

# METHODS ANNEX

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## OVERVIEW OF DATA COLLECTION AND RESEARCH METHODS

We extracted all available data on health-related disbursements and expenditures, as well as income from existing project databases, annual reports, and audited financial statements. The channels included in the study and the corresponding data sources are summarized in Table 1.1. We constructed two integrated databases from the data: one reflecting aggregate flows, the IHME DAH Database 2010; and a second, the IHME DAH Database (Country and Regional Recipient Level) 2010, for channels that provided information on country- and/or regional-level allocation, namely bilateral agencies, the European Commission (EC), the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), the GAVI Alliance (GAVI), the World Bank, the Asian Development Bank (ADB), the African Development Bank (AfDB), the Inter-American Development Bank (IDB), and the Bill & Melinda Gates Foundation (BMGF).

We counted as development assistance all health-related disbursements from bilateral donor agencies, excluding funds that they transferred to any of the other channels tracked to avoid double-counting. We extracted this information from the Creditor Reporting System (CRS) database of the Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD-DAC). Most donor agencies did not report disbursement data to the CRS prior to 2002. Consequently, we developed a method for predicting disbursements from observed data (see Part 1).

For other grant- and loan-making institutions, we similarly included their annual disbursements on health grants and loans, excluding transfers to any other channels and ignoring any repayments on outstanding debts (see Part 2 for development banks, Part 3 for global health initiatives, and Part 5 for foundations). The annual disbursements for grant- and loan-making institutions only reflect the financial transfers made by these agencies. Therefore, we estimated separately in-kind transfers from these institutions in the form of staff time for providing technical assistance and the costs of managing programs (see Part 7).

For the United Nations (UN) agencies, we included their annual expenditures on health both from their core budgets and from voluntary contributions. For UNICEF, we also estimated the fraction of its total expenditure spent on health prior to 2001 (see Part 4).

For non-governmental organizations (NGOs), we used data from US government sources and a survey of health expenditure for a sample of NGOs to estimate development assistance for health (DAH) from NGOs registered in the US. The 2008 amount, which was incomplete when this analysis was conducted, was estimated based on available data and trends from previous years (see Part 6). We were unable to include NGOs and foundations registered in other countries due to data limitations.

We used the IHME DAH Database (Country and Regional Recipient Level) 2010 to analyze the composition of health aid by recipient country. Next, we assessed development assistance for HIV/AIDS, maternal, newborn and child health, tuberculosis, malaria, noncommunicable diseases, and health sector support using keyword searches within the descriptive fields (see Part 8). We chose to focus on these areas because of their relevance to current policy debates about global health financing. We extracted separately from the CRS data on general budget support and debt relief and estimated total disbursements for both (see Part 1).

We also explored the relationship between health assistance and the burden of disease measured in DALYs,<sup>1</sup> as well as between per capita health assistance<sup>2</sup> and income measured by the gross domestic product of recipient countries.<sup>3-5</sup> We present all results in real 2008 US dollars by adjusting nominal dollar sequences into real 2008 US dollars.<sup>3</sup>

This year's report includes a new area of research: preliminary estimates of DAH for 2009 and 2010. To obtain these preliminary estimates, we implemented a variety of methods dependent on data availability and validated estimates based on the consistency of recent trends in DAH. Generally, estimates are based on channel-specific budget data, assuming disbursements track with program commitments. When budget data were unavailable, we imputed budgets

using other measures such as income or assets or estimated trends based on recent years or other channels. Due to the lack of more detailed disaggregated data, estimates are provided only by channel. Furthermore, the preliminary estimates may include some double-counting due to missing data on transfers between channels of assistance. We have sought to minimize the degree of double-counting in these estimates by estimating DAH in 2009 and 2010 based on prior years' disbursements adjusted for double-counting whenever possible.

All analyses were conducted in Stata 11.0 and R 2.7.1.

**Table 1.1**

**Summary of data sources**

Bilateral agencies in OECD-DAC member countries	OECD-DAC Aggregates database and the Creditor Reporting System (CRS) <sup>6</sup>
EC	OECD-DAC and CRS <sup>6</sup> databases and annual reports <sup>7</sup>
UNAIDS	Financial reports and audited financial statements <sup>8</sup>
UNICEF	Financial reports and audited financial statements <sup>9,10</sup>
UNFPA	Financial reports and audited financial statements <sup>11</sup>
PAHO	Financial reports and audited financial statements <sup>12</sup>
WHO	Financial reports and audited financial statements <sup>13</sup>
World Bank	Online project database <sup>14</sup>
ADB	Online project database <sup>15</sup>
AfDB	Online project database, <sup>16</sup> compendium of statistics, <sup>17</sup> and correspondence
IDB	Online project database <sup>18</sup>
GAVI	GAVI annual reports, <sup>19</sup> OECD-CRS <sup>6</sup> , country fact sheets, <sup>20,21</sup> and correspondences
GFATM	Online grant database <sup>22,23</sup>
NGOs registered in the US*	USAID Report of Voluntary Agencies (VolAg), <sup>24</sup> tax filings, <sup>25</sup> annual reports, financial statements, RED BOOK Expanded Database, <sup>26</sup> WHO's Model List of Essential Medicines, <sup>27</sup> and correspondences
BMGF	Online grant database, <sup>28</sup> IRS 990 tax forms, <sup>29</sup> and correspondence <sup>30</sup>
Other private US foundations*	Foundation Center's grants database <sup>31</sup> and custom research for years 1990-2004

\*Non-US private foundations and NGOs were not included because data were unavailable.

## Part 1:

# TRACKING DEVELOPMENT ASSISTANCE FOR HEALTH FROM BILATERAL AID AGENCIES AND THE EC USING DATA FROM THE OECD-DAC

OECD-DAC maintains two databases on aid flows: 1) the DAC annual aggregates database, which provides summaries of the total volume of flows from different donor countries and institutions and 2) the CRS, which contains project- or activity-level data.<sup>6</sup>

These two DAC databases track the following types of resource flows:<sup>32</sup>

a. Official development assistance (ODA), defined as “flows of official financing administered with the promotion of the economic development and welfare of developing countries as the main objective”<sup>33</sup> from its 24 members (Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, South Korea, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, the United Kingdom, the United States, Spain, Sweden, Switzerland, and the EC).

ODA includes:

- Bilateral ODA, which is given directly by DAC members as aid to recipient governments, core contributions to NGOs and public-private partnerships, and earmarked funding to international organizations.
- Multilateral ODA, which includes core contributions to multilateral agencies such as WHO, UNFPA, GFATM, GAVI, UNAIDS, UNICEF, PAHO, the World Bank, and other regional development banks. Only regular budgetary contributions to these institutions can be reported to the OECD-DAC; hence, extrabudgetary funds, including earmarked contributions that donors can report as bilateral ODA, are not included as multilateral ODA. Only 70% of core contributions to WHO can be counted as multilateral ODA.

b. Official development finance (ODF), which includes grants and loans made by multilateral agencies.

The DAC aggregate tables include all multilateral development banks, GFATM, operational activities of UN agencies and funds, and a few other multilateral agencies. The project-level data in the CRS cover a smaller subset of multilateral institutions including UNAIDS, UNFPA, GFATM, UNICEF, and some development banks, but do not reflect the core-funded operational activities of WHO, disbursements by GAVI prior to 2007, or loans from the World Bank.

For the purposes of tracking bilateral DAH, we relied principally on the CRS. This is because the DAC aggregate tables do not report detailed project-level information about the recipient country and disease focus of the flows. We identified all health flows in the CRS using the OECD sector codes for general health (121), basic health (122), and population programs (130).

To avoid double-counting, we subtracted from bilateral ODA all identifiable earmarked commitments and disbursements made by DAC members via GAVI, International Finance Facility for Immunisation (IFFIm), GFATM, WHO, UNICEF, UNAIDS, UNFPA, and PAHO using the channel of delivery fields as well as keyword searches in the descriptive project fields (project title, short description, and long description). Research funds for HIV/AIDS channeled by the US government through the National Institutes for Health (NIH) were also removed from the total since they do not meet our definition of DAH as contributions from institutions whose primary purpose is development assistance. We did not count ODF from the CRS due to the fact that we collected data on multilateral institutions relevant to our study directly from their annual reports, audited financial statements, and project databases. We also disregarded multilateral ODA. To avoid double-counting, we only counted as health assistance flows *from* multilateral institutions to low- and middle-income countries and not transfers *to* multilateral institutions.

Both the DAC tables and the CRS rely on information reported by DAC members and other institutions to the OECD-DAC. Hence, the quality of the data varies considerably over time and across donors. There were two main challenges in using the data from the CRS for this research. The first was the underreporting of aid activity by DAC members to the CRS. Prior to 1996, the sum of the project-wise flows reported to the CRS by donors was less than the total aggregate flows they reported to the DAC aggregate tables. OECD uses total CRS commitments as a fraction of DAC aggregate commitments to construct a coverage ratio for the CRS database.<sup>34</sup> Figure 1.1 displays total health commitments from the DAC and the CRS, disbursements from the CRS (the DAC does not report disbursements), and the aggregate coverage ratio of health commitments in the CRS to health commitments in the DAC from 1990 to 2008. The coverage in the CRS was well below 100% prior to 1996, but it has improved considerably since then. In some years, notably 2006, members appeared to be reporting more commitments to the CRS than the DAC. The second problem relates to the underreporting of disbursement data to the CRS. Several donor countries did not report their annual disbursements and only reported project-wise commitments to the CRS prior to 2002. The orange line for observed disbursements in Figure 1.1 shows that the variable is more complete in recent years, but it drops well below commitments in years prior to 2002.

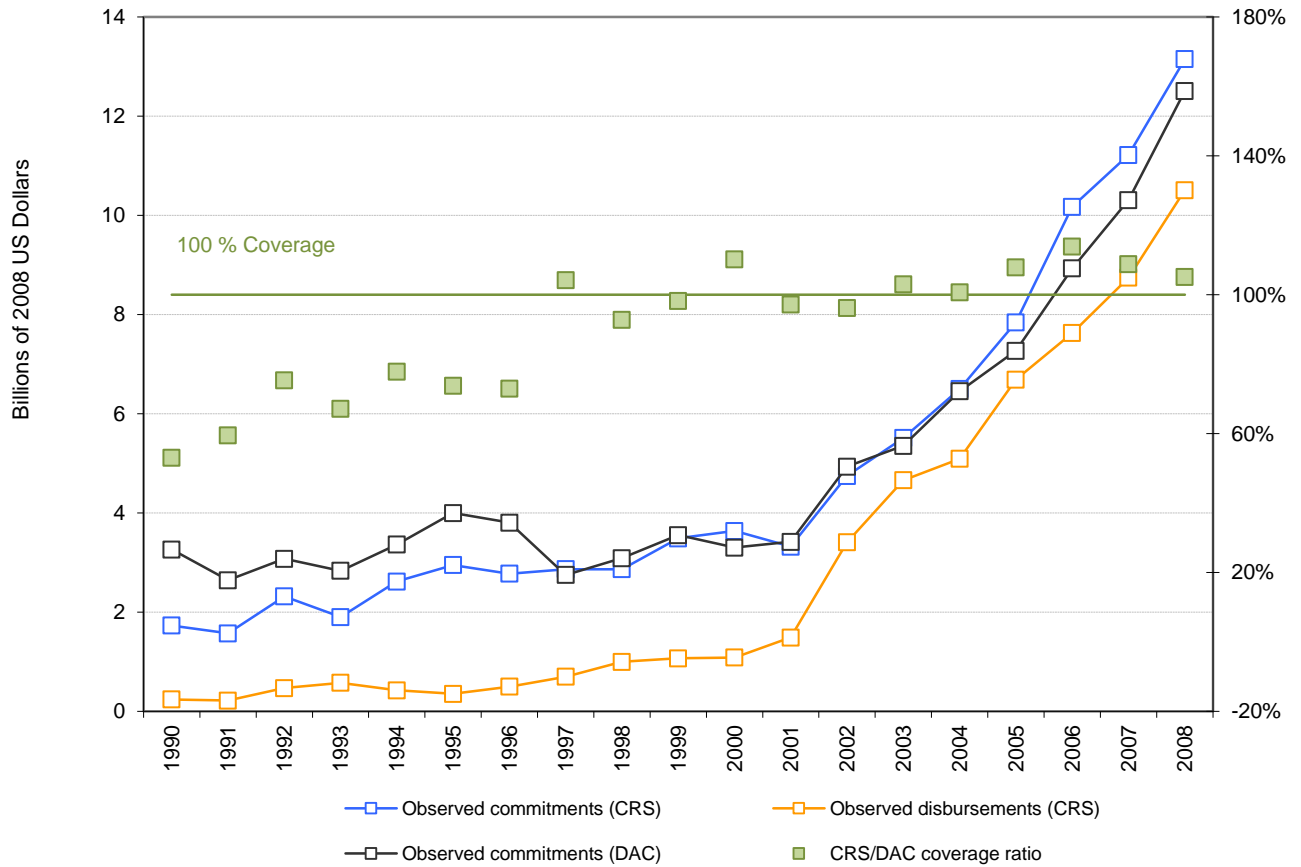
We developed methods for accounting for both these sources of discrepancy and arrived at consistent estimates of disbursements. Since the method followed for the EC differed from that followed for the 23 member countries of the DAC, they are described in different sections below. The final section describes how we estimated disbursements for general budget support and debt relief. Refer to Part 7 for details on how we estimated the cost of providing technical assistance and program support for these institutions.

We converted all disbursement sequences into real 2008 US dollars by converting disbursements in nominal US dollars in the year of disbursement, and then adjusting these nominal dollar sequences into real 2008 US dollars. We also explored converting disbursements from current to constant local currency units using local currency deflator sequences, and then to US dollars using exchange rates in a single year. The alternative methods led to significant differences in the case of some currencies. We picked the first method to make bilateral flows comparable with other flows in the study that are all denominated in dollars.

**Figure 1.1**

**Commitments and disbursements by bilateral agencies**

The graph compares estimates from the CRS and DAC tables from 1990 to 2008. "Observed" refers to the fact that these quantities are taken as reported by donors to the OECD, without any corrections for missing data or discrepancies between the CRS and the DAC.

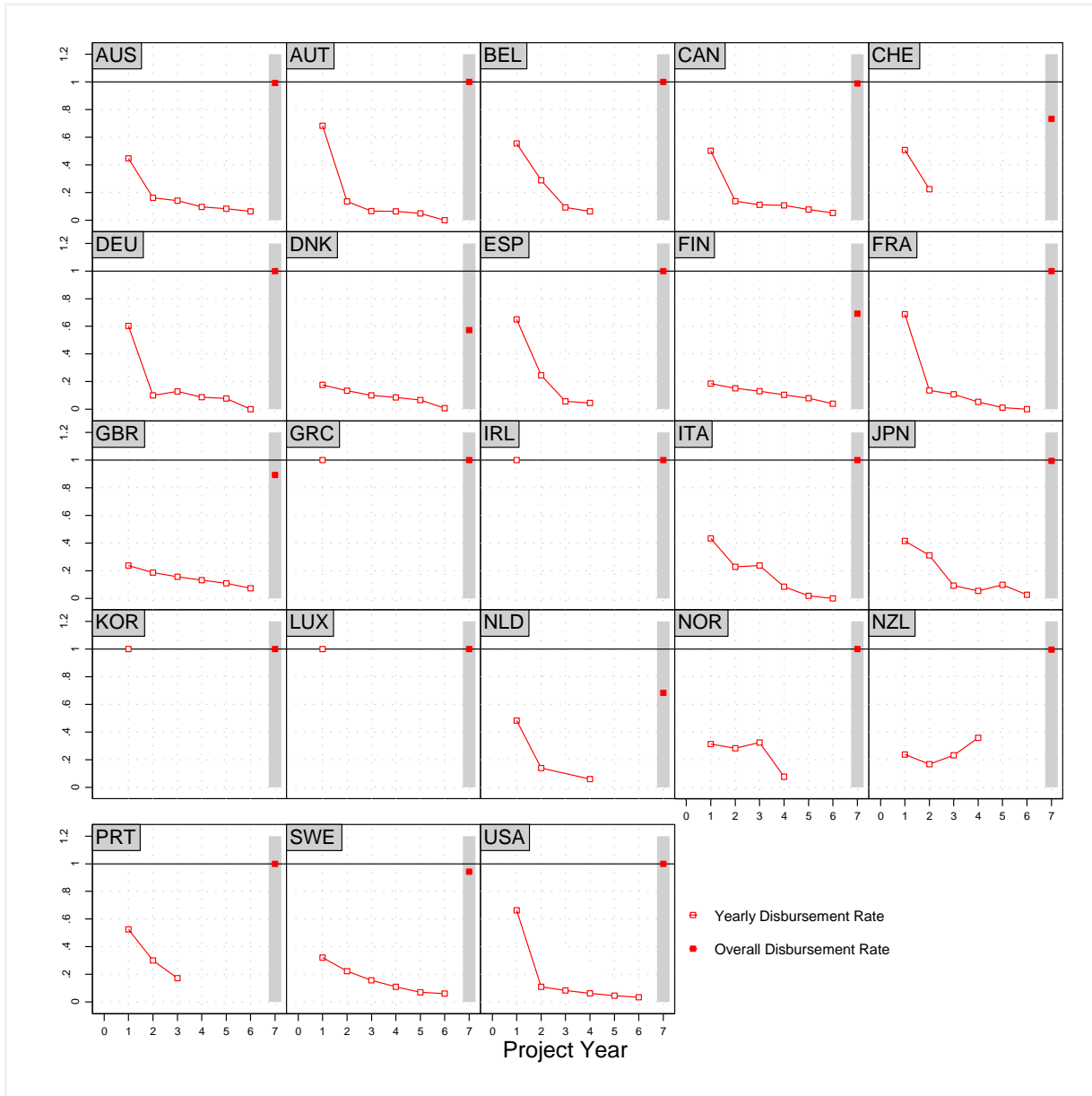


Source: OECD-DAC aggregate tables and OECD Creditor Reporting System

**Figure 1.2**

**Disbursement schedules for the 23 DAC member countries**

AUS = Australia, AUT = Austria, BEL = Belgium, CAN = Canada, CHE = Switzerland, DEU = Germany, DNK = Denmark, ESP = Spain, FIN = Finland, FRA = France, GBR = Great Britain, GRC = Greece, IRL = Ireland, ITA = Italy, JPN = Japan, KOR = South Korea, LUX = Luxembourg, NLD = the Netherlands, NOR = Norway, NZL = New Zealand, PRT = Portugal, SWE = Sweden, USA = United States of America



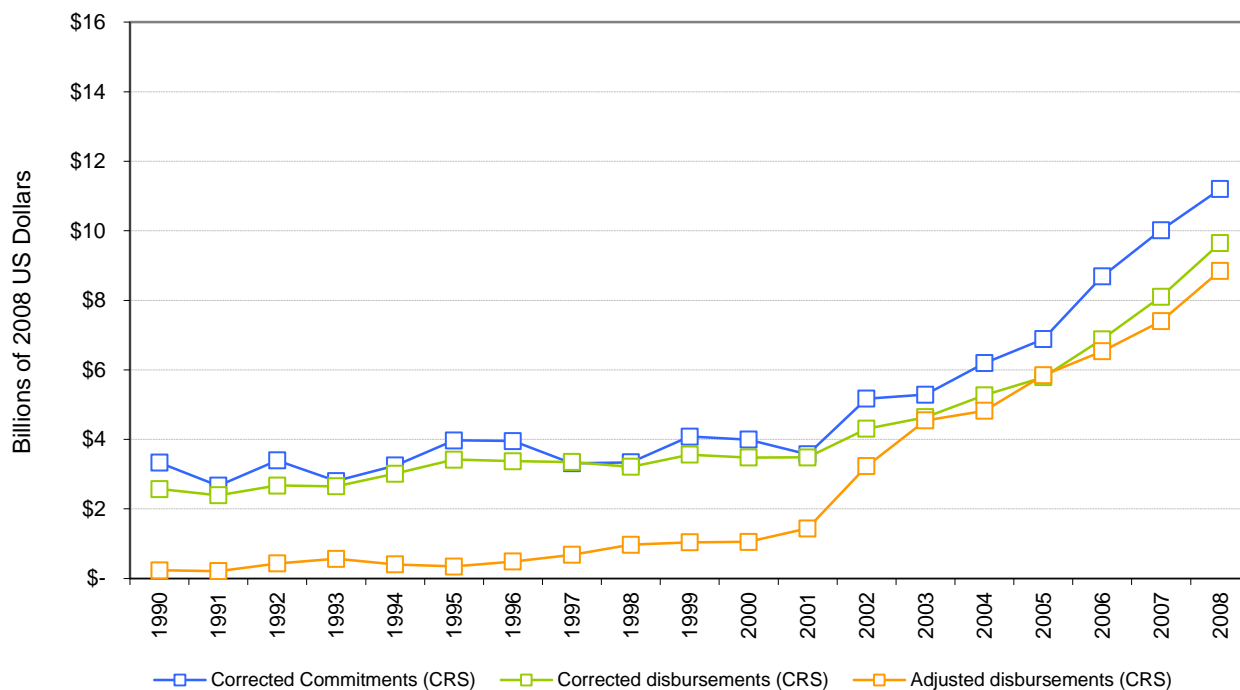
Source: OECD Creditor Reporting System

### Estimating disbursements for 23 DAC member countries

Given the low coverage of commitments in the CRS between 1990 and 1996, we adjusted all CRS commitments for the health sector upward using the coverage ratios observed for each donor. To correct for missing disbursements, we pooled completed projects in the CRS for each donor and computed both yearly project disbursement rates (the fraction of total commitments disbursed for each observed project year) and overall project disbursement rates (the fraction of total commitments disbursed over the life of each project). We produced six-year disbursement schedules by taking the median yearly disbursement rates for each donor and normalizing the yearly rates using the median overall disbursement rates. Figure 1.2 shows the disbursement schedules and overall disbursement rates for each of the 23 member countries. To estimate yearly disbursements, we applied the disbursement schedule to each donor’s observed commitments net of grants through IHME’s channels of assistance.

**Figure 1.3**  
**Commitments and estimated disbursements by bilateral agencies**

Total commitments net of transfers to other channels, after correction for low coverage in the CRS, are shown in blue; total disbursements reported in the CRS net of transfers to other channels, are in orange; and the corrected disbursement series based on the corrected commitment sequence and the estimation model are shown in green.



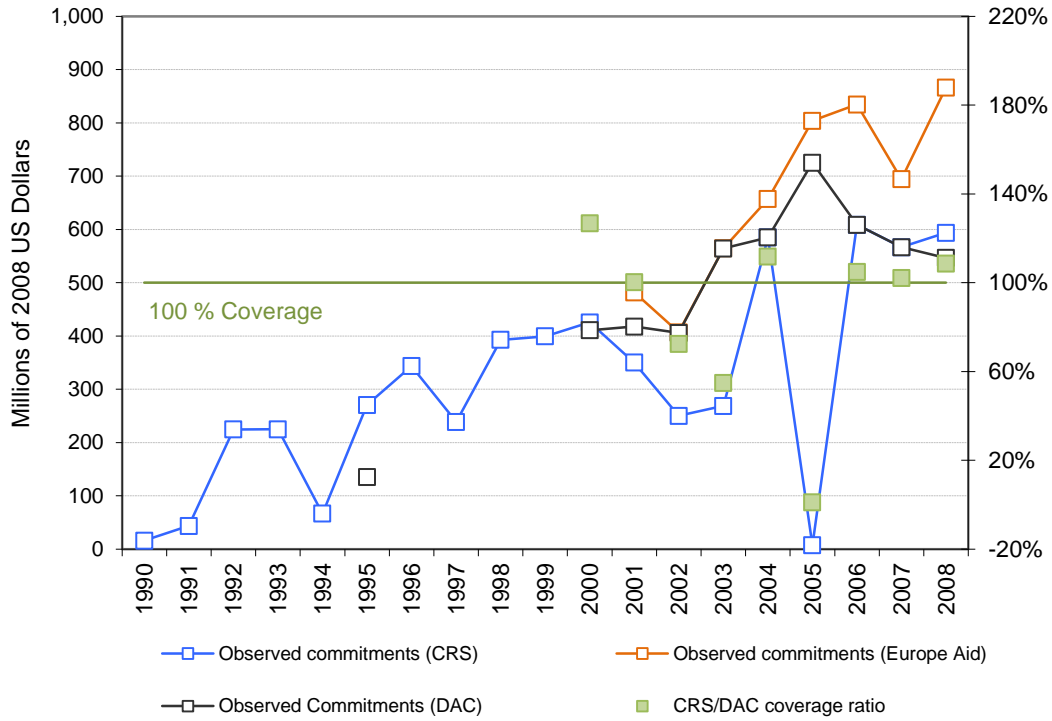
Source: IHME DAH Database 2010

Figure 1.3 shows the results. The blue “corrected commitments” line corresponds to aggregate commitments both net of transfers to other institutions tracked by this project and corrected for coverage deficits prior to 1996. The orange “adjusted disbursements” line shows disbursements from the CRS after adjusting for funds transferred to other global health channels of assistance. The green “corrected disbursement” line corresponds to our estimate of annual disbursements modeled from the corrected commitments. Prior to 2002, the corrected disbursements are well above adjusted disbursements, reflecting the underreporting of disbursements in the CRS; after 2002, adjusted disbursements and corrected disbursements track each other closely.



**Figure 1.4**  
**EC's commitments**

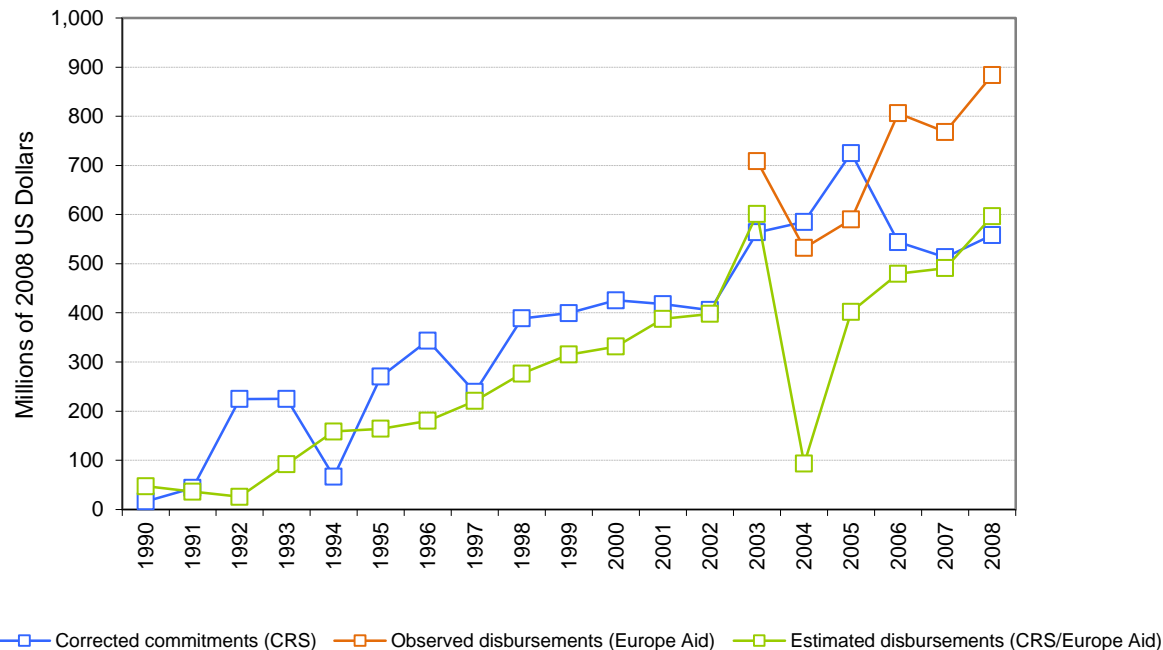
Commitments as reported by the EC to 1) the CRS, 2) the DAC tables, and 3) in its annual reports are in blue, gray, and orange, respectively. The discrepancy between the CRS and the DAC tables is shown by the coverage ratio shown in green.



Source: OECD-DAC, OECD Creditor Reporting System, and Europe Aid Annual Reports

**Figure 1.5**  
**Estimated disbursements by the EC**

The green line shows the complete time series included in the estimates of DAH.



Source: OECD Creditor Reporting System, Europe Aid Annual Reports, and IHME DAH Dataset 2010

### Estimating disbursements for the EC

Europe Aid annual reports released by the EC are available online from 2001 onward.<sup>7</sup> Starting in 2003, the reports included data on annual disbursements. Figure 1.4 shows commitment time series from different sources. Flows shown in the EC report include regular and extrabudgetary contributions to multilateral agencies, resulting in numbers that are larger than those in the CRS for the same years. We applied a hybrid approach to generate a time series of disbursements for the EC, combining data from both sources.

Specifically, from 1990 to 2003, we started with the sequence of commitments from the CRS, net of any transfers to other channels of assistance in our study. This is shown in Figure 1.5 in blue. We estimated disbursements using a three-year moving average of past commitments, shown in this figure in green from 1990 to 2003. From 2003 onward, we used disbursements reported by the EC in its annual reports (shown in orange) and subtracted from it any transfers to other channels of assistance, as reported by the channels. The green line from 2003 to 2007 shows the result of this calculation. The dip in 2004 is the result of EC’s grant of \$270 million to GFATM as well as \$188 million in extrabudgetary contributions to WHO and UNFPA that year.

### Estimating disbursements for GBS and debt relief

To estimate aggregate disbursements on general budget support (GBS) commitments, disbursement schedules were estimated for each donor as described above. The disbursement schedules were applied to observed commitments to predict disbursements prior to 2002 when reported disbursements were highly incomplete. The CRS database tracks seven types of debt relief operations: debt forgiveness, rescheduling and refinancing, relief of multilateral debt, debt for development swap, other debt swap, debt buy-back, and other action related to debt. All debt relief commitments, except for other action related to debt, were pooled. As debt relief commitments are reported in a lump sum amount that is equivalent to the forgiven principal and interest due in the future, we estimated the stream of yearly principal and interest payments due each year in the future by assuming an average duration of forgiven loans at 10 years. We uniformly allocated debt relief commitments evenly over this duration to obtain estimates of yearly disbursements.

## Preliminary estimates for bilateral aid agencies and the EC as channels of assistance

For each bilateral channel, data were extracted from a variety of sources, which are presented in Table 1.2. These data were used to estimate DAH for 2009 and 2010, assuming that trends in budgeting reflect trends in disbursements. We attempted to obtain global health budgetary data whenever possible, but these detailed data were not available for all years and bilateral channels. For most bilateral channels, general ODA budgets were used due to lack of global health ODA budget data. When budget data were unavailable or of poor predictive quality, alternative measures of planned expenditures were used.

We regressed the disbursement series for all available years (1990-2008) on these budget measures using a natural-log transformed linear model. We then used the regression coefficients and observed budget data to predict DAH for 2009-2010. In addition, we tested not only disbursements based on current budgets, but also lagged budgets of one to four years, based on the idea that expenditures may lag reported budgets. Model choice and preliminary estimates were based not only on model fit, but more importantly, on validity and consistency between trends in recent years' DAH and 2009-2010 trends. Model choices are also presented in Table 1.2.

We were unable to locate budget data for Greece, Korea, and the Netherlands. Budget data for Austria and the EC were inconsistent and did not match the disbursement series. For these channels, we estimated DAH from 2009 to 2010 by applying annual percentage changes in aggregate DAH for the remainder of the bilateral universe, or a selected subset of relevant channels (presented in Table 1.2).

**Table 1.2:**  
**Summary of additional data sources and model choices used for preliminary estimates of DAH**

Channel	Data source	Variables used	Years used	Model used
<b>Australia</b>	Australia's International Development Assistance (2008-2010); Australia's Overseas Aid Program (1998-2008) <sup>35</sup>	Health ODA: International development assistance budget	1998-2010	4-year lagged budget
<b>Austria</b>	Development Cooperation <sup>36</sup>	Not used as data were inconsistent with disbursements	–	Estimated DAH trends of all bilateral channels
<b>Belgium</b>	Project Budget General – general expenses <sup>37</sup>	General ODA: Foreign affairs, foreign trade development and cooperation;	2000-2010	Current budget
<b>Canada</b>	Canadian International Development Agency – Report on Plans and Priorities <sup>38</sup>	General ODA: Financial summary – planned spending	1996-2010	3-year lagged budget
<b>Denmark</b>	Correspondence <sup>39</sup>	General ODA: Budgeted expenditures on overseas development assistance	2000-2010	Current budget
<b>EC</b>	General budget <sup>40</sup>	Data not used as they were inconsistent with disbursements	–	Estimated bilateral trends of European channels
<b>Finland</b>	Document Assembly in budget years 1998-2010 <sup>41</sup>	General ODA: Ministry of Foreign Affairs' administrative appropriations, international development	2002-2010	Current budget

<b>France</b>	Finance bills 2004-2010, general budget <sup>42</sup>	General ODA: Finance bill's ODA development – solidarity with developing countries	2004-2010	1-year lagged budget
<b>Germany</b>	Plan of the Federal Budget <sup>43</sup>	General ODA: Development expenditure	2001-2010	Current budget
<b>Greece</b>	Unable to locate budget data	–	–	Estimated DAH trends of all bilateral channels
<b>Ireland</b>	Department of Finance – budget 2000-2004; Estimates for Public Services and Summary Public Capital Programme, 2005-2010 <sup>44</sup>	General ODA: Summary of adjustments to gross current estimates – international co-operation	2002-2010	Current budget
<b>Italy</b>	Ordinary Supplement to “Official Journal” – Ministry of Foreign Affairs <sup>45</sup>	General ODA: Provision for Ministry of Foreign Affairs – development and management challenges global	2006-2010	Current budget
<b>Japan</b>	Highlights of the Budget for FY1999-2010 <sup>46</sup>	General ODA: Major budget expenditures	2003-2010	Current budget
<b>Korea, South</b>	Unable to locate budget data	–	–	Estimated DAH trends of all bilateral channels
<b>Luxembourg</b>	Gazette Grand Duchy of Luxembourg <sup>47</sup>	General ODA: Ministry of Foreign Affairs – budgeted international development cooperation and humanitarian aid	2001-2010	1-year lagged budget
<b>Netherlands</b>	Unable to locate budget data	–	–	Estimated DAH trends of DNK, FRA, DEU
<b>New Zealand</b>	Vote Foreign Affairs and Trade (1998-2001); VOTE Official Development Assistance (2002-2009) <sup>48</sup>	General ODA: Total annual official development assistance expenditure	1998-2010	3-year lagged budget
<b>Norway</b>	Correspondence <sup>49</sup>	General ODA: ODA budget	2000-2010	Current budget
<b>Portugal</b>	Ministry of Finance and Public Administration State Budget 2003-2010 <sup>50</sup>	General ODA: Integrated service expenditure – external cooperation budget	2003-2010	Current budget
<b>Spain</b>	Annual Plan of International Cooperation <sup>51</sup>	General ODA: Net Spanish ODA instruments and modalities	2003-2010	Current budget
<b>Sweden</b>	Correspondence <sup>52</sup>	General ODA: Ministry for Foreign Affairs budgets for expenditure – international development cooperation	2000-2010	Current budget
<b>Switzerland</b>	Foreign Affairs (2001-2006); Budget – Further Explanations and Statistics (2008-2010) <sup>53,54</sup>	General ODA: Direction of development and cooperation (2000-2006); foreign affairs – international cooperation, development aid (in the South and East) (2008-2010)	2000-2010	Current budget

<b>United Kingdom</b>	Budget <sup>55</sup>	General ODA: Department expenditure limits – resource/ current and capital budgets	1998-2010	2-year lagged budget
<b>United States</b>	President's Budget <sup>56</sup>	Global health ODA: Global health appropriations from international assistance programs (2002-2006); global health appropriations from Department of State and other international programs (2007-2011) and the Department of Health and Human Services	2004-2010	Current appropriations
<b>UN agencies</b>				
WHO	Financial Reports <sup>57</sup>	Total disbursements: Statement of performance by major funds – total operating expenses; program budget utilization (2008-2009)	2000-2010	Current budget
UNAIDS	Unified Budget and Workplan, bienniums 2002-2011 <sup>58</sup>	Total commitments: Distribution of resources by agency	2002-2010	Two-part model: UBW and non-UBW, current imputed budget
UNICEF	Financial report and audited financial statements; <sup>59</sup> 2009 Annual Report <sup>60</sup>	Total income	2001-2010	2-year lagged income
UNFPA	Correspondence	Total expenditure (2009); estimated expenditure (2010)	–	–
PAHO	Proposed program budget <sup>61</sup>	Total regular budget, estimated voluntary contributions	2000-2010	Two-part model: voluntary and regular, 2-year lagged imputed budget
<b>Development banks</b>				
World Bank	Projects database (online) <sup>14</sup>	Commitments and disbursements for health sectors	1990-2010	Smoothed disbursements
African Development Bank	Online projects database <sup>16</sup> and Compendium of Statistics <sup>17</sup>	Health disbursements and commitments	1990-2010	Smoothed disbursements
Asian Development Bank	Online projects database <sup>15</sup>	Health disbursements and commitments	1990-2010	Smoothed disbursements
Inter-American Development Bank	Online projects database <sup>18</sup>	Health disbursements and commitments	1990-2010	Smoothed disbursements

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**Private organizations**

BMGF	Correspondence	2009 global health disbursements; 2010 grant payout target	–	–
NGOs	VolAg (1990-2007), <sup>24</sup> GuideStar (2008), sample of top NGOs (2008-2009) <sup>25</sup>	Revenue breakdowns for: US public, non-US public, private, in-kind, BMGF; total overseas expenditures	1990-2008	Two-part model: DAH financed from US public, non-US
Foundations	Foundation Center database <sup>31</sup>	Total assets	1997-2009	Proxy trends in DAH by trends in assets

**Global health partnerships**

GAVI	Correspondence	2009 total disbursements; 2010 estimated disbursements	–	–
GFATM	Records of pledges and contributions <sup>23</sup>	Total pledges by year due	2001-2010	1-year lagged pledge

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## Part 2:

# TRACKING DEVELOPMENT ASSISTANCE FOR HEALTH FROM THE DEVELOPMENT BANKS

## The World Bank

In last year's report, after considering multiple sources of information for tracking DAH from the two arms of the World Bank, IDA and IBRD, we decided to rely on the online loans database for our DAH estimates to make our estimates replicable by others.<sup>14</sup> This year, the World Bank provided us with aggregated annual health disbursement data for years 1990-2010. In an attempt to best estimate the World Bank's DAH for 2009 and 2010, we considered the possibility of utilizing these newly obtained data. Figure 2.1 shows the annual health disbursement data supplied by the World Bank compared to our estimates based on the online database. We ultimately chose to use data from the online database as it included more detailed project-level data and was more consistent with past analysis.

The online database contains up to five sector codes and five theme codes that can be assigned to each project. Sector codes represent economic, political, or sociological subdivisions, while theme codes represent the goals or objectives of World Bank activities. These codes are summarized in Table 2.1. We used the sector codes in the database to calculate what fraction of the loan was for the health sector. We divided the cumulative disbursement for the loan by the observed duration of the loan to estimate annual disbursements on a calendar year basis. Projects that reported as ongoing did not contain disbursement data in the online database. To best track what was received directly from the World Bank, the cumulative commitment data for ongoing projects was divided by the known project length for the projects listed as active for 2006 onward.

Figure 2.1 shows annual commitment totals from the online database and annual disbursement data received from the World Bank. The discrepancy between them is a cause for concern and is an example of the data quality challenges that plague this work. Differences in commitments are likely a result of either or both of the following: 1) whether sector codes or theme codes (or a combination) are used to identify health projects and 2) for projects spanning multiple sectors or themes, whether the loan dollars for a project are fully assigned to each sector or theme, or whether the dollars are distributed according to the relative share of the project that was for each sector or theme. We used the sector codes in the online projects database to identify health loans and assigned dollars based on World Bank estimates of the share of the loan going to the health sector.

**Table 2.1**  
**World Bank's health sector and theme codes**

<b>Health sector codes</b>	<b>Health theme codes</b>
(Sector codes represent economic, political, or sociological subdivisions within society. World Bank projects are classified by up to five sectors.)	(Theme codes represent the goals or objectives of World Bank activities. World Bank projects are classified by up to five themes.)
<b>Historic (prior to 2001):</b>	<b>Current:</b>
<ul style="list-style-type: none"> <li>(1) Basic health</li> <li>(2) Other population health and nutrition</li> <li>(3) Targeted health</li> <li>(4) Primary health, including reproductive health, child health, and health promotion</li> </ul>	<ul style="list-style-type: none"> <li>(1) Child health</li> <li>(2) HIV/AIDS</li> <li>(3) Health system performance</li> <li>(4) Nutrition and food security</li> <li>(5) Population and reproductive health</li> <li>(6) Other communicable diseases</li> <li>(7) Injuries and noncommunicable diseases</li> </ul>
<b>Current (as of 2001):</b>	
<ul style="list-style-type: none"> <li>(1) Health</li> <li>(2) Compulsory health finance</li> <li>(3) Public administration – health</li> <li>(4) Noncompulsory health finance</li> </ul>	

The database distinguishes between loans from IDA and IBRD. Figures 2.2 and 2.3 show estimated disbursements for each of the arms of the World Bank, compared to the annual disbursement data that we received from the World Bank. In order to disaggregate IDA flows by source, we obtained data on yearly government contributions from the DAC statistics.<sup>6</sup> We also collected information on debt repayments and IBRD transfers to IDA from the audited financial statements.<sup>62</sup> Refer to Part 7 for details on how we estimated the cost of providing technical assistance and program support for these institutions.

### Regional development banks

For the ADB, AfDB, and IDB, the CRS contains project-level commitments but does not provide annual disbursement data. All also maintain their own loan databases. The ADB only reports commitments. Hence, we estimated its annual disbursements by dividing each commitment reported in its loan database<sup>15</sup> by the duration of the project, and then summing the amounts in each year. The IDB's project database<sup>18</sup> provides cumulative disbursements. We divided those by the duration of the project to obtain annual disbursements. Only since the last publication of this report did the AfDB provide an online project-level database<sup>16</sup> that provides cumulative commitment data for all projects and cumulative disbursement data for closed projects. To estimate annual disbursements for closed projects, we divided cumulative disbursements by the project length, and for ongoing projects, we divided cumulative commitment data by the average project length of all closed projects. However, when analyzing this new source, we found the disbursements for years prior to 2007 surprisingly low in comparison to previously gather data from its Compendium of Statistics.<sup>17</sup> Due to this concern, we used the detailed data in the project-level database but also included the difference between what was reported in the Compendium of Statistics and the project-level database in our estimates of DAH. Table 2.3 summarizes the data sources. Figures 2.4, 2.5, and 2.6 summarize commitment and disbursement time series for each of the three banks. Refer to Part 7 for details on how we estimated the cost of providing technical assistance and program support for these institutions.



## Preliminary estimates for the development banks

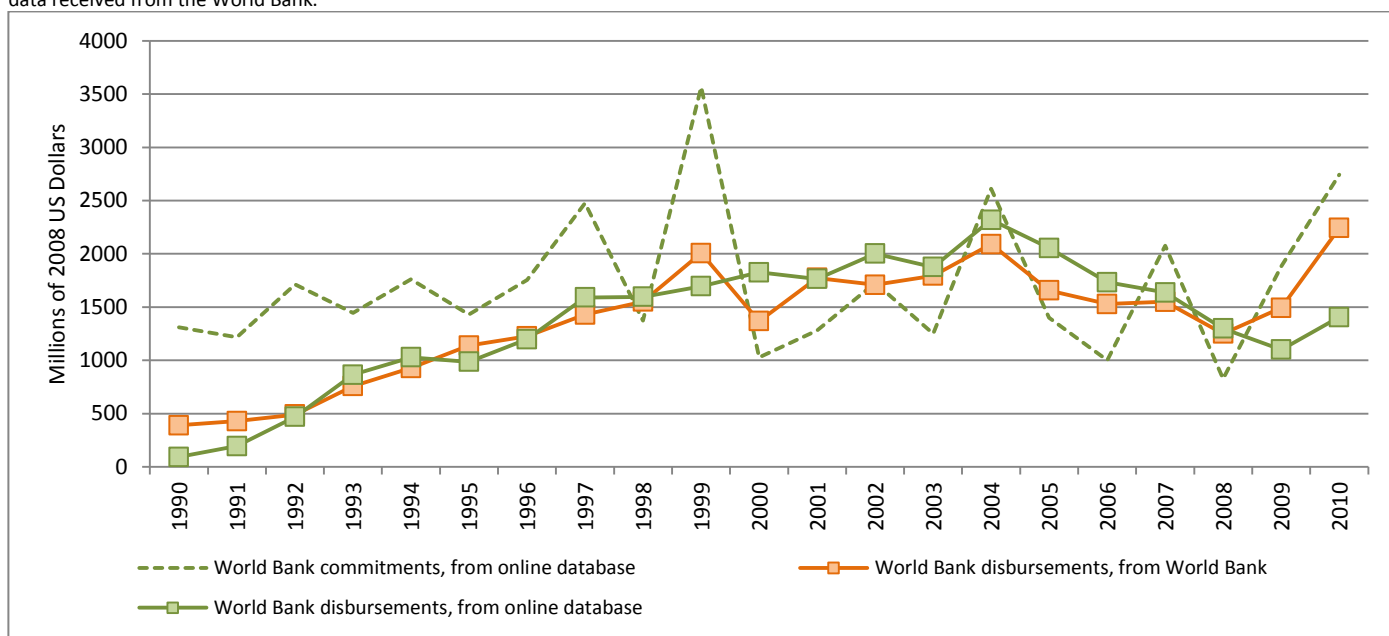
The methodology used to generate preliminary estimates for the development banks are identical to the methods used to estimate disbursements from 1990-2008. For the World Bank, IDB, and ADB, we obtained project-level commitments and disbursements for the years 1990-2010 from their respective online projects databases. We used health disbursement data from the AfDB's Compendium of Statistics and its online projects database. We applied a smoothed disbursement model, using the methods described in the previous section to estimate DAH for years 2009-2010. While all development banks have reported their complete 2009 project commitments, 2010 project commitments may be incomplete due to lags in reporting. Thus, preliminary estimates of DAH in 2010 are potentially underestimated.

Projects reported as currently active do not report cumulative disbursements, and thus commitments are used to estimate disbursements. We assumed the length of active projects to be the average length of closed projects and divided cumulative disbursements by the average project length to estimate yearly disbursements.

For the World Bank, we used commitment data as a proxy for disbursements for active projects from 2006 onward as this method produced more consistent estimates when compared to yearly disbursement amounts that we received from the World Bank.

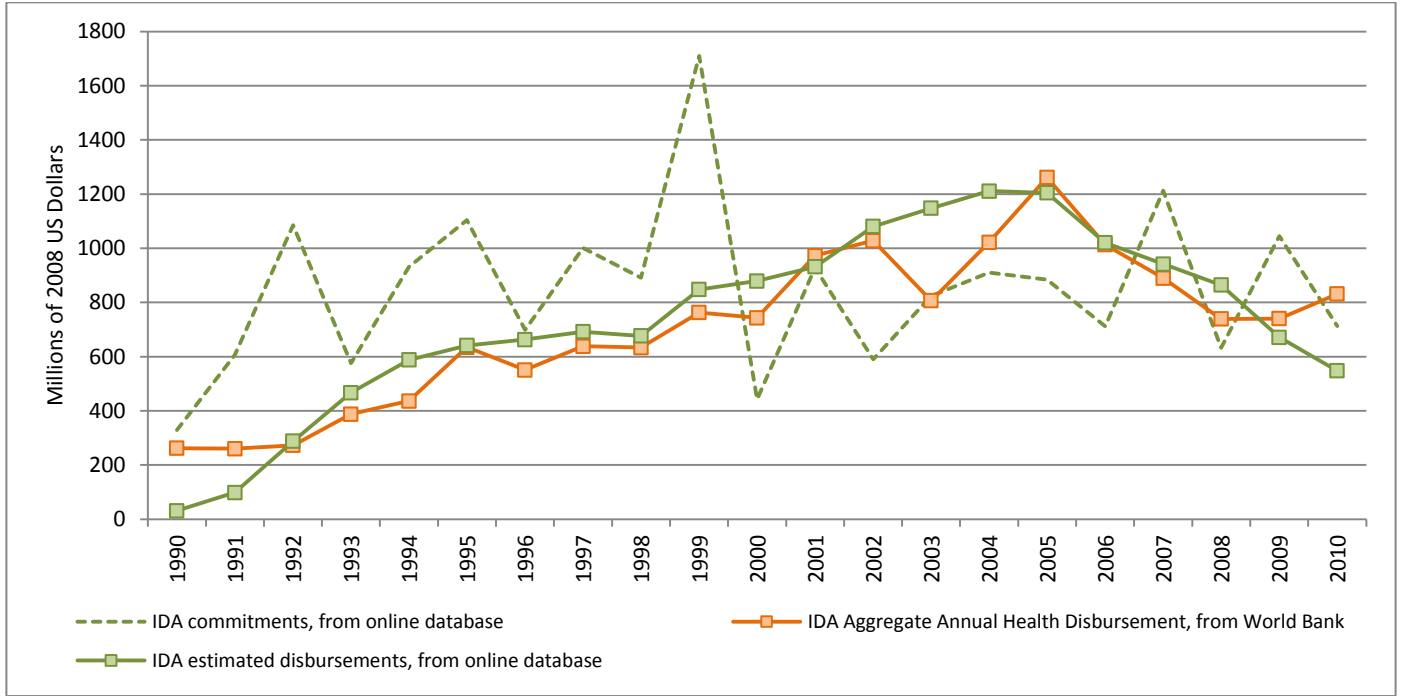
**Figure 2.1**  
**World Bank's annual commitments and disbursements**

The graph shows health sector loan commitments and disbursements in green from the online database. The orange line shows annual health disbursements data received from the World Bank.



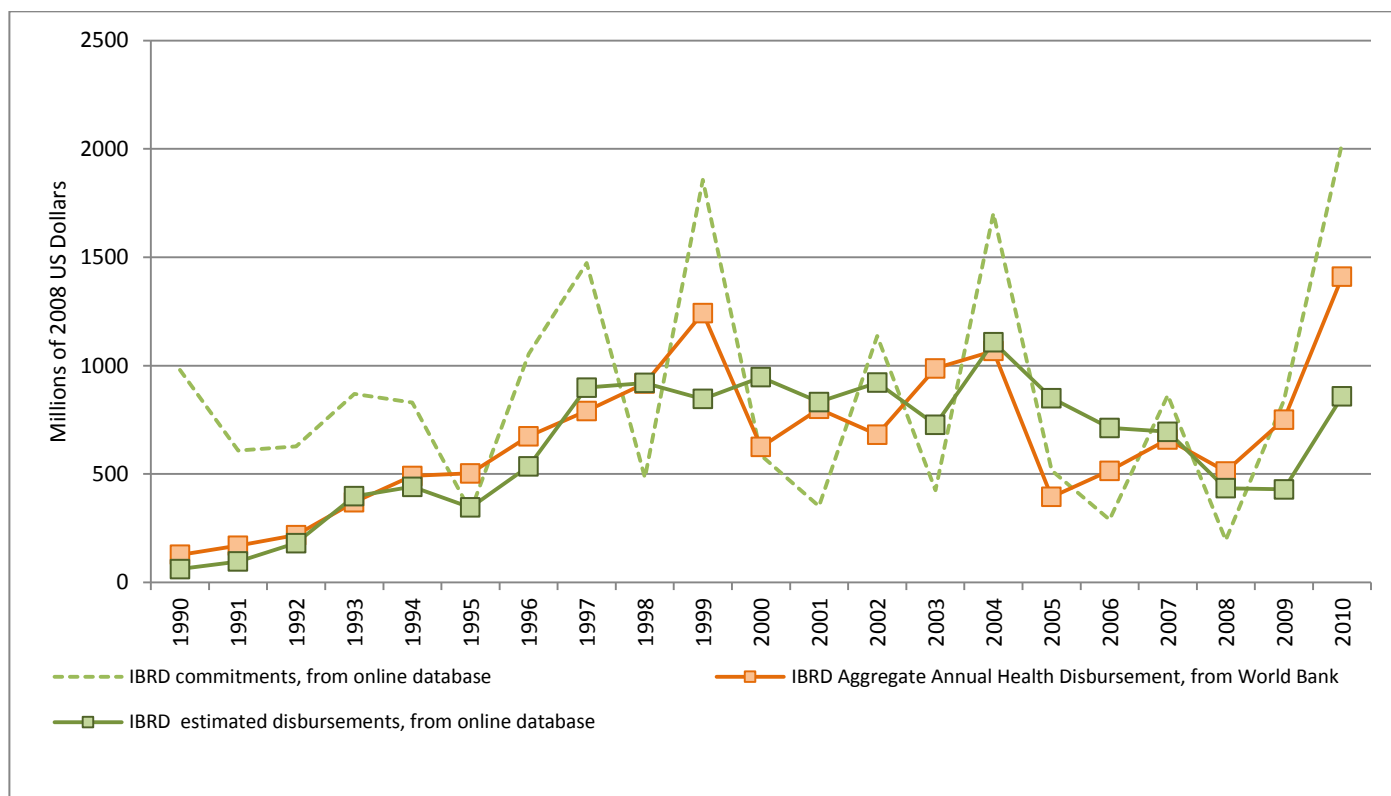
Source: IHME DAH Database 2010 and correspondence with World Bank

**Figure 2.2**  
**IDA's estimated commitments and disbursements**



Source: IHME DAH Database 2010 and correspondence with World Bank

**Figure 2.2**  
**IBRD's estimated commitments and disbursements**



Source: IHME DAH Database 2010 and correspondence with World Bank

**Table 2.3**  
**Summary of data sources for the regional development banks**

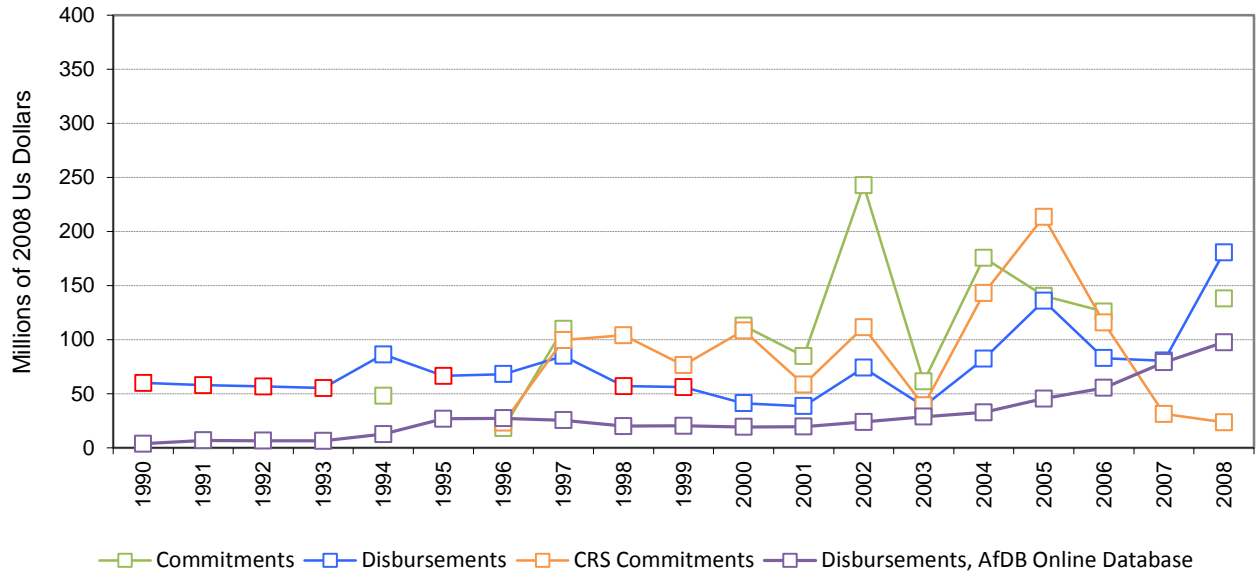
Institution	Data source	Commitments	Cumulative disbursements	Yearly disbursements	Notes
African Development Bank	Compendium of Statistics	X	-	X (Aggregate - not at the project level)	The compendium of statistics was not available for 1990-1993, 1995, and 1998-1999; we estimated yearly disbursements using the average of neighboring disbursements.
	Online Projects Database	X	-	-	As yearly disbursement amounts are not provided in the online database, we estimated yearly disbursements by uniformly allocating commitments over each year of the project.

	OECD - Creditor Reporting System	X	-	-	
Asian Development Bank	Online Projects Database	X	-	-	As yearly disbursement amounts are not provided in the online database, we estimated yearly disbursements by uniformly allocating commitments over each year of the project.
	OECD - Creditor Reporting System	X	-	-	
Inter-American Development Bank	Online Projects Database	X	X	-	As yearly disbursement amounts are not provided in the online database, we estimated yearly disbursements by uniformly allocating cumulative disbursements over each year of the project.
	OECD - Creditor Reporting System	X	-	-	

**Figure 2.4**

**Commitments and disbursements by AfDB**

The green lines show data from AfDB’s compendium of statistics, while commitment data from the CRS are shown in orange. The red squares correspond to years in which disbursement data from the compendium of statistics were missing and were estimated from neighboring values. The purple line shows the online project database. A combination of compendium of statistics and online project database was used in the DAH estimates.

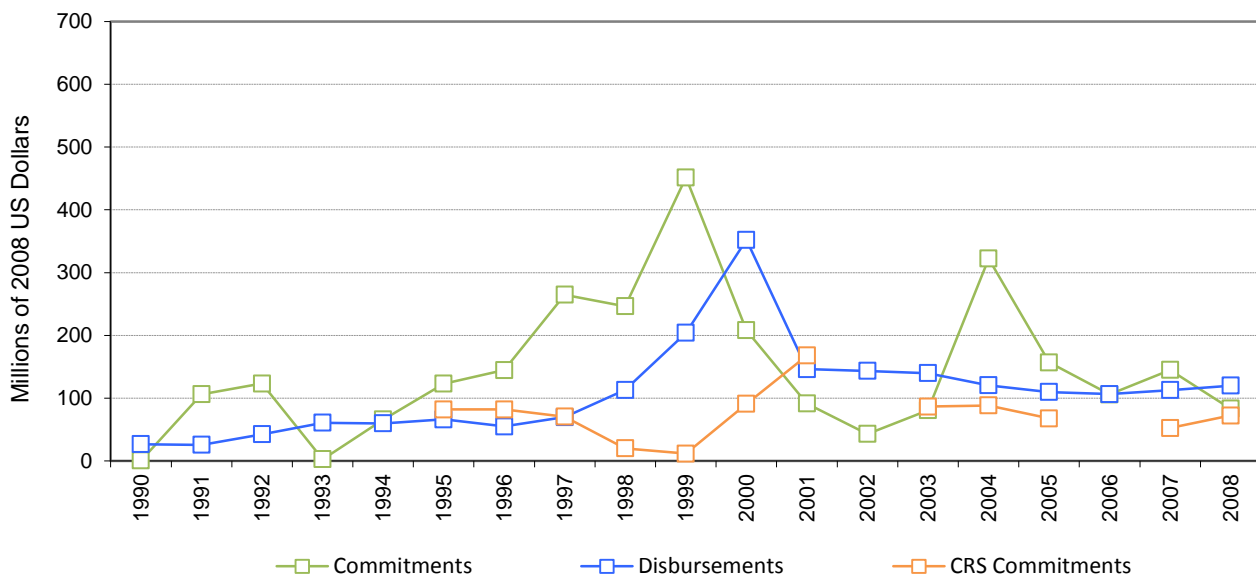


Source: IHME DAH Database (2010) and OECD-CRS

**Figure 2.5**

**Commitments and disbursements by ADB**

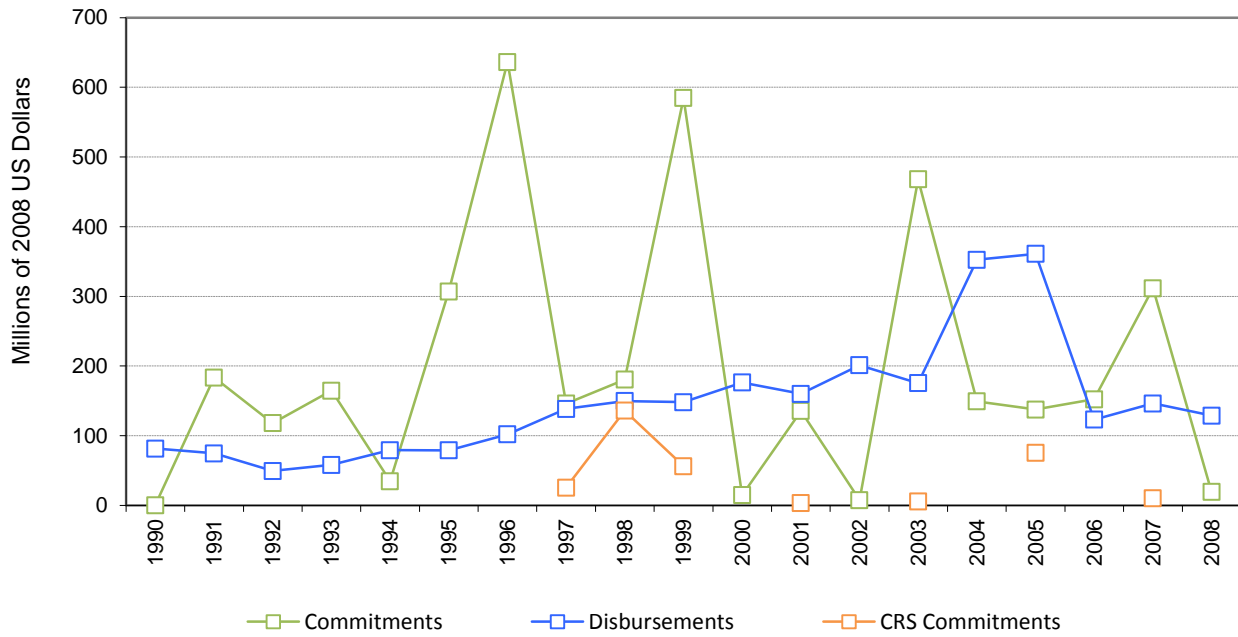
Disbursement data from ADB’s project database, shown here in blue, were the basis for our DAH estimates.



Source: IHME DAH Database (2010) and OECD-CRS

**Figure 2.6**  
**Commitments and disbursements by IDB**

Disbursement data from IDB's project database, shown here in blue, were the basis for our DAH estimate.



Source: IHME DAH Database (2010) and OECD-CRS

Part 3:

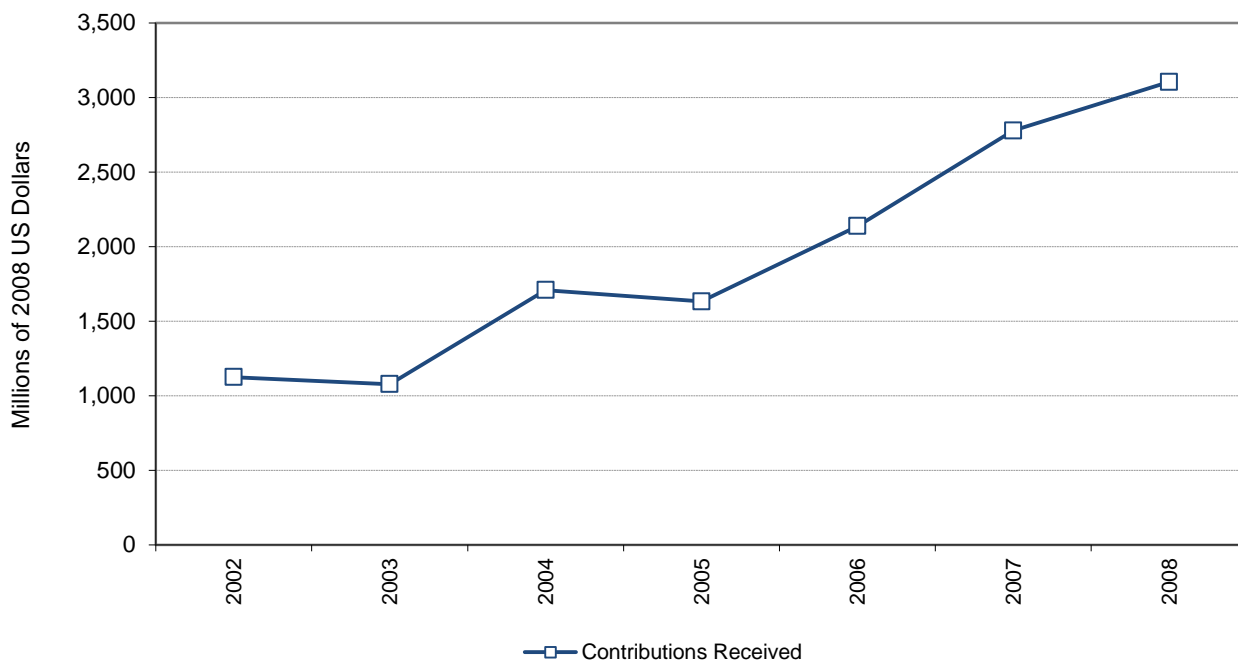
## TRACKING CONTRIBUTIONS FROM GFATM AND GAVI

### GFATM

The grants database made available online by GFATM provides grant-wise commitments and annual disbursements.<sup>22</sup> In addition, we used the contributions dataset that can also be found on the GFATM website to compile data on the source of funding for GFATM.<sup>23</sup> Finally, we extracted information on annual income and expenditure from GFATM’s audited financial statements.

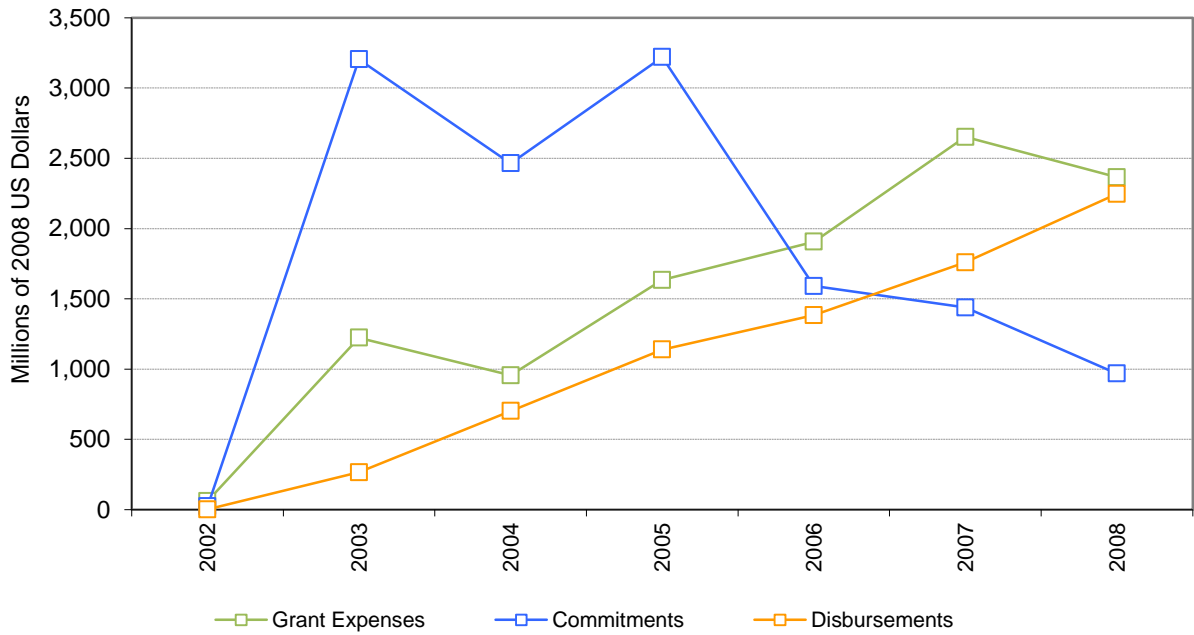
Figure 3.1 shows GFATM’s annual contributions received from public and private sources. Figure 3.2 shows GFATM’s annual commitments and disbursements from its project database and total grant expenses reported by GFATM in its financial statements. Grant expenses, shown in the graph in green, include both grants disbursed in that year as well as movements in undisbursed grants (which represent the portion of approved grants that had not been disbursed as of the date of the financial statement). Due to the accrual basis of accounting, grant expenses are consistently higher than actual grants disbursed during the year, shown in orange in the graph, which is the quantity we counted toward DAH. Refer to Part 7 for details on how we estimated the cost of providing technical assistance and program support for GFATM.

**Figure 3.1**  
**Contributions received by GFATM**



Source: GFATM pledges and contributions

**Figure 3.2**  
**GFATM's commitments, disbursements, and grant expenses**



Source: IHME DAH Database 2010

### GAVI

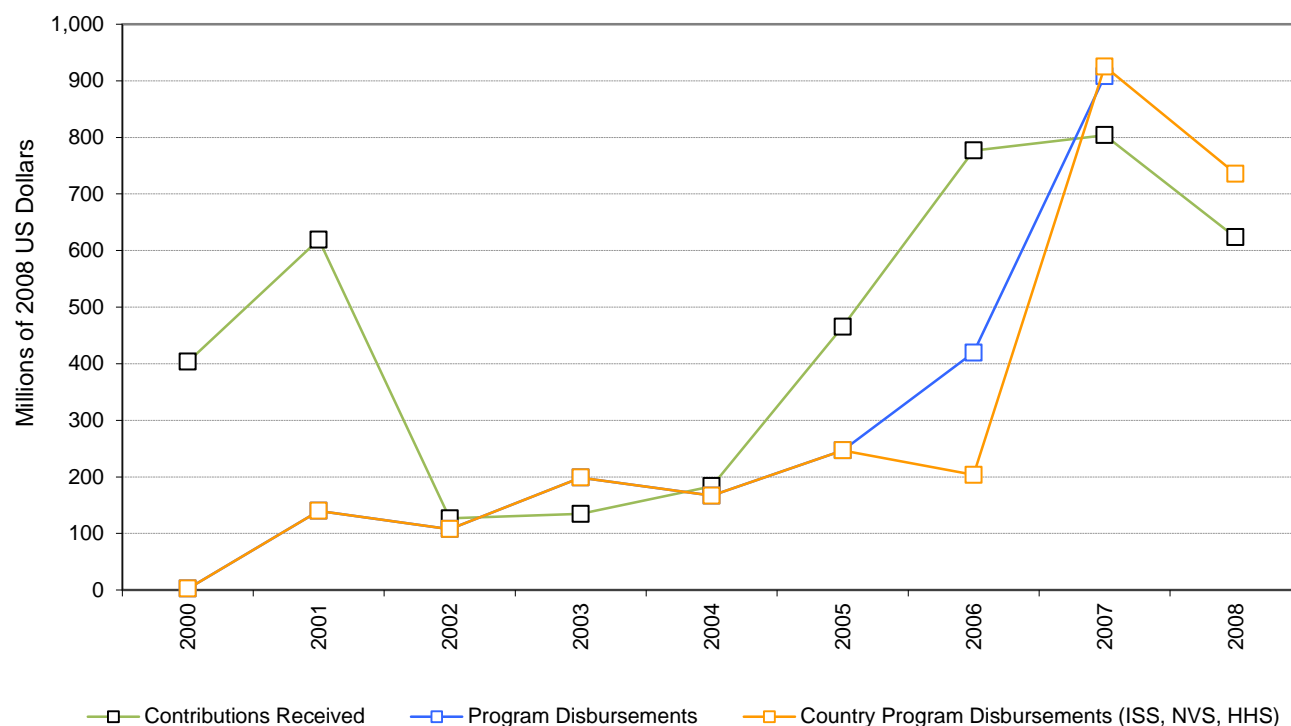
From GAVI's annual report in 2007, we drew its program disbursements for every year since 2000.<sup>19</sup> GAVI provides data on contributions received from different sources on its website.<sup>21</sup> The country fact sheets<sup>20</sup> provided on the website also report GAVI's disbursements for each recipient country; however, the transfers are shown graphically, and the underlying data were not provided. From 2000 to 2005, we were able to obtain the underlying data from GAVI upon request. For 2006, we constructed estimates of country-wise GAVI disbursements from the graphs contained in the country fact sheets. For 2007 and 2008, we were able to obtain the underlying data from the CRS.<sup>6</sup> There are differences in the accounting method (cash versus accrual) among these various sources, complicating the assessment. The different data sources for GAVI are summarized in Table 3.1.



**Figure 3.3**

**GAVI's income and disbursements**

Contributions received by GAVI, its country disbursements, and its total program disbursements are shown. Country program disbursements from 2007 and 2008 are derived from the CRS.



Source: IHME DAH Database 2010, GAVI Alliance Progress Report

**Table 3.1**  
**Summary of data sources for GAVI**

Source document/ database	Contributions by donor	Expenditure	Disbursements	Notes/ modification to data
Annual progress reports	–	X	X	
Contributions data available on GAVI website	X	–	–	
Country fact sheets on GAVI website	–	–	X	Disbursements are only shown graphically. Our annual estimates are based on the underlying data, provided upon request.
Country reports on GAVI website	–	–	X	Disbursements reported in dollars for Immunization Support Services; for new and underused vaccine support, the number of vaccine doses delivered is reported.

Financial statements	–	<b>X</b>	–	–
OECD Creditor Reporting System (CRS)	–	–	<b>X</b>	Disbursements reported to OECD-CRS began in 2007

GAVI’s income from contributions and disbursements is shown in Figure 3.3. Total program disbursements, shown in blue, were the same as country program disbursements until 2005. Since then, using funds made available through IFFIm, GAVI has scaled up support to GAVI partners (for new initiatives such as Global Polio Eradication and Measles) and funds for Pentavalent vaccine procurement. We believe that this explains the gap between total program expenditure and country-based expenditure in 2006. This gap was greatly reduced in 2007. This is due to the fact that the 2007 data reported by GAVI to the CRS seem to be more comprehensive than the data we used to approximate 2006 country disbursements (derived from country fact sheets). We were unable to obtain total program expenditure for 2008.

### Preliminary estimates for GFATM and GAVI

For GFATM, we used total program pledges to estimate DAH for 2009-2010. We regressed the disbursement series for all available years (1990-2008) on pledges, using a linear model. We then used the regression coefficients and observed pledge data to predict DAH for 2009-2010. A one-year lagged budget model was chosen based not only on model fit, but more importantly, on validity and consistency between trends in recent years’ DAH and 2009-2010 trends.

We did not model preliminary estimates of 2009-2010 DAH for GAVI, as we were able to obtain expected 2009-2010 expenditure through correspondence. Refer to Part 7 for details on how we estimated the cost of providing technical assistance and program support for GAVI.

## Part 4:

# TRACKING EXPENDITURE BY UN AGENCIES ACTIVE IN THE HEALTH DOMAIN

For the purposes of this research, we collected data on income and expenditures for five UN agencies: WHO, UNICEF, UNFPA, UNAIDS, and PAHO. The data sources and calculations for each are described in detail below.

## WHO

We used annual reports and audited financial statements released by WHO to compile data on its budgetary and extrabudgetary income and expenditure.<sup>13</sup> Specifically, we extracted data on its assessed and voluntary contributions on the income side and both budgetary and extrabudgetary spending on the expenditure side from these documents. As the financial statements represent activities over a two-year period, both income and expenditure data were divided by two to approximate yearly amounts. Dollars were deflated using the US GDP deflator specific to the reporting year. We excluded expenditures from trust funds, regional offices tracked separately, and associated entities not part of WHO's program of activities, such as UNAIDS and GFATM trust funds. We also excluded expenditures from supply services funds as these expenditures pertain to services provided by WHO but paid for by recipient countries.

## UNFPA

We extracted data on income and expenditure for UNFPA from its audited financial statements.<sup>11</sup> As these statements represent activities over a two-year period, income and expenditure data were divided by two to approximate yearly amounts. Dollars were deflated using the US GDP deflator specific to the reporting year. The only exceptions to this rule were 2006, 2007, and 2008, for which annual data were available. We excluded income and expenditures associated with procurement and cost-sharing activities from our estimates of health assistance. UNFPA uses cost-sharing accounts when a donor contributes to UNFPA for a project to be conducted in the donor's own country. Since this money can be considered domestic spending that goes through UNFPA before being returned to the country in the form of a UNFPA program, we do not include it in our totals. UNFPA's additional expenditures for these projects come from trust funds or regular resources and are therefore captured in our estimates. By excluding cost-sharing expenditures, we exclude only the amount spent on UNFPA projects that originally came from the recipient country. Income and expenditure for procurement services relate to services provided by UNFPA and WHO but paid for by recipient countries, and hence are excluded from our totals.

## UNICEF

We extracted data on income and expenditure for UNICEF from its audited financial statements.<sup>9,10</sup> As these statements represent activities over a two-year period, income and expenditure data were divided by two to approximate yearly amounts. Dollars were deflated using the US GDP deflator specific to the reporting year.

Since UNICEF's activities are not limited to the health sector, we attempted to estimate the fraction of UNICEF's expenditure that was for health. UNICEF's annual reports in the early 1990s reported this number, but reporting categories changed over time, making it difficult to arrive at consistent estimates of health expenditure. For the years 2001 onward, we received health expenditure data from UNICEF directly.

We calculated the average fraction of expenditure for health for regular and supplementary funds from the most recent five years of these data and applied them to the expenditure reported in the financial reports for those years where health expenditure data were missing. In those years, we assumed that, on average, 13% of regular funds and 32% of extrabudgetary funds were utilized for health.

## UNAIDS

UNAIDS income and expenditure data for both its core and noncore budgets were extracted from its audited financial statements.<sup>8</sup> As financial data are provided on a biennium basis, we divided the quantities by two to obtain yearly amounts. Dollars were deflated using the US GDP deflator specific to the reporting year.

## PAHO

The Pan American Regional Office for WHO, PAHO, reports its income and expenditure in its biennial financial report.<sup>12</sup> Correspondence with WHO revealed that it reports only a small subset of the overall funds received by PAHO. According to the financial reports, WHO funds made up 12% and 11% of PAHO's total expenditures in the 2006-2007 and 2008-2009 bienniums. We excluded the funds transferred through the "Rotating Fund" as developing countries fund this procurement of health commodities, and it therefore does not fit our definition of DAH.

As the financial data are provided on a biennium basis, we divided the quantities by two to obtain yearly amounts. Dollars were deflated using the US GDP deflator specific to the reporting year.

## Preliminary estimates for UN agencies

Similar to the bilateral channels, we extracted budget measures for the UN agencies. Model choice and budget measures for UN agencies are presented in Table 1.2. For WHO and UNICEF, the budget measures were consistent with estimated disbursement sequences. Thus, we regressed disbursements (1990-2008 for WHO, 1990-2009 for UNICEF) on budget measures using a natural-log transformed linear model. We then used the regression coefficients and observed budget data to predict DAH for unknown years. Again, preliminary estimates were chosen based not only on model fit, but more importantly, on consistency and validity of estimates relative to recent trends in DAH. Since we received data directly from UNICEF for 2001 to 2009, we used these numbers to maintain consistency. Despite having 2009 expenditure data for WHO, we were unable to eliminate double-counting from this figure due to missing data on transfers from other channels of assistance. For this reason, we did not use the 2009 WHO expenditure data from the financial report and instead chose to model this estimate as we believe that this method would more closely represent DAH adjusted for double-counting.

For UNAIDS and PAHO, budget measures were available only for a subset of reported total disbursements. UNAIDS reports total expenditure, combining Unified Budget and Workplan (UBW) and non-UBW components, but only UBW budget data were available. PAHO reports disaggregated expenditures of voluntary and regular programs, but only regular budget data were available. Thus, a two-stage model was required to first impute unavailable budget measures, which were then used to estimate DAH in 2009-2010. Similar to our approach to WHO, we did not use 2009 expenditure data from UNAIDS and PAHO and instead chose to model DAH for those years.

To impute the UNAIDS budget, we assumed the income ratio of UBW to non-UBW approximated the ratio of UBW to non-UBW budget. Thus, we applied this UBW / non-UBW income ratio to the UBW budget to impute the non-UBW budget. For PAHO, we used a LOESS time-smoothing model to estimate the voluntary budget in 2010, as income data were not available. We then regressed disbursements for all available years (1990-2008 for UNAIDS, 1990-2009 for PAHO) on imputed total budgets, again using a natural-log transformed linear model. We used the regression coefficients and imputed budget data to predict DAH for missing years. Preliminary estimates were chosen based on consistency and validity of estimates relative to recent trends in DAH.

We did not model preliminary estimates of 2009-2010 DAH for UNFPA, as we were able to obtain actual and expected expenditures through correspondence for 2009 and 2010, respectively.

## Part 5:

# TRACKING DEVELOPMENT ASSISTANCE FOR HEALTH FROM PRIVATE FOUNDATIONS

Previous studies on foundations outside the US have documented the severe paucity of reliable time series data and lack of comparability across countries.<sup>63</sup> Hence, we focused our research efforts on tracking US foundations. The Wellcome Trust, a foundation based in the United Kingdom, is reputed to be the single largest non-US foundation active in the area of health. However, since the Wellcome Trust is principally a source of funding for technology, including drugs and vaccine research and development, it does not meet our definition of a channel of development assistance. Other studies have estimated that the amount of resources contributed by non-US foundations for global health is small in comparison to resources from US-based foundations.<sup>64</sup> Therefore, we do not think excluding them significantly impacts the overall estimate of health aid. In future years, we hope to find better sources of data for tracking the contributions of non-US foundations.

The Foundation Center maintains a database of all grants of US \$10,000 or more awarded by over 1,000 US foundations.<sup>31</sup> The Foundation Center codes each grant by sector and international focus and, therefore, is able to identify global health grants regardless of whether the principal recipient was located in the US or in developing countries. We received a customized data feed from the Foundation Center with estimates of total international health grant-making for each year from 1990 to 2004.<sup>31</sup> We obtained data on the top 50 US foundations giving to international health and total US foundation grants for international health for years 2005 to 2008 from the Foundation Center's website.<sup>31</sup>

BMGF has been the single most important and influential grant-making institution in the health domain since 2000; hence, we undertook additional research to accurately capture its annual disbursements, described below. We used the estimate provided by the Foundation Center for all remaining US foundations. One limitation of using the Foundation Center's database is that it does not distinguish between commitments and disbursements. Thus, the total grant-making figure for US foundations, except BMGF, derived from these data is not a precise estimate of total disbursements by these foundations. However, since the Foundation Center draws most of its data from tax filings with the US Internal Revenue Service (IRS), it is likely to capture disbursement figures for most foundations.

We collected BMGF's IRS 990PF filings, which reports all global health grants disbursed for years 1990-2007, and obtained actual disbursement data via correspondence for years 2008 and 2009 and anticipated disbursement data for 2010.<sup>30</sup> We also collected information on annual commitments from BMGF's online grants database for the years 1990-2007 and through correspondence for years 2008 and 2009.<sup>65</sup> We then manually coded all BMGF grants disbursed by recipient type, distinguishing between awards to other foundations, NGOs, universities and research institutions, UN agencies, public-private partnerships, and governments.

Refer to Part 7 for details on how we estimated the cost of providing technical assistance and program support for US foundations.

## Preliminary estimates for private foundations

For private foundations, we estimated DAH in 2009-2010 using percent changes in aggregate foundation total assets, as budget data for individual foundations were unavailable. At the time of analysis, total assets from the Foundation Center were available only until 2009, and thus we estimated assets in 2010. We assumed that economic trends in both the public and private sectors would predict foundation funding and assets. Thus, we regressed aggregate foundation total assets on US GDP per capita and the S&P 500 market close index, using a natural-log transformed linear model. The model specification is as follows:

$$LN(\text{Foundation total assets}_t) = \beta_1 LN(\text{US GDP per capita}_t) + \beta_2 LN(\text{S\&P 500 market index}_t) + \varepsilon$$

We then used the regression coefficients from the above model and observed market data to predict total foundation assets in 2010. Regressing DAH on total assets, similar to previous channels, produced implausible preliminary estimates of DAH for 2009-2010. As an alternative, we assumed percent changes in total assets would approximately reflect percent changes in DAH. Therefore, we calculated annual percent changes in observed assets from 2008-2009 and estimated assets from 2009-2010. Finally, we applied these yearly percent changes to observed foundation DAH in 2008 to produce estimates of DAH for 2009-2010.

## Part 6:

# TRACKING NON-GOVERNMENTAL ORGANIZATIONS

Currently, there is no centralized, easily accessible database for tracking the program expenses of the thousands of NGOs based in high-income countries that are active in providing development assistance and humanitarian relief worldwide. For this study, we relied on the only comprehensive data source we could identify for a large subset of these NGOs, namely the VolAG report<sup>24</sup> issued by USAID. The report, which includes NGOs incorporated in the US that received funding from the US government, provides data on domestic and overseas expenditures for these NGOs, as well as their revenue from US and other public sources, from private contributions, and from in-kind donations. In addition, this update includes total revenue and expenditure data obtained from 2008 NGO IRS tax forms through the GuideStar online database.<sup>25</sup> Unfortunately, more detailed revenue data for 2008 were not available at the time of analysis, and thus modified methods were required to estimate DAH in 2008.

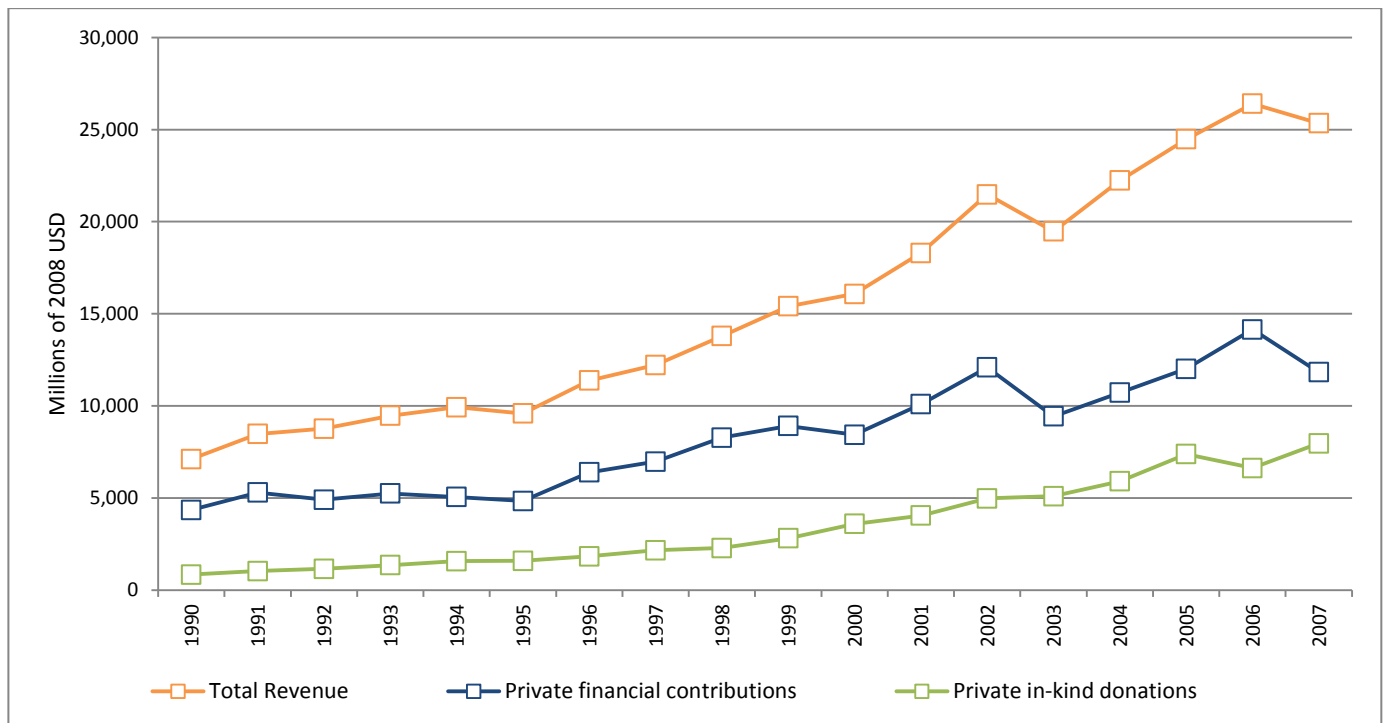
We encountered three challenges in using these data. First, with the exception of BMGF, we were unable to track the amount of funding from US foundations routed through US NGOs, and that may have led to double-counting in our estimates of total health aid. The second relates to the incompleteness of the universe of NGOs captured through the USAID report. The report provides data on NGOs registered in the US that received funding from the US government. While this covers many of the largest US-based NGOs, it is not a comprehensive list. A related problem is that the report only includes NGOs that received funds in a given year. While many of the largest NGOs are consistently funded by the US government and are therefore in the report every year, not all NGOs have data every year. Finally, its coverage of NGOs registered in other donor countries only began in 1998. We attempted to compile data on the health expenditures of the top non-US NGOs in terms of overseas expenditure by searching their websites for financial documents and contacting them directly. Getting reliable time series data before 2000 proved to be extremely difficult for even this small sample of non-US NGOs. Consequently, only NGOs registered in the US for which data were available in the USAID VolAg reports from 1990 to 2007 are included in this study. Since USAID VolAG data for 2008 were unavailable while we were conducting our analysis, we implemented revised methods to impute missing NGO-year data and estimate DAH in 2008, concurrent with methods used to estimate DAH for 2009-2010.

**Table 6.1**  
**Summary of US NGOs in the study**

Year	Number of US NGOs in VolAG report	Number of US NGOs in IHME sample	Number of US NGOs from sample for which we found data on health expenditures
1990	267	16	12
1991	334	19	15
1992	385	18	15
1993	411	17	13
1994	424	17	11
1995	416	16	12
1996	423	21	14
1997	425	23	18
1998	435	24	22
1999	438	32	28
2000	433	32	28
2001	442	30	26
2002	486	30	27

2003	507	40	32
2004	508	43	33
2005	494	40	34
2006	536	50	38
2007	555	43	35

**Figure 6.1**  
**Total revenue received by US NGOs**

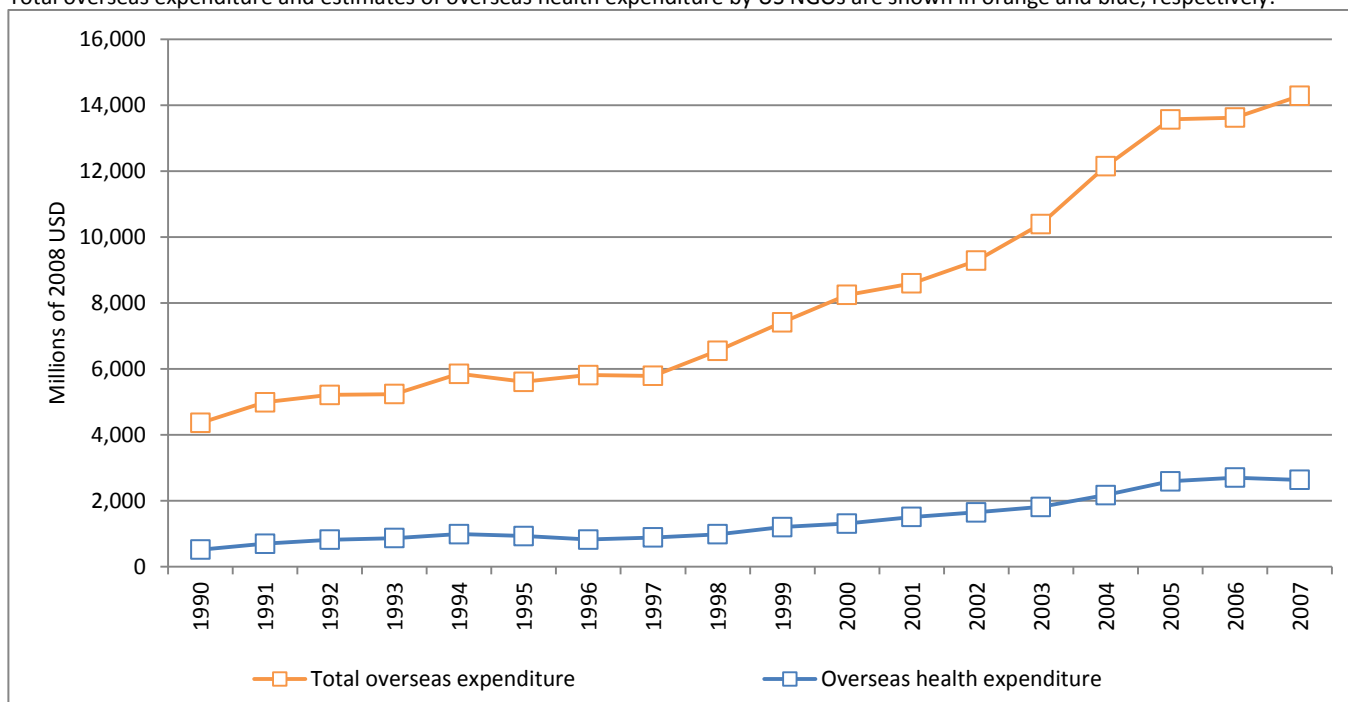


Source: IHME DAH (NGOs) Database 2010



**Figure 6.2**  
**Expenditure by US NGOs**

Total overseas expenditure and estimates of overseas health expenditure by US NGOs are shown in orange and blue, respectively.



Source: IHME DAH (NGOs) Database 2010

While we hope to find data on non-US NGOs in future years, we do not think their exclusion from this study is a source of bias for the following reasons. First, many of the top non-US NGOs have US-based chapters that are registered in the US and with USAID, and are therefore covered by the USAID VolAg reports.<sup>24</sup> For example, Save the Children and International Planned Parenthood Federation both have arms registered in the US and receive funds from the US government. Second, the health expenditure numbers we were able to collect for the top non-US NGOs from 2000 onward suggest that they still account for a relatively small amount of development assistance in comparison to US-based NGOs; the top 10 non-US NGOs (Marie Stopes International, International Planned Parenthood Federation, Medical Emergency Relief International, International Union Against Tuberculosis and Lung Disease, GOAL, Save the Children UK, ActionAid International, Norwegian People’s Aid, Kindernothilfe e.V., and German Agro Action) accounted for \$417.20 million in overseas health expenditure in 2007, while the top 10 US-based NGOs accounted for \$2.64 billion (adjusted overseas health expenditure) in the same year. This comparison does not account for private in-kind adjustments for international NGOs due to lack of information on valuation of private in-kind donations and tax regulations outside of the US.

The third challenge in using the data from the USAID VolAG reports for this study relates to the fact that the reports do not break down overseas expenditure by sector. Collecting financial data on health expenditures for each NGO would have been prohibitively time consuming. Therefore, a sample of NGOs was drawn from the list each year; the sample included the top 10 NGOs in terms of overseas expenditure as well as additional top NGOs depending on data availability and 10 randomly selected NGOs from the remaining pool, with the probability of being selected set proportional to their overseas expenditure. Next, we collected health expenditure data for each NGO in our sample using annual reports, audited financial statements, 990 tax forms, websites, and personal communications. Health expenditure was carefully reviewed to ensure that expenditures on food aid, food security, disaster relief, and water and sanitation projects were not included. Table 6.1 summarizes the number of NGOs included each year in the USAID report, the number of NGOs in our sample from each year, and the number of NGOs for which we successfully found health expenditure data.

We fit a linear regression model for predicting health expenditure as a fraction of total expenditure using the data in the sample and used it to predict health fractions for the remaining NGOs. Since several NGOs in the sample were observed for multiple years, we included random effects for each NGO. Variables used to predict the health fraction were the fraction of revenue from in-kind donations, fraction of revenue from the US government, fraction of revenue from private financial contributions, overseas expenditure as a fraction of total expenditure, calendar year, and receipt of US government food aid. All these variables were drawn from the USAID reports. To ensure that the predicted health fractions were bounded between zero and 1, we used the logit-transformed health fraction as the dependent variable. As detailed revenue variables used to predict the health fraction were not available for 2008 from the USAID VolAg reports, we used the mean of 2003-2007 fractions to estimate overseas health expenditures for 2008, assuming trends in health spending for each NGO were relatively consistent in the most recent five years. In addition, 2008 expenditures financed from US public sources and non-US public sources were estimated separately to allow for plausible preliminary estimates of DAH from 2008-2010, detailed in the section below.

Overseas health expenditure was calculated for individual NGOs in each year by multiplying the health fraction and total overseas expenditure. Expenditures financed from specific revenue sources were then calculated by multiplying overseas health expenditure by NGO-specific revenue fractions. As a revision to previous estimates, expenditures from in-kind sources were deflated by a constant fraction. This was determined by comparing the federal upper limit and average wholesale price valuations of drugs on the WHO's Model List of Essential Medicines<sup>27</sup> from the RED BOOK Expanded Database.<sup>26</sup> Figure 6.1 shows the income of the NGOs in the universe of NGOs that we tracked in this study. Figure 6.2 shows estimated overseas health expenditure for these from 1990 to 2008 in constant 2008 US dollars.

### Preliminary estimates for NGOs

Modeling preliminary estimates of 2009-2010 DAH for NGOs required multiple components and methods to produce consistent and plausible trends in NGO overseas health expenditures, given data availability. Based on the assumption that NGO financing from US public sources would be differentially affected by the economic downturn than other sources, we chose to model NGO expenditures financed by US public sources and non-US sources separately.

For the US public component, we assumed that NGO financing and expenditures from US public sources would follow economic trends. Thus, we regressed observed aggregate NGO overseas health expenditures from US public sources for 1990-2007 on US GDP per capita and US bilateral aid per capita, using a natural-log transformed linear model. We were able to obtain a sample of 2008 expenditure data from GuideStar, which compiles NGO tax returns. However, as this sample was incomplete, we decided to also estimate aggregate NGO overseas health expenditures from US public sources in 2008. The model specification is as follows:

$$\begin{aligned} &LN(\text{NGO overseas health expenditures from US public sources}_t) \\ &= \beta_1 LN(\text{US GDP per capita}_t) + \beta_2 LN(\text{US bilateral aid per capita}_t) + \varepsilon \end{aligned}$$

We then used the regression coefficients and observed market data to estimate aggregate NGO overseas health expenditures from US public sources for 2008-2010. Preliminary estimates using the same model at the individual NGO level were implausibly high, and therefore aggregate expenditures were used instead.

In order to estimate NGO overseas health expenditures from non-US sources, we implemented a random effect model to impute missing NGO-year observations, assuming that NGOs that reported disbursements in the USAID VolAg data from 2006-2007 continued to disburse throughout 2008-2010. Unlike the US public component, we were able to use the incomplete observed 2008 expenditures from GuideStar, as missing NGOs in 2008 were imputed accordingly in this model. Assuming that NGO financing from other sources would also follow market trends, we regressed observed NGO overseas health expenditures from non-US sources on US GDP per capita and US bilateral aid per capita, using a natural-log transformed linear model. To account for systematic variation in expenditures among NGOs and across years, we included random effects on NGO ( $\gamma_i$ ) and year ( $\gamma_t$ ) separately. The model specification is as follows:

$$\begin{aligned} &LN(\text{NGO overseas health expenditures from nonUS sources}_{it}) \\ &= \beta_1 LN(\text{US GDP per capita}_t) + \beta_2 LN(\text{US bilateral aid per capita}) + \gamma_i + \gamma_t + \varepsilon \end{aligned}$$

We then used the regression coefficients, NGO and year random effect estimates, and observed market data to estimate individual NGO overseas health expenditures from non-US sources for 2008-2010. Further breakdowns of expenditures by more specific non-US financing sources were calculated by multiplying total expenditures from non-US sources by specific revenue fractions (non-US public, private other, in-kind, and BMGF). As detailed revenue data and fractions were not available for 2008-2010, we used the mean of the revenue fractions of the most recent five years (2003-2007). Finally, we combined estimates of expenditures financed by US public and non-US public sources to form preliminary estimates of NGO total overseas health expenditures by year.

## Part 7:

# CALCULATING THE TECHNICAL ASSISTANCE AND PROGRAM SUPPORT COMPONENT OF DAH FROM LOAN- AND GRANT-MAKING CHANNELS OF ASSISTANCE

We used the following methods to estimate the costs incurred by loan- and grant-making institutions for administering and supporting health sector loans and grants, which includes costs related to staffing and program management.

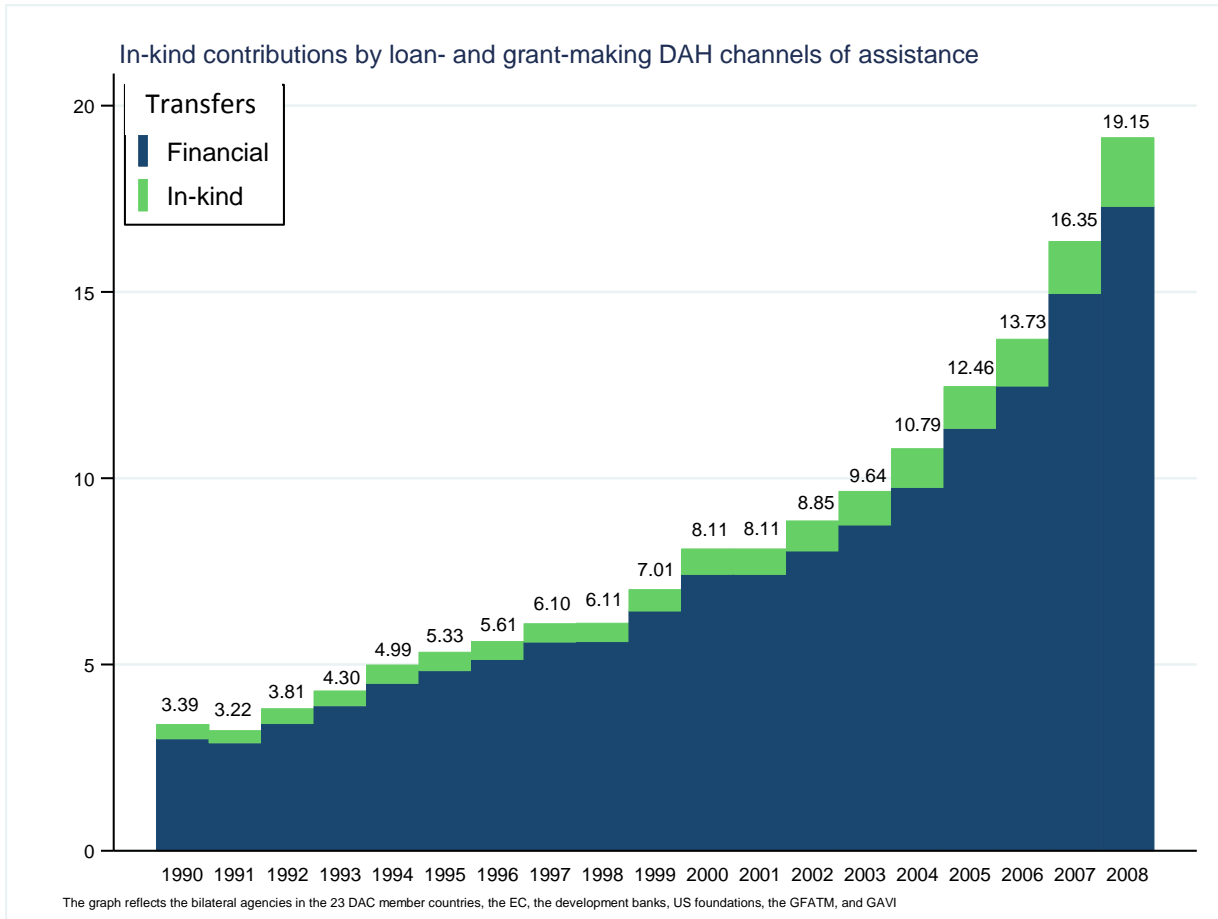
We collected data on the total administrative costs for a subset of institutions in our universe for which these data were readily available: IDA, IBRD, BMGF, GFATM, GAVI, USAID, and the UK Department for International Development (DFID). The sources of data for the institutions in our sample are summarized in Table 7.1. For each of them, we calculated the ratio of total administrative costs to total grants and loans by year. We assumed that the percentage of operating and administrative costs devoted to health would be equal to the percentage of grants and loans that were for health. In other words, if 20% of a foundation's grants were for health, we assumed that 20% of administrative costs of the foundation were spent on facilitating these health grants. Given this assumption, we used the observed administrative costs to grants/loans ratios to estimate the in-kind contribution made by each of these organizations toward maintaining their health grants and loans. For the institutions not in this sample, we used the ratio from the institution most similar to it to arrive at an estimate of in-kind contributions.

We used the average ratio observed for IDA and IBRD for all other development banks; the average of the ratios for BMGF for all other US foundations; the average ratio for DFID from 2002 to 2006 to calculate the in-kind component for DFID in other years; and the average ratio for USAID and DFID for all other bilateral agencies and the EC. Total in-kind contributions from all grant- and loan-making global health institutions are shown in Figure 7.1. It shows that the in-kind contributions by these channels ranged from 8.1% to 12.0% of the financial transfers between 1990 and 2008. These data mask considerable variation across institutions in the ratio of staffing and administrative costs to loans and grants extended in a year. At the high end, the ratio for USAID was on average 0.17 over the study period, while the comparable ratio for IBRD was 0.07 over the same time span.

**Table 7.1**  
**Summary of data sources for calculating in-kind contributions**

<b>Organization</b>	<b>Source</b>	<b>Notes</b>
BMGF	990 tax returns	Used "cash basis" column to calculate ratio of total operating and administrative expenses to grants paid.
GFATM	Annual report financial statements	Calculated ratio of operating expenses to grants disbursed.
GAVI	Annual report financial statements	Calculated ratio of management, general, and fundraising expenses to program expenses.
USAID	US government budget database	Used outlays spreadsheet to calculate ratio of total outlays for USAID operating account to sum of outlays for bilateral accounts.
DFID	Annual report expense summary	Calculated ratio of DFID's administration expenses to DFID's bilateral program expenses from 2002 onward.
IDA	World Bank audited financial statements	Calculated ratio of management fee charged by IBRD to development credit disbursements.
IBRD	World Bank audited financial statements	Calculated ratio of administrative expenses to loan disbursements.

**Figure 7.1**  
**In-kind contributions by loan- and grant-making DAH channels of assistance**



Source: IHME DAH Database 2010

Note: in-kind contributions not shown for 2009 and 2010 due to data limitations

## Part 8:

# KEYWORD SEARCHES

To identify health aid for HIV/AIDS; tuberculosis; malaria; health sector support; maternal, newborn, and child health; and noncommunicable diseases, we searched for keywords associated with each in descriptive fields of our IHME DAH Database (Country and Regional Recipient Level), as shown in Table 8.1. This includes a subset of global health channels for which information on country and/or regional allocation was available, namely the bilateral development assistance agencies from the 23 DAC member countries, the EC, GFATM, GAVI, the World Bank, ADB, IDB, AfDB, and BMGF. When a project was matched to two or more areas, the dollar value of the grant was divided evenly across the matched areas.

**Table 8.1**  
**Terms for keyword searches**

Project type	Search terms
HIV	HIV, HIV/AIDS, H.I.V., AIDS, human immunodeficiency virus, reverse transcriptase inhibitor, acquired immune deficiency syndrome, retroviral
Tuberculosis	TB, tuberculosis, anitubercular, tuberculostatic, DOTS, directly observed treatment, mycobacterium tuberculosis, XDR-TB, MDR-TB, rifampicin, isoniazid
Malaria	Malaria, paludisme, plasmodium falciparum, anopheles, bed nets, insecticide, artemisinin, indoor residual spraying
Health sector support	SWAP, sector wide approach in health, sector programme, sector program, budget support
Maternal, newborn, and child health	Antenatal, prenatal, maternal health, sante maternelle, maternal mortality, mortalite maternelle, maternal death, deces maternel, perinatal, neonatal, safe motherhood, antenatal care, soins prenataux, skilled birth attendant, sba, accoucheur qualifie, personnel de sante qualifie, vaccination, emergency obstetric care, soins obstetriques essentiels, soins obstetriques d'urgence, reproductive health, sante genesique, child health, newborn health, sante du nouveau-ne, mortalite infantile, sante de l'enfant, child mortality, mortalite des enfants, vitamin a, vitamine a, infant mortality, "maternal, newborn & child health", "sante de la mere, du nouveau-ne et de l'enfant", family planning, planification familiale, planning familial, postpartum, under-five mortality, mortalite des moins de cinq ans, sante reproductive, child survival, maternal and infant health, integrated management of childhood illness
Noncommunicable diseases	Cancer, chemotherapy, radiation, neoplasm, neoplasia, tumor, diabetes, diabetic, insulin, endocrine, mental health, behavioral, rheumatic, rheumatism, ischaemic, ischemic, circulatory, cerebrovascular, cirrhosis, digestive disease, other digestive, genitourinary, musculoskeletal, congenital, alcohol, alcoholism, addiction, tobacco, smoking, smokers, obesity, overweight, schizophrenia, neurotic, neurosis, psychological, psychology, psychiatric, emotional, ptsd, post-traumatic, glaucoma, hypertensive, hypertension, hernia, arthritis, cleft lip, cleft palate, phenylketonuria, pku, sickle cell, drepanocytosis, down syndrome, down's syndrome, hemophilia, disorder, thalassemia, genetic, heart disease, cardiovascular, chronic respiratory, sante mentale, comportement, chimiotherapie, rhumatismes, tumeur, neoplasie, neoplasme, rhumatisme, ischémique, diabète, diabétique, insuline, circulatoire, cerebro-vasculaire, cerebrovasculaire, vasculaire cerebral, vasculaires cerebraux, cirrhose, genito-urinaire, musculo-squelettiques, congenitale, alcool, toxicomanie, tabac, tabagisme, fumeurs, obesitesurpoids, schizophrenie, nevrose, alcoolisme, psychologique, psychologie, psychiatrie, emotionnel, stress post-traumatique, glaucome, hypertension, hernie, arthrite, phenylcetonurie, pcu, anemie falciforme, drepanocytose, syndrome de down, hemophilie, maladie sanguine, maladies sanguines, maladie de l'appareil digestif, maladies de l'appareil digestif, maladies digestives, thalassemie, genetique, cardio-vasculaire, cardiovasculaire, maladies du cœur, maladie cardiaque, affections respiratoires chroniques, noncommunicable, copd, stroke, cataract, chronic obstructive pulmonary disease, broncho-pneumopathie chronique obstructive, bronchopneumopathie chronique obstructive, bpco, asthma, asthme, skin disease, maladie de la peau

Note: When conducting the keyword search, we capitalized all project descriptions and search terms, which eliminated all accents from the text. Thus, our French search terms are listed without accents.

## Part 9:

# COLLECTING UN AGENCIES' FUND BALANCE AND SURPLUS DATA

To track total fund balances and expenditures for UN agencies, we gathered data from their audited financial statements.<sup>8-13</sup> For UNFPA and UNICEF, however, audited financial statements for 2009 were not yet available, so we used financial reviews<sup>9,10</sup> and estimates<sup>11</sup> released by the Executive Boards. End-of-year fund balances and reserves are reported for December 31<sup>st</sup> of the last year of the biennium for all UN health agencies tracked. Unless given on an annual basis, all yearly expenditures are calculated by halving biennial expenditure, and these dollars were converted to constant 2008 US\$ using the GDP deflator specific to the reporting year. Both expenditures and balances include regular and extrabudgetary funds.

Since WHO changed its accounting practices over the course of the study period, we developed a methodology to make figures comparable over time. We chose to use the "General Fund" as defined in the 2008-2009 WHO Financial Statement<sup>66</sup> as a benchmark for measurement, netting out any expenditures and fund balances listed under the "Special Purpose Fund," the "Enterprise Fund," the "Fiduciary Fund," or any of WHO's nonconsolidated entities whenever they appeared in prior financial statements from that biennium's total. A full list of these items can be found in notes 1.11 and 3 of the 2008-2009 WHO Financial Statements.<sup>66</sup> While we worked with the available data to make figures comparable over time, changes in definitions or other accounting changes could have affected these corrections.



## Section 2: Country Spending on Health

This appendix is divided into three components. The first component provides more detail on data sources, descriptive statistics, and country and regional groupings. The second component presents a detailed and extensive sensitivity analysis that strengthens the basis for the conclusions drawn in the main body of the text. The third component provides the fully imputed government health expenditure as agent data, which are based on data reported to WHO and the IMF by countries. These imputed data should serve as an improved source for future analyses. For a detailed description of the methodology used, see the related article.<sup>67</sup>

### Detailed information for variables included in the final analysis

**Table A1: Data sources for variables used in the final analysis**

Variables	Source
Government health expenditure as agent/GDP	WHO <sup>68</sup> IMF <sup>69</sup>
Percent government health expenditure estimated	WHO <sup>70</sup>
DAH to government/GDP	IHME <sup>71</sup>
DAH to non-government/GDP	IHME <sup>71</sup>
Debt relief/GDP	IHME <sup>71</sup>
GDP per person	IMF World Economic Outlook, <sup>72</sup> UN Population data <sup>73</sup>
General government spending/GDP	World Bank <sup>74</sup>
HIV prevalence rate	UNAIDS <sup>75</sup>

**Table A2: Descriptive statistics of variables for 111 developing countries included in the statistical analysis**

Variable	N	Mean	Standard deviation	Minimum	Maximum
GHE-S/GDP, WHO	1332	0.02	0.01	0	0.07
GHE-S/GDP, IMF	1332	0.02	0.01	0	0.08
DAH to government/GDP	1332	2.70E-03	4.46E-03	0	0.04
DAH to non-government/GDP	1332	6.91E-04	1.94E-03	0	0.02
Debt relief/GDP	1332	4.84E-03	0.01	0	0.15
GDP per person	1332	2285	2825	89	21414
GGE/GDP	1332	0.14	0.06	0.03	0.52
HIV prevalence	1332	0.03	0.05	0	0.29

**Table A3: Correlation of variables for 111 developing countries used in the statistical analysis**

Variable	GHE-S/GDP, WHO	GHE-S/GDP, IMF	DAH to government/GDP	DAH to non-government/GDP	Debt relief/GDP	GDP per person	GGE/GDP	HIV prevalence
GHE-S/GDP, WHO	1.00							
GHE-S/GDP, IMF	0.65	1.00						
DAH to government/GDP	-0.15	-0.23	1.00					
DAH to non-government/GDP	0.01	-0.08	0.49	1.00				
Debt relief/GDP	-0.09	-0.10	0.30	0.25	1.00			
GDP per person	0.32	0.33	-0.35	-0.19	-0.20	1.00		
GGE/GDP	0.41	0.35	0.00	0.03	-0.06	0.14	1.00	
HIV prevalence	0.13	0.12	0.22	0.14	0.05	-0.10	0.19	1.00

**Table A4: List of the 111 countries included in final analysis by Global Burden of Disease region  
(developing regions only)**

<b>Asia, Central</b>	<b>Latin America, Central</b>	Equatorial Guinea
Armenia	Colombia	Gabon
Azerbaijan	Costa Rica	<b>Sub-Saharan Africa, East</b>
Georgia	El Salvador	Burundi
Kazakhstan	Guatemala	Comoros
Kyrgyzstan	Honduras	Djibouti
Mongolia	Mexico	Ethiopia
Tajikistan	Nicaragua	Kenya
Turkmenistan	Panama	Madagascar
Uzbekistan	Venezuela	Malawi
<b>Asia, East</b>	<b>Latin America, South</b>	Mozambique
China	Argentina	Rwanda
<b>Asia, South</b>	Chile	Sudan
Bangladesh	Uruguay	Tanzania
Bhutan	<b>Latin America, Tropical</b>	Uganda
India	Brazil	Zambia
Nepal	Paraguay	<b>Sub-Saharan Africa, South</b>
Pakistan	<b>North Africa / Middle East</b>	Botswana
<b>Asia, Southeast</b>	Algeria	Lesotho
Cambodia	Bahrain	Namibia
Indonesia	Egypt	South Africa
Laos	Iran	Swaziland
Malaysia	Jordan	Zimbabwe
Maldives	Lebanon	<b>Sub-Saharan Africa, West</b>
Mauritius	Libya	Benin
Philippines	Morocco	Burkina Faso
Sri Lanka	Oman	Cameroon

Thailand	Saudi Arabia	Cape Verde
Vietnam	Syria	Chad
<b>Caribbean</b>	Tunisia	Côte d'Ivoire
Barbados	Turkey	Gambia
Belize	Yemen	Ghana
Dominican Republic	<b>Oceania</b>	Guinea
Guyana	Fiji	Guinea-Bissau
Haiti	Papua New Guinea	Liberia
Jamaica	Samoa	Mali
Suriname	Solomon Islands	Mauritania
Trinidad and Tobago	Vanuatu	Niger
<b>Latin America, Andean</b>	<b>Sub-Saharan Africa, Central</b>	Nigeria
Bolivia	Central African Republic	Senegal
Ecuador	Congo	Sierra Leone
Peru	Congo, Democratic Republic of the	Togo

## Regression and sensitivity analysis

### Sensitivity of results to statistical modeling

With time series cross-country data, we have applied various panel data models in the analysis to test the robustness of our results. In particular, we examine the sensitivity of our findings to two models. The first model is the Arellano-Bover/Blundell-Bond (ABBB) developed by Arellano and Bover (1995)<sup>76</sup> and Blundell and Bond (1998),<sup>77</sup> which is provided in the main body of the text. The second is the fixed effects model with robust standard errors recommended by Kristensen and Wawro (2003).<sup>78</sup> Since our dependent variable – government health spending as source as a share of GDP – is obtained by subtracting DAH to government from government health spending as agent, DAH to government as a regressor may be endogenous. The fixed effects model allows for the endogeneity of regressors and individual effects and produces consistent estimates under this situation.<sup>79</sup>

Regression results of fixed effects models are presented in Table A.5. There are two sets of dependent variables: GHE-S/GDP generated from WHO and IMF estimates. We find that the estimates of DAH are consistently negative and significant across model specifications. The values of these estimates range from -0.44 to -0.46. This is consistent with our findings from ABBB models. The estimates of DAH to non-government sectors are consistently positive and significant. The values of these estimates are very close, between 0.47 and 0.52. Among other variables, debt relief and HIV prevalence are statistically insignificant. The impact of government size, measured by GGE/GDP, is positive and

statistically significant at  $p < 0.05$  for the IMF dataset, while the WHO dataset is statistically significant at  $P < 0.1$ . These results are similar to those from ABBB models, indicating that the fixed effect model with robust standard errors produces consistent estimates.

Table A6 presents the regression results for subgroup countries: low- and lower-middle-income countries and sub-Saharan African countries. The coefficients are consistent with those generated from “all countries.” The effect size in subgroup countries is not significantly smaller than in “all countries.”

**Table A5: Regression results from fixed effects model with robust standard errors (111 developing countries)**

	WHO			IMF		
	Coefficient	SE	p value	Coefficient	SE	p value
DAH to government/GDP	-0.46	0.11	0	-0.44	0.08	0
DAH to non-government/GDP	0.52	0.10	0	0.47	0.10	0
Debt relief/ GDP	0.03	0.02	0.144	0.03	0.02	0.261
GDP per person	4.67E-09	9.17E-08	0.959	7.90E-08	1.23E-07	0.522
GGE/ GDP	0.02	0.01	0.069	0.01	0.01	0.012
HIV prevalence	-0.01	0.02	0.613	-0.01	0.02	0.554

**Table A6: Coefficients of DAH to government/GDP and DAH to non-government/GDP from subgroup analyses from fixed effects models**

		DAH to government/GDP	SE	p value	DAH to non- government/GDP	SE	p value
<b>1. Low- and lower-middle-income countries</b>							
	WHO	-0.45	0.11	0	0.52	0.10	0
	IMF	-0.45	0.08	0	0.47	0.11	0
<b>2. Low-income countries</b>							
	WHO	-0.41	0.11	0	0.62	0.09	0
	IMF	-0.45	0.08	0	0.50	0.14	0.001
<b>3. Sub-Saharan African countries</b>							
	WHO	-0.39	0.11	0.001	0.55	0.11	0
	IMF	-0.40	0.12	0.002	0.37	0.13	0.005

### Sensitivity of results to specification of DAH

For the DAH data with missing information on delivery channel, we assumed in the primary analysis that all DAH went to government. Given the large amount of DAH without a clear indication of delivery channel, we conducted sensitivity tests for our results by creating three DAH variables: “DAH to government,” with clear definition that the funds went to the government; “DAH to non-government,” with clear definition that the funds went to the non-government sector; and “DAH unspecified,” with no identification on delivery channel. Their ratios to GDP are included in the regression analysis. We ran our analysis with three DAH variables for “all developing countries,” “low-income countries,” and “middle-income countries.” Table A7 shows that the results are entirely consistent with the results presented in the text. The coefficient on DAH to government/GDP is significant and more negative (less additionality). The coefficient on DAH to non-government/GDP is positive and significant. And the coefficient on DAH unspecified/GDP is negative and not significant. The likely conclusion is that DAH unspecified/GDP is a combination of DAH to government and to non-government that varies by country. The effect size in low-income countries is not significantly smaller than in middle-income countries. Given that there is less additionality for DAH to government/GDP using this method, we have chosen to present the original formulation in the main body of the paper, thus taking a more conservative approach.

**Table A7: Regression outputs of DAH parsed to government, non-government, and unspecified**

	DAH to government/		DAH to non-government/		DAH unspecified/		Debt relief/		GGE/		HIV prevalence			
	GDP (SE)	p value	GDP (SE)	p value	GDP (SE)	p value	GDP (SE)	p value	GDP per person (SE)	p value	GDP (SE)	p value		
<b>All developing countries, n=111</b>														
<b>Fixed effects model</b>														
<b>WHO</b>	-0.45 (0.13)	0.001	0.32 (0.10)	0.001	-0.19 (0.11)	0.108	0.03 (0.02)	0.107	4.08E-09 (7.94E-08)	0.959	0.02 (0.01)	0.029	-0.01 (0.02)	0.401
<b>IMF</b>	-0.53 (0.11)	0	0.42 (0.11)	0	-0.18 (0.14)	0.211	0.02 (0.02)	0.345	5.22E-08 (1.24E-07)	0.676	0.017 (0.01)	0.004	-0.06 (0.02)	0.711
<b>ABBB model</b>														
<b>WHO</b>	-0.65 (0.09)	0	0.42 (0.14)	0.002	-0.16 (0.13)	0.215	0.07 (0.05)	0.143	-6.78E-09 (1.80E-07)	0.970	0.02 (0.01)	0.018	0.03 (0.02)	0.285
<b>IMF</b>	-0.54 (0.11)	0	0.52 (0.17)	0.002	-0.27 (0.18)	0.120	0.01 (0.04)	0.821	-1.26E-07 (2.96E-07)	0.670	0.01 (0.001)	0.148	0.00 (0.02)	0.932
<b>Low-income countries, n=46</b>														
<b>Fixed effects model</b>														
<b>WHO</b>	-0.43 (0.13)	0.002	0.37 (0.11)	0.002	-0.22 (0.13)	0.086	0.03 (0.02)	0.126	5.15E-07 (8.25e-07)	0.536	0.01 (0.01)	0.481	-0.01 (0.01)	0.678
<b>IMF</b>	-0.57 (0.14)	0	0.47 (0.13)	0.001	-0.22 (0.17)	0.191	0.02 (0.03)	0.393	-1.40E-06 (1.23e-06)	0.261	1.25E-02 (6.60E-03)	0.066	-0.02 (0.01)	0.211
<b>ABBB model</b>														
<b>WHO</b>	-0.56 (0.08)	0	0.48 (0.14)	0.001	-0.18 (0.14)	0.195	0.86 (0.05)	0.071	-7.22E-07 (8.68E-07)	0.406	0.01 (0.01)	0.470	0.02 (0.02)	0.241
<b>IMF</b>	-0.47 (0.13)	0	0.42 (0.20)	0.032	-0.09 (0.19)	0.645	0.02 (0.04)	0.626	5.92E-07 (8.95e-07)	0.509	5.97E-03 (0.01)	0.670	2.25E-04 (0.02)	0.990
<b>Middle-income countries, n=61</b>														
<b>Fixed effects model</b>														
<b>WHO</b>	-0.63 (0.20)	0.002	0.05 (0.17)	0.753	-0.06 (0.18)	0.748	0.06 (0.05)	0.226	7.96e-08 (8.97E-08)	0.379	0.04 (0.01)	0	-0.01 (0.02)	0.670

<b>IMF</b>	-0.45 (0.21)	0.033	0.30 (0.17)	0.078	-0.04 (0.23)	0.858	0.08 (0.05)	0.102	1.14E-07 (1.60E-07)	0.481	0.02 (0.01)	0.040	3.31E-03 (0.03)	0.895
<b>ABBB model</b>														
<b>WHO</b>	-0.72 (0.17)	0	3.22E-03 (0.031)	0.992	-0.16 (0.21)	0.437	0.06 (0.09)	0.529	-1.55e-07 (2.05E-07)	0.449	0.03 (0.01)	0	0.03 (0.01)	0.057
<b>IMF</b>	-0.51 (0.19)	0.007	0.34 (0.34)	0.316	-0.19 (0.14)	0.499	0.14 (0.08)	0.092	-2.74E-08 (3.49E-07)	0.937	0.01 (0.01)	0.193	0.03 (0.01)	0.012

SE=standard error



### Sensitivity of results of the debt relief variable

To test for sensitivity of our findings on the debt relief variable, we conducted the analyses using two approaches: 1) debt relief including capital interest and 2) debt relief assuming even redistribution over a five-year period. In all analyses using these variations in the debt relief variable, we found that the effect of debt relief on government spending as source was statistically insignificant ( $p\text{-value} < 0.05$ ) and consistent with our overall findings.

**Table A8: Debt relief sensitivity test**

		Debt relief/GDP including capital interest	SE	p value	Debt relief/GDP assuming 5-year disbursement	SE	p value
<b>ABBB model</b>							
	WHO	0.06	0.04	0.087	0.00	0.01	0.733
	IMF	0.00	0.03	0.957	0.01	0.01	0.437
<b>Fixed effects model</b>							
	WHO	0.04	0.02	0.129	0.02	0.01	0.194
	IMF	0.03	0.02	0.249	0.02	0.01	0.077

**Fully imputed government health expenditure as agent as a percentage of GDP (GHE-A/GDP) data based on data reported to WHO and the IMF by countries**

**Table A9: Government health expenditure as agent as % of GDP (GHE-A/GDP), based on country data reported to WHO\***

Country name	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Algeria	<b>3.2%</b>	<b>3.2%</b>	<b>3.2%</b>	<b>2.9%</b>	<b>2.7%</b>	2.6%	2.9%	<b>2.9%</b>	<b>2.7%</b>	<b>2.6%</b>	<b>2.3%</b>	<b>2.4%</b>
Angola	3.2%	1.7%	1.8%	1.3%	1.4%	1.9%	2.9%	1.9%	2.1%	1.6%	1.6%	2.3%
Argentina	5.0%	4.6%	4.5%	4.6%	5.1%	5.0%	5.1%	4.5%	4.3%	4.3%	4.5%	4.6%
Armenia	2.0%	1.6%	1.4%	1.6%	1.6%	1.1%	1.6%	1.4%	1.5%	1.7%	1.8%	1.9%
Azerbaijan	<b>1.6%</b>	<b>1.5%</b>	<b>1.4%</b>	<b>1.4%</b>	<b>1.3%</b>	<b>1.3%</b>	<b>1.2%</b>	<b>1.2%</b>	<b>1.3%</b>	<b>1.2%</b>	<b>1.2%</b>	1.1%
Bahrain	<b>3.1%</b>	<b>3.2%</b>	<b>3.4%</b>	3.5%	3.3%	2.7%	2.9%	2.9%	2.8%	2.7%	<b>2.7%</b>	<b>2.8%</b>
Bangladesh	1.0%	1.1%	1.2%	1.1%	1.0%	0.9%	0.9%	0.9%	1.0%	1.0%	0.9%	<b>1.0%</b>
Barbados	4.3%	4.2%	3.9%	3.9%	4.0%	4.1%	4.5%	5.0%	4.6%	4.5%	4.4%	4.2%
Belize	2.8%	2.2%	2.4%	<b>2.3%</b>	<b>2.4%</b>	<b>2.3%</b>	<b>2.3%</b>	2.2%	2.5%	2.7%	2.8%	2.6%
Benin	<b>1.6%</b>	<b>1.9%</b>	2.1%	2.3%	<b>2.3%</b>	2.2%	<b>2.3%</b>	2.2%	2.2%	<b>2.4%</b>	2.4%	2.4%
Bhutan	2.3%	3.2%	3.6%	3.7%	3.4%	3.8%	3.5%	4.3%	2.9%	2.8%	2.6%	2.5%
Bolivia	2.9%	3.1%	3.0%	3.1%	3.6%	3.7%	3.7%	4.1%	<b>3.8%</b>	<b>3.8%</b>	<b>3.7%</b>	<b>3.7%</b>
Botswana	<b>2.8%</b>	2.7%	<b>3.0%</b>	<b>3.3%</b>	3.1%	3.1%	2.7%	4.0%	4.4%	<b>4.5%</b>	<b>4.0%</b>	<b>3.8%</b>
Brazil	2.9%	2.8%	2.9%	2.9%	3.0%	2.9%	3.1%	3.2%	3.1%	3.4%	3.5%	3.6%
Burkina Faso	<b>3.4%</b>	<b>3.4%</b>	<b>3.3%</b>	<b>3.3%</b>	<b>2.9%</b>	<b>2.9%</b>	<b>3.1%</b>	<b>2.8%</b>	2.6%	3.3%	4.0%	3.6%
Burundi	0.8%	0.7%	0.6%	0.6%	0.6%	0.5%	0.8%	0.8%	0.6%	0.6%	0.5%	0.7%
Cambodia	1.1%	2.4%	1.9%	1.3%	1.1%	1.3%	1.7%	1.9%	2.4%	2.3%	1.5%	1.5%
Cameroon	0.9%	<b>1.1%</b>	<b>1.2%</b>	<b>1.2%</b>	<b>1.3%</b>	<b>1.3%</b>	<b>1.3%</b>	<b>1.2%</b>	<b>1.2%</b>	<b>1.4%</b>	<b>1.3%</b>	<b>1.2%</b>
Cape Verde	<b>3.6%</b>	<b>3.5%</b>	<b>3.7%</b>	3.8%	3.3%	3.4%	3.8%	3.8%	3.4%	4.0%	3.5%	3.8%
Central African Republic	1.4%	1.1%	1.4%	1.2%	1.3%	1.6%	1.5%	1.6%	1.5%	1.5%	<b>1.8%</b>	<b>1.9%</b>
Chad	<b>1.8%</b>	<b>1.7%</b>	<b>1.6%</b>	1.7%	2.0%	2.7%	2.4%	<b>2.2%</b>	<b>2.1%</b>	<b>1.8%</b>	<b>1.8%</b>	<b>1.9%</b>
Chile	3.3%	2.4%	2.5%	2.8%	2.9%	3.0%	3.2%	3.1%	3.0%	2.8%	2.8%	2.8%
China	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.6%	1.7%	1.8%	1.8%	1.8%	1.9%
Colombia	4.3%	5.7%	6.2%	6.7%	7.1%	6.2%	6.2%	6.2%	6.4%	6.3%	6.2%	<b>6.4%</b>

Comoros	<b>2.2%</b>	<b>2.1%</b>	<b>2.2%</b>	2.2%	2.0%	1.5%	1.1%	1.6%	<b>1.7%</b>	<b>1.8%</b>	<b>1.7%</b>	<b>1.6%</b>
Congo	1.9%	1.7%	<b>1.7%</b>	<b>1.8%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.7%</b>	<b>1.6%</b>	1.5%	1.4%	1.5%
Congo, Democratic												
Republic of the	<b>1.9%</b>	<b>2.0%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.2%</b>	<b>2.0%</b>	<b>2.3%</b>	<b>2.5%</b>	<b>2.6%</b>	<b>2.9%</b>	<b>3.0%</b>
Costa Rica	5.0%	5.1%	4.6%	4.8%	4.7%	5.0%	5.4%	5.7%	5.7%	5.1%	5.0%	5.3%
Côte d'Ivoire	1.1%	1.3%	1.5%	1.3%	1.3%	1.3%	1.0%	1.0%	1.0%	1.0%	0.8%	0.9%
Djibouti	<b>3.5%</b>	<b>3.2%</b>	<b>3.3%</b>	<b>3.1%</b>	<b>3.2%</b>	<b>3.4%</b>	<b>3.5%</b>	3.5%	<b>3.5%</b>	<b>3.5%</b>	<b>3.5%</b>	<b>3.6%</b>
Dominican Republic	1.2%	1.2%	1.5%	1.8%	2.0%	2.2%	1.9%	2.0%	2.0%	1.5%	1.7%	2.1%
Ecuador	2.3%	2.6%	2.3%	1.7%	1.9%	1.3%	1.6%	1.9%	1.9%	2.1%	2.1%	2.3%
Egypt	1.8%	<b>1.9%</b>	<b>2.0%</b>	<b>2.2%</b>	<b>2.2%</b>	<b>2.3%</b>	<b>2.4%</b>	2.5%	<b>2.7%</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.5%</b>
El Salvador	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%
Equatorial Guinea	<b>2.1%</b>	<b>2.1%</b>	1.9%	2.6%	<b>2.2%</b>	<b>2.0%</b>	<b>1.8%</b>	<b>2.0%</b>	<b>1.8%</b>	<b>1.7%</b>	<b>1.5%</b>	<b>1.4%</b>
Eritrea	<b>2.0%</b>	<b>2.0%</b>	2.0%	<b>2.0%</b>	<b>2.4%</b>	<b>2.8%</b>	2.7%	2.3%	2.0%	1.7%	<b>1.6%</b>	<b>2.3%</b>
Ethiopia	<b>1.9%</b>	1.9%	<b>1.8%</b>	<b>2.2%</b>	<b>2.5%</b>	2.3%	<b>2.5%</b>	<b>2.4%</b>	<b>2.2%</b>	<b>2.5%</b>	2.5%	<b>2.3%</b>
Fiji	2.3%	2.6%	2.9%	2.6%	2.5%	3.2%	2.6%	2.8%	2.8%	3.1%	2.9%	<b>2.9%</b>
Gabon	0.8%	1.0%	1.8%	3.5%	3.1%	3.1%	<b>2.6%</b>	<b>2.5%</b>	<b>2.2%</b>	<b>2.2%</b>	<b>2.2%</b>	<b>2.1%</b>
Gambia	1.7%	1.7%	1.7%	2.1%	2.0%	2.0%	2.2%	2.2%	2.9%	3.6%	<b>2.8%</b>	<b>2.3%</b>
Georgia	0.3%	0.9%	1.3%	1.2%	1.0%	1.2%	1.4%	1.4%	1.3%	1.3%	1.7%	1.8%
Ghana	<b>2.2%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.0%</b>	<b>2.2%</b>	2.4%	<b>2.5%</b>	<b>2.5%</b>	<b>2.6%</b>	2.7%
Guatemala	1.3%	1.2%	1.4%	2.1%	2.3%	2.2%	2.1%	1.9%	2.2%	2.3%	2.0%	2.0%
Guinea	<b>1.0%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.2%</b>	<b>1.1%</b>	0.9%	<b>1.0%</b>	<b>1.0%</b>	<b>1.1%</b>
Guinea-Bissau	1.6%	2.1%	2.2%	<b>1.9%</b>	<b>1.4%</b>	1.0%	0.9%	2.5%	2.6%	1.6%	1.6%	1.5%
Guyana	3.9%	3.7%	4.0%	4.0%	3.6%	4.6%	4.5%	4.7%	4.4%	4.2%	4.0%	5.1%
Haiti	3.1%	2.7%	2.6%	2.5%	<b>2.9%</b>	<b>3.0%</b>	<b>3.3%</b>	<b>3.3%</b>	<b>3.4%</b>	<b>3.7%</b>	<b>4.1%</b>	5.7%
Honduras	<b>2.3%</b>	<b>2.3%</b>	<b>2.3%</b>	2.5%	<b>2.6%</b>	<b>2.9%</b>	<b>3.1%</b>	3.2%	3.4%	3.3%	<b>3.2%</b>	<b>3.3%</b>
India	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	<b>0.9%</b>	<b>0.8%</b>	0.8%	0.9%
Indonesia	0.8%	0.8%	0.7%	0.8%	0.9%	0.6%	0.7%	0.8%	0.9%	0.8%	<b>0.9%</b>	<b>1.0%</b>
Iran	<b>2.7%</b>	<b>2.6%</b>	2.5%	2.7%	<b>2.5%</b>	<b>2.4%</b>	<b>2.5%</b>	<b>2.4%</b>	<b>2.4%</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.6%</b>
Jamaica	2.2%	2.8%	3.4%	3.4%	2.7%	3.3%	2.5%	3.2%	2.7%	3.1%	2.3%	2.5%
Jordan	<b>4.2%</b>	<b>4.5%</b>	<b>5.1%</b>	4.9%	<b>4.7%</b>	4.4%	4.5%	4.4%	4.5%	5.0%	4.8%	4.2%

Kazakhstan	3.0%	2.8%	3.0%	3.1%	2.3%	2.1%	2.0%	1.9%	2.0%	2.3%	2.5%	2.3%
Kenya	<b>1.8%</b>	1.7%	1.6%	<b>1.8%</b>	<b>1.7%</b>	<b>1.9%</b>	<b>1.9%</b>	2.0%	<b>2.0%</b>	<b>1.8%</b>	<b>1.7%</b>	<b>1.8%</b>
Kyrgyzstan	4.0%	3.1%	2.9%	3.5%	2.9%	2.1%	2.0%	2.1%	2.1%	2.3%	2.4%	2.8%
Laos	1.3%	1.2%	1.6%	1.3%	1.1%	1.0%	1.1%	1.1%	1.4%	0.8%	0.7%	<b>1.0%</b>
Lebanon	<b>3.4%</b>	<b>3.1%</b>	<b>3.3%</b>	3.2%	<b>3.1%</b>	<b>3.5%</b>	<b>3.4%</b>	<b>3.2%</b>	3.4%	3.6%	3.7%	<b>3.6%</b>
Lesotho	3.3%	3.3%	2.7%	3.0%	2.9%	3.1%	4.1%	3.7%	3.8%	3.7%	3.2%	4.0%
Liberia	<b>0.6%</b>	<b>0.5%</b>	0.4%	0.7%	0.8%	0.7%	0.8%	<b>0.7%</b>	0.6%	1.6%	1.7%	1.2%
Libya	<b>2.2%</b>	<b>2.5%</b>	<b>2.3%</b>	2.3%	1.8%	<b>1.4%</b>	<b>1.6%</b>	<b>1.6%</b>	<b>1.4%</b>	<b>1.3%</b>	<b>1.5%</b>	<b>1.7%</b>
Madagascar	<b>1.7%</b>	<b>1.9%</b>	<b>1.8%</b>	<b>1.9%</b>	<b>2.1%</b>	<b>2.0%</b>	<b>2.0%</b>	<b>2.2%</b>	2.2%	<b>2.0%</b>	<b>2.5%</b>	<b>2.6%</b>
Malawi	<b>3.5%</b>	2.0%	2.3%	3.2%	3.7%	2.7%	4.8%	7.3%	9.5%	9.6%	<b>8.3%</b>	8.9%
Malaysia	1.4%	1.6%	1.5%	1.7%	1.7%	1.7%	1.9%	1.9%	2.6%	2.2%	1.8%	1.9%
Maldives	3.7%	3.6%	3.5%	3.5%	3.7%	4.1%	3.9%	3.9%	3.9%	4.3%	7.3%	6.5%
Mali	<b>2.5%</b>	<b>2.3%</b>	<b>2.2%</b>	<b>2.1%</b>	1.8%	<b>2.1%</b>	2.9%	2.3%	2.6%	2.8%	<b>2.9%</b>	<b>2.8%</b>
Mauritania	2.0%	1.1%	1.3%	1.5%	2.1%	2.0%	1.5%	2.3%	1.9%	1.6%	1.7%	1.5%
Mauritius	2.0%	1.9%	1.9%	2.0%	1.9%	2.0%	2.0%	2.2%	2.1%	2.3%	2.2%	<b>2.2%</b>
Mexico	2.4%	2.1%	2.4%	2.5%	2.7%	2.6%	2.7%	2.7%	2.6%	2.7%	2.7%	2.6%
Mongolia	3.7%	3.5%	3.4%	3.7%	3.9%	3.9%	4.8%	4.7%	3.7%	3.6%	3.0%	<b>3.5%</b>
Morocco	1.3%	1.3%	1.2%	1.2%	1.1%	1.2%	1.4%	1.4%	1.4%	1.4%	<b>1.4%</b>	1.4%
Mozambique	<b>2.0%</b>	<b>1.9%</b>	2.1%	2.2%	2.7%	3.3%	2.9%	3.3%	3.0%	2.9%	<b>2.9%</b>	<b>3.2%</b>
Namibia	4.4%	4.8%	4.9%	5.0%	5.1%	4.8%	5.3%	4.7%	5.1%	5.0%	3.5%	3.6%
Nepal	1.3%	1.3%	1.4%	2.4%	1.6%	1.3%	1.2%	1.6%	1.4%	1.4%	1.5%	1.6%
Nicaragua	4.8%	4.2%	3.3%	3.6%	3.2%	3.7%	3.7%	3.9%	4.4%	4.1%	4.5%	4.6%
Niger	<b>2.2%</b>	<b>1.8%</b>	<b>2.1%</b>	<b>2.3%</b>	<b>2.4%</b>	<b>2.4%</b>	<b>2.6%</b>	<b>2.2%</b>	<b>2.0%</b>	1.8%	2.9%	3.2%
Nigeria	<b>0.8%</b>	<b>0.8%</b>	<b>0.9%</b>	1.5%	1.6%	1.7%	1.5%	1.3%	1.2%	1.2%	<b>1.5%</b>	<b>1.9%</b>
Oman	<b>2.8%</b>	<b>2.9%</b>	<b>2.8%</b>	3.0%	<b>2.9%</b>	<b>2.6%</b>	<b>2.7%</b>	<b>2.6%</b>	<b>2.6%</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.4%</b>
Pakistan	0.6%	0.7%	0.6%	0.5%	0.5%	0.5%	0.4%	0.5%	0.4%	0.4%	0.4%	0.3%
Panama	4.8%	4.6%	4.9%	4.7%	4.5%	5.3%	5.2%	5.5%	5.0%	<b>4.9%</b>	5.1%	5.0%
Papua New Guinea	2.7%	3.0%	2.6%	3.2%	3.1%	3.3%	3.8%	3.6%	3.3%	3.8%	<b>3.3%</b>	2.7%
Paraguay	2.4%	2.8%	2.7%	3.2%	3.4%	3.7%	3.1%	3.0%	2.5%	2.6%	3.2%	2.9%

Peru	2.2%	2.3%	2.1%	2.4%	2.6%	2.5%	2.7%	2.7%	2.6%	2.5%	2.6%	2.6%
Philippines	1.4%	1.5%	1.6%	1.5%	1.6%	1.6%	1.4%	1.2%	1.4%	1.4%	1.3%	1.3%
Rwanda	<b>2.3%</b>	<b>2.3%</b>	<b>2.2%</b>	<b>2.0%</b>	<b>1.8%</b>	1.7%	<b>2.1%</b>	2.2%	3.5%	<b>3.9%</b>	<b>4.2%</b>	4.6%
Samoa	<b>4.1%</b>	<b>4.0%</b>	<b>4.1%</b>	4.5%	<b>4.2%</b>	4.0%	<b>3.6%</b>	3.6%	<b>3.8%</b>	4.1%	<b>4.2%</b>	<b>4.2%</b>
Saudi Arabia	1.5%	1.6%	1.8%	1.9%	2.8%	3.1%	3.3%	3.1%	2.9%	2.6%	<b>2.4%</b>	<b>2.4%</b>
Senegal	<b>1.6%</b>	<b>1.7%</b>	<b>1.7%</b>	<b>1.8%</b>	<b>1.7%</b>	<b>1.6%</b>	1.5%	1.8%	1.8%	1.8%	2.9%	3.0%
Sierra Leone	<b>1.8%</b>	<b>1.6%</b>	<b>1.5%</b>	<b>1.7%</b>	<b>1.7%</b>	2.1%	1.8%	2.3%	2.0%	1.9%	<b>1.9%</b>	<b>1.9%</b>
Solomon Islands	3.6%	3.5%	4.0%	4.2%	4.4%	4.8%	4.8%	4.4%	4.5%	4.6%	4.5%	4.4%
South Africa	2.9%	3.7%	3.7%	3.4%	3.6%	3.4%	3.5%	3.4%	3.0%	3.0%	3.0%	3.0%
Sri Lanka	1.6%	1.6%	1.6%	1.7%	1.7%	1.7%	1.7%	1.6%	1.6%	1.9%	1.9%	2.0%
Sudan	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.2%</b>	<b>1.3%</b>	<b>1.4%</b>	1.4%	1.5%	<b>1.6%</b>
Suriname	<b>2.8%</b>	<b>3.0%</b>	<b>2.9%</b>	<b>3.5%</b>	<b>3.3%</b>	3.9%	<b>3.4%</b>	<b>3.1%</b>	<b>2.9%</b>	<b>2.9%</b>	<b>2.8%</b>	<b>2.8%</b>
Swaziland	<b>3.3%</b>	<b>3.4%</b>	<b>3.7%</b>	4.0%	3.8%	3.6%	<b>3.6%</b>	<b>3.7%</b>	<b>3.8%</b>	<b>4.0%</b>	<b>3.9%</b>	<b>4.0%</b>
Syria	<b>1.5%</b>	<b>1.3%</b>	<b>1.4%</b>	<b>1.4%</b>	<b>1.4%</b>	<b>1.9%</b>	<b>2.1%</b>	2.2%	2.4%	2.2%	2.1%	1.9%
Tajikistan	1.4%	1.3%	1.5%	1.2%	1.0%	1.0%	0.9%	0.9%	0.9%	0.9%	1.1%	1.1%
Tanzania	<b>2.5%</b>	<b>2.6%</b>	<b>2.3%</b>	<b>2.1%</b>	1.9%	<b>2.6%</b>	<b>2.7%</b>	<b>2.9%</b>	2.5%	<b>2.8%</b>	<b>3.4%</b>	3.7%
Thailand	1.7%	1.8%	2.2%	2.0%	1.9%	1.9%	1.9%	2.3%	2.6%	2.2%	2.2%	<b>2.3%</b>
Togo	<b>1.4%</b>	<b>1.4%</b>	<b>1.2%</b>	<b>1.3%</b>	<b>1.2%</b>	<b>1.1%</b>	<b>1.0%</b>	0.9%	<b>1.1%</b>	<b>1.1%</b>	<b>1.6%</b>	<b>1.7%</b>
Trinidad and Tobago	<b>2.1%</b>	<b>2.0%</b>	1.9%	<b>1.9%</b>	<b>1.7%</b>	1.7%	2.9%	2.6%	2.4%	2.9%	2.5%	2.5%
Tunisia	2.7%	2.8%	2.6%	2.7%	<b>2.6%</b>	2.7%	<b>2.8%</b>	<b>2.8%</b>	<b>2.9%</b>	<b>2.9%</b>	<b>2.8%</b>	<b>2.9%</b>
Turkey	2.4%	2.7%	3.0%	2.6%	2.9%	3.1%	3.8%	4.1%	4.3%	4.3%	4.1%	3.5%
Turkmenistan	<b>2.2%</b>	<b>1.9%</b>	<b>2.5%</b>	<b>2.7%</b>	<b>2.2%</b>	<b>2.5%</b>	<b>2.4%</b>	<b>2.1%</b>	<b>2.3%</b>	<b>2.4%</b>	<b>2.2%</b>	<b>2.1%</b>
Uganda	<b>1.5%</b>	<b>1.5%</b>	<b>1.5%</b>	1.5%	1.9%	1.8%	2.0%	<b>2.1%</b>	<b>2.2%</b>	<b>2.2%</b>	<b>2.2%</b>	<b>2.0%</b>
Uruguay	4.6%	4.5%	3.9%	4.0%	3.7%	3.5%	3.7%	3.2%	2.7%	3.6%	<b>3.7%</b>	<b>3.7%</b>
Uzbekistan	3.6%	3.7%	3.3%	3.2%	2.9%	2.6%	2.6%	2.5%	2.4%	2.3%	2.4%	2.4%
Vanuatu	2.2%	1.7%	2.2%	2.5%	2.5%	2.7%	2.8%	2.9%	2.8%	2.7%	2.7%	2.7%
Venezuela	2.3%	2.0%	3.2%	3.1%	3.0%	3.2%	2.1%	2.1%	2.0%	2.3%	2.1%	<b>2.3%</b>
Vietnam	1.6%	1.6%	1.4%	1.7%	1.7%	1.6%	1.8%	1.6%	1.7%	1.5%	1.5%	2.1%
Yemen	<b>2.0%</b>	<b>1.8%</b>	<b>1.8%</b>	2.0%	<b>1.9%</b>	<b>2.0%</b>	<b>2.2%</b>	<b>2.0%</b>	2.0%	<b>2.2%</b>	<b>2.1%</b>	<b>2.2%</b>
Zambia	3.4%	3.7%	4.1%	4.1%	2.9%	2.9%	<b>3.2%</b>	4.2%	4.1%	3.7%	3.8%	3.8%

Zimbabwe	<b>3.7%</b>	<b>4.0%</b>	<b>4.6%</b>	6.3%	3.5%	<b>3.2%</b>	3.2%	<b>3.6%</b>	<b>3.7%</b>	<b>4.6%</b>	<b>4.7%</b>	<b>4.6%</b>
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Note: \*Bold italics indicates imputed country-year

**Table A10: Government health expenditure as agent as a % of GDP (GHE-A), based on country data reported to the IMF\***

Country name	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Algeria	1.8%	1.9%	1.7%	1.4%	<b>1.2%</b>	<b>1.2%</b>	<b>1.3%</b>	<b>1.2%</b>	1.1%	1.0%	0.8%	0.9%
Angola	3.3%	1.6%	2.0%	1.4%	1.2%	1.9%	2.8%	2.0%	2.3%	1.8%	1.4%	1.9%
Argentina	5.0%	4.6%	4.4%	4.4%	4.6%	<b>4.5%</b>	<b>4.7%</b>	<b>4.3%</b>	<b>4.1%</b>	<b>4.3%</b>	<b>4.2%</b>	<b>4.3%</b>
Armenia	<b>1.6%</b>	1.4%	1.2%	1.4%	1.4%	1.0%	1.3%	1.2%	<b>1.2%</b>	1.3%	1.4%	1.5%
Azerbaijan	2.1%	1.4%	1.2%	0.9%	1.0%	0.9%	0.8%	0.7%	0.8%	0.9%	0.9%	0.9%
Bahrain	2.5%	2.5%	2.6%	2.5%	2.5%	2.0%	2.2%	2.2%	2.1%	1.9%	2.0%	2.0%
Bangladesh	0.9%	1.0%	1.0%	<b>1.5%</b>	<b>1.9%</b>	2.3%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
Barbados	4.2%	3.9%	3.9%	<b>4.1%</b>	<b>4.2%</b>	4.1%	4.5%	5.0%	4.5%	4.5%	4.3%	4.2%
Belize	2.8%	2.1%	2.4%	2.5%	<b>2.5%</b>	2.4%	2.2%	2.2%	2.5%	2.7%	2.8%	3.2%
Benin	0.6%	1.3%	1.2%	1.3%	1.7%	1.6%	2.1%	1.4%	1.7%	1.8%	1.9%	1.9%
Bhutan	3.4%	4.1%	4.1%	3.8%	4.2%	3.8%	4.4%	3.2%	2.8%	3.0%	2.8%	<b>3.0%</b>
Bolivia	3.1%	3.3%	3.4%	2.9%	2.8%	2.8%	3.1%	2.9%	3.2%	3.3%	3.8%	3.3%
Botswana	1.8%	1.8%	2.1%	2.2%	2.2%	2.2%	2.5%	3.0%	3.9%	4.4%	4.6%	4.2%
Brazil	2.1%	1.8%	1.8%	1.7%	1.9%	1.8%	2.0%	1.8%	<b>1.8%</b>	<b>2.0%</b>	<b>2.0%</b>	<b>2.1%</b>
Burkina Faso	1.9%	2.6%	2.5%	2.2%	1.4%	1.2%	1.9%	1.7%	1.5%	1.8%	1.7%	2.0%
Burundi	0.8%	0.7%	0.6%	0.6%	0.6%	0.5%	0.7%	0.7%	0.8%	0.9%	0.7%	0.8%
Cambodia	0.6%	1.3%	1.0%	0.4%	1.0%	0.7%	0.8%	1.0%	0.9%	0.9%	0.9%	0.9%
Cameroon	0.5%	0.6%	0.5%	0.6%	0.9%	1.0%	0.7%	<b>0.6%</b>	0.5%	0.9%	0.5%	0.6%
Cape Verde	<b>2.2%</b>	<b>2.2%</b>	<b>2.4%</b>	<b>2.5%</b>	<b>2.3%</b>	<b>2.4%</b>	2.4%	2.5%	2.0%	2.4%	3.2%	3.1%
Central African Republic	1.1%	0.8%	1.0%	2.3%	<b>2.0%</b>	<b>1.6%</b>	<b>1.0%</b>	0.8%	0.8%	0.6%	2.7%	2.1%
Chad	1.2%	0.8%	1.3%	<b>1.4%</b>	<b>2.1%</b>	2.7%	2.4%	1.9%	2.2%	1.6%	1.5%	1.3%
Chile	2.4%	2.4%	2.4%	2.6%	2.8%	2.8%	3.0%	3.0%	3.0%	2.8%	<b>2.5%</b>	<b>2.5%</b>
China	0.7%	0.7%	0.8%	<b>1.2%</b>	<b>1.5%</b>	1.8%	1.6%	1.7%	1.7%	1.8%	1.8%	1.9%
Colombia	1.6%	2.0%	2.0%	2.0%	<b>2.2%</b>	<b>2.2%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.3%</b>	<b>2.3%</b>	<b>2.3%</b>	<b>2.3%</b>
Comoros	1.0%	0.9%	0.8%	0.8%	<b>0.7%</b>	<b>0.5%</b>	<b>0.5%</b>	<b>0.6%</b>	0.5%	0.5%	0.5%	0.5%
Congo	<b>2.3%</b>	2.3%	<b>2.2%</b>	<b>2.3%</b>	<b>1.8%</b>	<b>1.8%</b>	<b>1.9%</b>	<b>2.3%</b>	<b>2.0%</b>	<b>1.9%</b>	<b>1.9%</b>	<b>1.9%</b>

Congo, Democratic Republic of the	<b>1.3%</b>	<b>1.4%</b>	<b>1.6%</b>	<b>1.7%</b>	<b>1.7%</b>	<b>1.6%</b>	<b>1.5%</b>	<b>1.6%</b>	<b>2.0%</b>	<b>2.2%</b>	<b>2.4%</b>	<b>2.6%</b>
Costa Rica	0.3%	0.3%	0.3%	0.4%	<b>0.4%</b>	<b>0.4%</b>	<b>0.4%</b>	<b>0.4%</b>	<b>0.4%</b>	<b>0.3%</b>	<b>0.3%</b>	<b>0.3%</b>
Côte d'Ivoire	1.1%	1.1%	1.0%	1.0%	0.9%	0.9%	0.7%	1.2%	1.2%	1.0%	0.9%	0.9%
Djibouti	<b>1.8%</b>	<b>1.5%</b>	<b>1.7%</b>	1.6%	1.7%	1.8%	1.5%	1.5%	1.9%	1.8%	<b>2.0%</b>	<b>1.9%</b>
Dominican Republic	1.2%	1.3%	1.4%	2.2%	1.5%	1.7%	<b>1.7%</b>	<b>2.2%</b>	<b>1.8%</b>	<b>1.7%</b>	<b>1.9%</b>	<b>2.0%</b>
Ecuador	1.0%	0.9%	0.8%	0.8%	<b>1.2%</b>	1.3%	1.6%	1.8%	1.9%	2.1%	2.1%	2.4%
Egypt	0.7%	0.7%	0.8%	1.0%	<b>1.1%</b>	<b>1.1%</b>	<b>1.2%</b>	<b>1.4%</b>	1.7%	1.3%	1.3%	1.3%
El Salvador	1.3%	1.3%	1.3%	1.3%	<b>1.4%</b>	<b>1.6%</b>	<b>1.7%</b>	<b>1.6%</b>	1.5%	<b>1.6%</b>	<b>1.7%</b>	<b>1.7%</b>
Equatorial Guinea	<b>0.5%</b>	<b>0.5%</b>	<b>0.4%</b>	<b>0.6%</b>	<b>0.5%</b>	<b>0.4%</b>	<b>0.5%</b>	<b>0.6%</b>	0.6%	0.4%	0.2%	0.2%
Eritrea	2.9%	3.4%	2.7%	3.1%	2.5%	3.0%	3.1%	6.5%	8.7%	1.5%	1.3%	5.5%
Ethiopia	1.3%	1.4%	0.7%	1.4%	1.0%	1.4%	1.5%	1.4%	1.0%	1.2%	0.7%	0.7%
Fiji	2.3%	2.4%	2.6%	0.3%	2.4%	2.8%	2.7%	2.5%	<b>2.2%</b>	<b>2.0%</b>	<b>2.0%</b>	<b>2.0%</b>
Gabon	1.4%	1.5%	1.7%	<b>2.6%</b>	<b>2.4%</b>	3.1%	4.3%	3.8%	3.2%	3.1%	3.0%	2.9%
Gambia	2.2%	2.0%	1.5%	1.9%	3.6%	4.7%	2.9%	3.1%	1.5%	1.4%	1.1%	1.5%
Georgia	<b>0.5%</b>	1.2%	1.4%	1.0%	1.1%	1.0%	1.1%	<b>1.4%</b>	1.4%	1.5%	<b>1.7%</b>	<b>2.0%</b>
Ghana	0.9%	1.1%	1.0%	1.2%	0.8%	0.8%	1.2%	1.4%	1.4%	1.5%	1.5%	1.5%
Guatemala	0.9%	0.8%	1.0%	0.9%	1.0%	1.0%	1.0%	0.9%	1.0%	0.9%	<b>0.9%</b>	<b>1.2%</b>
Guinea	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.9%	0.8%	0.5%	0.4%	0.4%	0.4%
Guinea-Bissau	2.8%	2.5%	1.9%	1.4%	1.5%	0.9%	0.8%	1.0%	0.6%	0.9%	1.6%	0.6%
Guyana	4.0%	3.1%	2.8%	2.7%	4.1%	3.7%	3.5%	4.1%	4.6%	4.3%	4.4%	<b>5.0%</b>
Haiti	<b>2.4%</b>	<b>2.2%</b>	<b>2.2%</b>	<b>2.4%</b>	<b>2.5%</b>	2.5%	2.7%	3.0%	2.9%	2.9%	3.2%	5.4%
Honduras	2.4%	2.0%	1.9%	1.8%	2.3%	2.8%	2.7%	<b>3.4%</b>	4.0%	3.4%	3.2%	<b>3.2%</b>
India	1.1%	1.0%	1.2%	1.2%	<b>1.0%</b>	1.0%	0.9%	0.9%	0.9%	0.9%	1.0%	1.0%
Indonesia	0.6%	0.6%	0.6%	0.6%	<b>0.7%</b>	<b>0.5%</b>	0.7%	0.7%	0.9%	0.9%	1.0%	1.2%
Iran	1.3%	1.3%	1.2%	1.1%	0.9%	0.9%	0.9%	<b>1.0%</b>	1.1%	1.0%	<b>1.0%</b>	<b>1.1%</b>
Jamaica	2.0%	2.6%	2.9%	3.0%	2.4%	2.2%	1.3%	1.2%	1.4%	<b>1.8%</b>	<b>1.8%</b>	<b>1.9%</b>
Jordan	2.2%	3.1%	3.4%	3.5%	3.4%	3.2%	3.4%	<b>2.9%</b>	2.8%	2.8%	<b>2.7%</b>	<b>2.7%</b>
Kazakhstan	3.0%	2.8%	2.1%	2.1%	2.2%	2.1%	1.9%	1.9%	1.9%	2.2%	2.4%	2.2%
Kenya	1.8%	1.8%	2.0%	2.0%	1.3%	1.4%	1.6%	1.5%	1.9%	1.4%	1.5%	1.5%



Kyrgyzstan	3.7%	3.2%	2.9%	2.9%	2.3%	2.1%	1.8%	2.0%	1.9%	2.0%	2.3%	<b>2.8%</b>
Laos	1.2%	1.2%	0.2%	0.2%	<b>0.4%</b>	1.0%	1.1%	1.1%	1.4%	0.8%	0.7%	0.7%
Lebanon	1.0%	0.8%	1.0%	0.9%	0.7%	1.0%	1.0%	0.9%	1.2%	1.0%	<b>1.0%</b>	<b>0.9%</b>
Lesotho	3.7%	4.8%	4.0%	4.5%	4.3%	4.7%	6.0%	5.3%	5.7%	5.6%	8.4%	7.3%
Liberia	<b>1.3%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.6%</b>	<b>1.5%</b>	1.2%	1.6%	1.2%	1.5%	3.4%	4.4%	3.6%
Libya	2.7%	4.1%	4.7%	<b>2.8%</b>	1.8%	0.6%	3.0%	1.6%	1.1%	0.6%	<b>1.0%</b>	<b>1.5%</b>
Madagascar	0.6%	0.7%	0.9%	1.3%	1.5%	1.2%	1.3%	1.1%	0.8%	0.7%	3.4%	3.5%
Malawi	2.6%	1.8%	1.7%	2.6%	2.2%	1.6%	4.0%	2.8%	2.9%	2.8%	5.3%	6.0%
Malaysia	1.2%	1.4%	1.3%	1.4%	1.5%	1.7%	2.0%	1.9%	2.7%	2.3%	1.9%	1.9%
Maldives	3.7%	3.5%	3.5%	3.5%	3.7%	3.7%	3.8%	3.9%	4.1%	4.3%	5.5%	5.6%
Mali	2.2%	1.6%	1.4%	1.1%	1.0%	1.3%	1.8%	1.8%	1.3%	1.6%	2.0%	2.3%
Mauritania	2.0%	1.7%	1.7%	1.7%	1.7%	1.6%	1.9%	3.3%	2.2%	2.0%	<b>1.5%</b>	0.9%
Mauritius	1.9%	1.9%	1.9%	2.1%	2.1%	2.1%	2.2%	<b>2.4%</b>	2.5%	2.2%	2.2%	2.2%
Mexico	3.5%	3.3%	3.7%	3.9%	4.4%	4.3%	<b>4.4%</b>	<b>4.4%</b>	<b>3.8%</b>	<b>3.9%</b>	<b>4.2%</b>	<b>4.1%</b>
Mongolia	3.9%	3.9%	3.4%	4.0%	3.9%	4.5%	4.8%	4.1%	3.5%	3.4%	2.9%	5.3%
Morocco	1.1%	0.9%	1.0%	0.8%	1.4%	1.3%	1.0%	1.1%	1.2%	1.2%	<b>1.2%</b>	<b>1.2%</b>
Mozambique	0.9%	0.9%	1.0%	2.8%	2.9%	3.5%	2.9%	3.2%	2.6%	2.4%	2.6%	3.4%
Namibia	3.8%	5.3%	3.7%	3.7%	3.9%	3.7%	3.6%	3.5%	3.5%	3.2%	3.2%	3.2%
Nepal	0.7%	0.7%	0.9%	1.1%	0.8%	0.9%	0.9%	0.9%	0.7%	0.8%	0.9%	<b>0.9%</b>
Nicaragua	4.9%	4.7%	4.1%	3.8%	<b>3.0%</b>	<b>3.0%</b>	2.8%	3.1%	3.5%	3.2%	3.5%	3.4%
Niger	1.7%	0.6%	1.3%	1.5%	2.2%	2.1%	2.3%	2.1%	1.9%	1.8%	1.8%	1.8%
Nigeria	0.2%	0.2%	0.2%	0.5%	0.5%	0.4%	0.8%	1.1%	0.5%	0.5%	0.6%	2.4%
Oman	2.3%	2.3%	2.1%	2.4%	2.3%	2.0%	2.0%	2.1%	2.1%	1.9%	1.7%	1.6%
Pakistan	<b>0.6%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>0.5%</b>	<b>0.6%</b>	0.5%	0.5%	0.6%	0.4%	0.4%	0.4%	0.3%
Panama	5.5%	5.7%	5.1%	4.4%	4.1%	5.3%	5.2%	5.5%	5.0%	4.5%	5.0%	5.0%
Papua New Guinea	2.1%	1.3%	1.8%	1.9%	1.9%	2.9%	3.3%	3.6%	3.3%	3.8%	3.6%	2.6%
Paraguay	1.1%	1.2%	1.2%	<b>2.2%</b>	<b>3.1%</b>	3.7%	3.1%	3.0%	2.5%	2.6%	3.2%	2.9%
Peru	1.1%	1.1%	1.3%	1.3%	1.2%	1.1%	1.0%	1.1%	1.2%	<b>1.2%</b>	<b>1.2%</b>	<b>1.2%</b>
Philippines	0.4%	0.5%	0.6%	0.5%	0.5%	0.4%	0.4%	<b>0.4%</b>	<b>0.4%</b>	<b>0.4%</b>	<b>0.4%</b>	<b>0.4%</b>
Rwanda	<b>0.6%</b>	<b>0.5%</b>	<b>0.4%</b>	0.4%	0.5%	0.5%	0.7%	<b>0.6%</b>	0.6%	1.0%	1.3%	1.4%

Samoa	<b>4.0%</b>	<b>3.8%</b>	3.8%	4.1%	4.1%	3.6%	4.1%	4.1%	4.0%	3.8%	4.1%	<b>4.3%</b>
Saudi Arabia	2.3%	2.6%	2.9%	2.9%	2.2%	2.6%	2.6%	2.5%	2.4%	2.3%	2.0%	2.5%
Senegal	1.1%	1.2%	1.2%	1.2%	1.3%	1.3%	2.1%	1.7%	1.8%	2.0%	1.9%	2.1%
Sierra Leone	1.2%	0.9%	0.7%	0.8%	0.6%	1.1%	1.5%	1.7%	1.7%	1.2%	1.1%	1.0%
Solomon Islands	3.4%	<b>3.3%</b>	3.3%	3.3%	3.4%	4.9%	5.1%	4.7%	4.9%	5.7%	4.0%	4.4%
South Africa	3.1%	3.9%	3.3%	3.1%	3.0%	3.1%	3.1%	3.1%	3.0%	3.0%	3.1%	3.2%
Sri Lanka	1.6%	1.5%	1.4%	1.4%	1.4%	1.8%	1.5%	1.8%	1.8%	1.9%	<b>1.8%</b>	<b>1.9%</b>
Sudan	<b>0.8%</b>	<b>0.8%</b>	<b>0.9%</b>	<b>0.8%</b>	<b>0.8%</b>	0.8%	1.1%	1.1%	1.3%	1.4%	1.4%	1.4%
Suriname	<b>0.6%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>0.7%</b>	<b>0.7%</b>	<b>0.7%</b>	<b>0.7%</b>	<b>0.7%</b>	0.7%	0.6%	0.5%	0.5%
Swaziland	2.3%	1.9%	2.3%	2.2%	2.2%	2.3%	2.2%	2.0%	2.5%	2.8%	3.1%	3.1%
Syria	0.9%	0.8%	0.7%	0.6%	0.5%	2.0%	2.2%	2.3%	2.5%	2.2%	2.1%	1.9%
Tajikistan	2.1%	1.3%	1.3%	1.1%	1.0%	0.9%	1.0%	0.9%	0.9%	1.0%	1.2%	<b>1.2%</b>
Tanzania	<b>1.1%</b>	<b>1.0%</b>	<b>1.0%</b>	1.2%	1.2%	1.3%	1.6%	1.9%	1.4%	0.7%	1.1%	0.6%
Thailand	1.3%	1.4%	1.6%	1.7%	1.6%	1.4%	1.4%	<b>1.7%</b>	<b>1.8%</b>	<b>1.7%</b>	<b>1.8%</b>	<b>1.8%</b>
Togo	<b>1.0%</b>	1.1%	1.1%	1.5%	0.8%	0.7%	0.8%	<b>0.7%</b>	0.7%	0.7%	1.7%	1.6%
Trinidad and Tobago	2.1%	1.9%	1.9%	1.8%	<b>1.6%</b>	<b>1.8%</b>	<b>2.5%</b>	<b>2.2%</b>	<b>2.0%</b>	<b>2.2%</b>	<b>2.0%</b>	<b>1.9%</b>
Tunisia	2.3%	2.3%	2.1%	2.1%	2.0%	2.7%	2.9%	2.6%	2.6%	2.4%	2.4%	2.3%
Turkey	0.6%	0.6%	1.2%	2.8%	3.1%	3.1%	3.8%	4.2%	4.3%	4.3%	4.1%	4.0%
Turkmenistan	1.8%	2.3%	4.0%	3.5%	2.4%	3.3%	2.9%	2.4%	2.7%	2.4%	2.0%	1.5%
Uganda	<b>1.0%</b>	<b>1.0%</b>	0.7%	0.8%	0.9%	1.1%	1.6%	1.6%	2.8%	2.4%	2.2%	1.2%
Uruguay	1.7%	1.8%	1.7%	1.8%	1.9%	<b>1.7%</b>	<b>1.8%</b>	<b>1.6%</b>	<b>1.6%</b>	<b>1.7%</b>	<b>1.7%</b>	<b>1.7%</b>
Uzbekistan	3.6%	3.7%	3.3%	3.2%	2.9%	2.6%	2.6%	2.5%	2.4%	2.3%	2.4%	2.4%
Vanuatu	<b>2.2%</b>	<b>2.3%</b>	3.0%	2.7%	2.8%	2.7%	2.7%	2.8%	2.7%	<b>2.9%</b>	<b>3.0%</b>	<b>3.0%</b>
Venezuela	1.0%	0.8%	1.4%	1.3%	1.4%	1.3%	1.3%	<b>1.4%</b>	1.4%	<b>1.2%</b>	<b>1.0%</b>	<b>1.0%</b>
Vietnam	<b>0.9%</b>	<b>0.9%</b>	1.0%	0.9%	0.8%	0.8%	0.9%	0.9%	0.9%	0.8%	1.3%	1.3%
Yemen	<b>1.1%</b>	1.0%	0.9%	1.2%	1.2%	1.3%	1.5%	1.3%	1.4%	1.8%	1.2%	1.3%
Zambia	1.8%	1.7%	2.0%	2.1%	2.3%	1.9%	2.7%	2.8%	2.8%	1.7%	1.7%	2.4%
Zimbabwe	2.4%	2.0%	2.4%	3.8%	3.0%	3.4%	3.2%	<b>2.6%</b>	2.4%	3.7%	4.0%	4.6%

Note: \*Bold italics indicates imputed country-year

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