated among recipient countries, depending on (i) political will to improve both financing and delivery of PHC services in the recipient country, (ii) harmonization or at least strong synergies of external and domestic spending on PHC, and (iii) allocation of spending to PHC services most relevant to reducing country's burden of disease.

DISCUSSION

It's well known that overall funding for health has increased dramatically over the past decade. We see from the analysis in this paper that overall donor spending on PHC has increased, particularly if one uses the most comprehensive definition of PHC that includes funding for HIV/AIDS. We also see some evidence that the increases in donor assistance to the health sector seem to have been mainly in the health systems support area, rather than for health systems strengthening. We also saw that patterns of domestic financing impact PHC in important ways, particularly the level of public financing. In the case of Nigeria and Ethiopia, we also saw some limited evidence that spending on specific programs may have an impact on PHC.

We would caution that drawing strong conclusions on spending on PHC is challenging for several reasons. Foremost is the realization that attempts to quantify donor spending on PHC by both donors and governments have been stymied by lack of agreement on measurable representations of PHC, including the absence of normative

Financing Source/Agent	% Share of THE by Financing Source	% Share of THE as 'Executing' Agent	Imputed Donor Contribution to 'Executing Agent' as % of THE
Ethiopia (NHA: 2007/08)			
Federal Government	4.8	34.7	29.9
Regional/District Government	8.1	8.6	.5
International NGOs	.0	9.1	9.1
Local NGOs	Na	2.0	2.0
Rest of World (Donors)	50.0	4.7	4.7
Households	33.6	33.6	.0
Other ^a	3.5	3.0	na
Nigeria (NHA: 2008)			
Federal Government	9.5	10.0	.5
State Ministries	.01	1.2	1.2
Local Government	11.1	12.0	.9
Development Partners (Donors)	4.8	.4	.4
Households	69.0	69.0	0
Private enterprise funds	4.3	5.6	na
<i>Federal MDG-DRG Fund—attributable to debt relief</i>	<i>1.3</i>	<i>1.3</i>	<i>1.3</i>

TABLE 7. Imputing the Relative Contribution of Donor Spending to Domestic Public Spending on Health by Financing Agent in Ethiopia and Nigeria, 2007/2008. *Note.* na = may be some small donor contribution but data do not facilitate estimates. ^aFigures for % share of THE as “Executing Agent” do not add to 100% due to missing data and adjustments in the NHA

statements about shares of donor spending that should go to health system strengthening (in support of PHC delivery) or what is often termed “health systems support.” Accordingly, we have proposed a working definition of PHC and HSS, and have combined various functional spending categories commonly used to classify donor spending to quantify spending according to our working definition. This can be replicated using OECD/CRS data and, in our view, could serve as a useful way of tracking donor resources allocated to PHC in the future.

Our attempt to measure HSS “*in support of PHC Delivery,*” or “health systems support” versus “health system strengthening” is a crude estimate. More research is needed to understand an efficient level of donor and domestic financing that should be devoted to this end. With this caveat, our analysis shows that the share of donor funding for HSS has declined over the past two decades. In the meantime, we note the Global Fund for AIDS, TB and Malaria has made a concerted effort in recent years to increase its spending on HSS that goes beyond disease-specific funding—in reaction to pressures to do so—with approximately 14% of ‘Round 8’ funding going to broader ‘system-wide’ HSS in and around 2008–09.²⁴

Our attempt to quantify spending on PHC at domestic level has also been stymied by inadequate data from National Health Accounts—the only source that aspires to use a standardized methodology to track resource flows of both

donors and domestic government. By our count, about 140 NHAs have been produced for LICs over the last decade. This is far fewer than needed to make sense of national health expenditures in LICs, especially over time. Moreover, most NHAs are conducted irregularly, use definitions that change over time, and provide piecemeal data, virtually ruling out cross-country comparisons of spending on PHC. Ethiopia is an exception, due to an agreed need for financial resource tracking by both donors and government, and willingness to provide public funds to this end on a regular basis. Were future NHAs to simply classify shares of *both* donor and government spending on “prevention and public health” versus “curative care” (akin to data presented in Table 8 for Ethiopia), assessment of allocative efficiency of public spending relative to the burden of disease would become more feasible.

Use of international benchmarks to assess adequacy of donor spending—as estimated by HLTF—has proven useful insofar as they represent serious attempts to cost provision of a basic package of PHC-related services and commodities. Yet, for most LICs, they will remain symbolic targets, unattainable in the near to medium term future. More useful, in our view, is to relate donor spending on PHC and HSS as a share of *public* spending on health in LICs. Relative to domestic *public* spending (not total spending on health), donor spending on PHC has the greatest potential to increase the provision of *public* health goods and services, including health promotion,

Share of Spending by Financing Source	Ethiopia NHA 2004/05	Ethiopia NHA 2007/08
Share of Spending on Prevention & Public Health		
· Donors	80	92
· Government	19	8
· Households	2	0
Share of Spending on Curative Care		
· Donors	3	9
· Government	58	28
· Households	39	62

TABLE 8. Comparison of Donor Versus Government Expenditures on Prevention and Public Health Versus Curative Care in Ethiopia, 2004/2005 and 2007/2008

and to subsidize PHC services for the poor who are most afflicted by communicable diseases.

Our inference that relatively huge increases in donor spending on ‘STI control and HIV/AIDS’ may be associated with allocative inefficiencies in donor spending on PHC—for LICs in general, and Ethiopia and Nigeria in particular—is familiar to many. To the extent that countries have been able to leverage funding for HIV/AIDS to strengthen the health system and improve services, the degree of allocative inefficiency may have been attenuated. Many of the vertical funds have made considerable efforts to take account of the financing needs countries have to strengthen health systems. These efforts should be continued, provided the benefits associated with the main areas of investment are not compromised. Moreover, recent efforts by PEPFAR to channel more funding in support of HSS are a welcome development. Such spending could have positive spill-over effects for other PHC-related concerns, though much of it falls outside government budgetary oversight, and may not be strategically aligned with priorities in national development plans. Further research on this issue is warranted in view of the huge sums of donor funding involved.

From our perspective, case study analysis of contextual factors affecting recipients of aid has been necessary to shed light on factors affecting the allocative efficiency of such spending. Compared to data measuring the flow of donor funding to recipient countries, what happens once the money arrives is much less clear. Our analysis suggests that contextual factors, such as political commitments to spending on health, strategic planning that harmonizes donor and government spending on PHC, and shared responsibility for financing and implementing PHC among federal, state and local levels of government can have a big impact. For future

research, we suggest that a two-part analysis, as undertaken in this paper, is a requisite to untangling contextual factors impacting the allocative efficiency of donor and government spending on PHC in LICs.

Finally, we applaud efforts to better leverage *domestic* public funding for PHC in LICs and improve the efficiency of health spending. Increasing government financing for health, as a share of total government expenditure, should be a first priority, especially among aid-dependent LICs. Expanding collective public and private financing, through prepayment, is also critical to reducing high reliance on private, out-of-pocket spending and contributing to a more sustainable financing base for PHC.

DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

No potential conflicts of interest were disclosed.

AUTHOR NOTE

Dana Hovig, Daniel Kress and Hong Wang would like to extend our wishes for a full and speedy recovery to our co-author of this paper, R. Paul Shaw. While on a short visit to Nigeria in December of 2014 to lead a training program on health systems for USAID staff, Paul unknowingly contracted malaria. Upon his return to Canada, Paul fell ill and ended up with a severe case of cerebral malaria which nearly took his life. Paul is slowly recovering in Vancouver General Hospital. We have Paul and his wife Michelle in our thoughts daily and wish them our very best.

NOTES

- [a] District based cost estimates contained in Reference 13.
- [b] Pertains to HLTF’s ‘medium scenario,’ 18% estimate when costs of pre-service training to strengthen HSS are not included; 28% when costs of pre-service training are included. See Reference 14.
- [c] Authors’ calculations based on Reference 3.
- [d] For purposes of our analysis, we consider both Ethiopia and Nigeria to be LICs as their average per capita incomes between 2000–11, as reported in Table 3, were below the World Bank’s cut-off of \$971. More recently, Nigeria has graduated to ‘lower-middle income status’ according the Bank’s per capita income criteria of \$996–3045 (as set in 2011).
- [e] These figures are imputed by differentiating NHA data on health financing by ‘source’ from financing by ‘agent,’ to discern donor shares flowing through different ‘executing’

agents. They therefore represent an approximation by the authors.

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Appendix 1: Preferred Use of OECD DAC Data vs. IHME Data²⁵

This paper makes use of OECD/CRS data on donor *commitments* rather than *disbursements*. Commitments measure the amount of funds to be drawn down over time, indicating a firm decision or promise to spend money. It is reasonable to assume that such commitments portray donor priorities and that recipient governments adjust their national health spending plans accordingly. Alternatively, *disbursements* represent the placement of financial resources at the disposal of entities within a country during a calendar year. In some cases, they can be more volatile than commitments, conditional on specific country events (e.g., political instability), absorptive capacity during any one year, and so. While absolute levels of donor commitments and disbursements differ year-by-year, they tend to be highly correlated over time, moving in the same direction. For example, the ratio of commitments to disbursements in 2011 was .988 for all donors, .967 for bi-lateral donors, and 1.028 for multi-lateral donors. Moreover, our use of multi-year *averages* when looking at historical data helps to minimize discrepancies between commitments and disbursements.

While the Institute for Health Metrics and Evaluation (IHME) also provides an alternative source of data on donor expenditures, they were not used here for four reasons:

- 1) IHME classifies donor aid for health by a few, very broad ‘functional categories’ that cannot be adapted to the four definitions of ‘PHC Delivery’ used here. The IHME ‘functional categories’ are HIV/AIDs, MNCH, Malaria, Health Sector Support, TB, Non-communicable Diseases, Other, and Unallocatable. The ‘Other’ and ‘Unallocatable’ categories represent 42% of total development assistance for health in 2010, meaning that almost half of all donor assistance cannot be assigned by IHME to ‘functional categories.’ Moreover, IHME’s ‘Health Sector Support’ category is very narrow as a proxy for spending on ‘Health System Strengthening.’ It represents only 5.5% of total donor assistance in 2010, as estimated by IHME, and pertains only to funding of ‘sector wide approach in health,’ ‘sector program,’ ‘budget support’ and ‘SWAP.’
- 2) While IHME quantifies absolute amounts of aid by recipient country, such aid is not classified by any ‘functional categories.’ Thus, the allocation of aid across ‘functional categories’ cannot be identified from the IHME data base for Ethiopia, Nigeria or Pakistan.
- 3) Third, IHME uses rather complicated procedures to classify aid based on a ‘word search’ of project/program content, rather than the long-established coding procedures followed by donors for the OECD/CRS data base. While IHME’s word search could conceivably be tailored and applied to identify donor assistance that is PHC-related, this is beyond the scope of the resource tracking exercise conducted here.
- 4) IHME data are based on ‘disbursements,’ officially reported to the OECD CRS since 2002. To create a longer time series, IHME developed statistical procedures to retrospectively estimate disbursements, donor-by-donor, back to 1990. Estimated disbursements were calculated as a percentage of actual donor commitments, with percentage shares tending to be lower during earlier years and closer to parity in later years. IHME’s disbursement data is likely to provide a more comprehensive and perhaps more accurate estimate of *absolute* amounts of aid going to recipient countries than CRS data, particularly as IHME includes many donors, such as international NGOs not included in CRS as well as a tally of actual disbursements reaching countries. The discrepancy between IHME estimates of *disbursements* versus CRS estimates of *commitments* would be problematic if emphasis were to be placed on ‘true’ absolute amounts of aid per year. Interpretation of Tables 1, 4 and 5 however, is concerned with (i) trends in aid over broad periods of time and (ii) percentage shares of aid across functional health categories. For this reason, CRS data on donor commitments from 1990 onwards can be expected to provide a useful picture.

Appendix 2: 'Health Function Codes' used to Classify Donor Commitments according to Intended Purpose

CRS Code	Description	What's Included
	<i>Health, general</i>	
12110	Health policy and administrative management	Health sector policy, planning and programmes; aid to health ministries, public health administration; institution capacity building and advice; medical insurance programmes; unspecified health activities
12181	Medical education and training	Medical education and training for tertiary level services
12182	Medical research	General medical research (excluding basic health research)
12191	Medical services	Laboratories, specialized clinics and hospitals (including equipment and supplies); ambulances; dental services; mental health care; medical rehabilitation; control of non-infectious diseases; drug and substance abuse control(excluding narcotics traffic control)
	<i>Basic health</i>	
12220	Basic health care	Basic and primary health care programmes; paramedical and nursing care programmes; supply of drugs, medicines and vaccines related to basic health care
12230	Basic health infrastructure	District-level hospitals, clinics and dispensaries and related medical equipment (excluding specialized hospitals and clinics)
12240	Basic nutrition	Direct feeding programmes (maternal feeding, breastfeeding and weaning foods, child feeding, school feeding); determination of micro-nutrient deficiencies; provision of Vitamin A, iodine, iron, etc; monitoring of nutritional status; nutrition and food hygiene education; household food security
12250	Infectious disease control	Immunization; prevention and control of malaria, TB, diarrheal diseases, vector-borne diseases (e.g., river blindness and guinea worm), etc.
12261	Health education	Information, education and training of the population for improving health knowledge and practices; public health and awareness campaigns
12281	Health personal development	Training of health staff for basic health care services
	<i>Pop policies and reproductive health</i>	
13010	Population policy and management	Population/development policies; census work, vital registration, migration data, demographic research/analysis; reproductive health research; unspecified population activities
13020	Reproductive health care	Promotion of reproductive health, prenatal and postnatal care including delivery; prevention and treatment of infertility; prevention and management of consequences of abortion; safe motherhood activities
13030	Family planning	Family planning services including counseling; information, education and communication (IEC) activities; delivery of contraceptives; capacity building and training
13040	STI control including HIV/AIDS	All activities related to sexually transmitted diseases and HIV/AIDS control, e.g., information, education and communication; testing; prevention; treatment, care
13081	Personnel development for population and reproductive health	Education and training of health staff for population and reproductive health care services
<i>Codes</i>	<i>available from: http://www.oecd.org/investment/stats/37461859.pdf</i>	