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Is Development Assistance for Health fungible? Findings from a mixed methods case study in Tanzania



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ABSTRACT

The amount of Development Assistance for Health (DAH) available to low- and middle-income countries has increased exponentially over the past decade. However, there are concerns that DAH increases have not resulted in increased spending on health at the country level. This is because DAH may be fungible, resulting from the recipient government decreasing its contribution to the health sector as a result of external funding. The aim of this research is to assess whether DAH funds in Tanzania are fungible, by exploring government substitution of its own resources across sectors and within the health sector.

A database containing 28140 projects of DAH expenditure between 2000 and 2010 was compiled from the Organisation for Economic Co-operation and Development's Creditor Reporting System (OECD-CRS) and AidData databases. Government health expenditure data for the same period were obtained from the Government of Tanzania, World Bank, public expenditure reviews and budget speeches and analysed to assess the degree of government substitution. 22 semi-structured interviews were conducted with Development Partners (DPs), government and non-government stakeholders between April and June 2012 to explore stakeholder perceptions of fungibility.

We found some evidence of substitution of government funds at the health sector and sub-sector levels and two mechanisms through which it takes place: the resource allocation process and macro-economic factors. We found fungibility of external funds may not necessarily be detrimental to Tanzania's development (as evidence suggests the funds displaced may be reallocated to education) and the mechanisms used by DPs to prevent substitution were largely ineffective.

We recommend DPs engage more effectively in the priority-setting process, not just with the Ministry of Health and Social Welfare (MoHSW), but also with the Ministry of Finance, to agree on priorities and mutual funding responsibilities at a macroeconomic level. We also call for more qualitative research on fungibility.

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1. Introduction

The amount of Development Assistance for Health (DAH) available to low- and middle-income countries has more than doubled from \$15.3 billion in 2004 to \$35.9 billion in 2014 (Dieleman et al., 2013). This substantial increase has led some to explore whether DAH is fungible (capable of being substituted) or additive to the overall allocation to the health sector within

countries (Dieleman and Hanlon, 2013; Pack and Pack, 1993). While some may argue fungibility is a rational response of countries faced with sub-optimal external aid allocations (McGillivray and Morrissey, 2000), others see it as a threat to meeting global targets on investment in health (Lu et al., 2010). In this latter respect, the current emphasis on achieving universal health coverage and financing the Sustainable Development Goals have focussed attention on domestic contributions to the health sector (United Nations, 2015), and several Development Partners (DPs) are working on co-financing agreements before DAH is provided (The Global Fund to fight AIDS Tuberculosis and Malaria, 2013). Exploring the extent to which DAH is fungible is therefore timely, as is the need to understand its causes and why it arises, both to assist those trying

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to reduce it, and to assist into the enquiry of whether fungibility is a rational response to increases in DAH.

There have been various attempts to study DAH fungibility, both from the sector (Dieleman and Hanlon, 2013; Farag et al., 2009; Lu et al., 2010) and sub-sector levels (Harper, 2012; Shiffman, 2008). In the health literature fungibility is typically defined as the non-additionality of DAH, where DAH is spent in the health sector, but the recipient government substitutes its own resources to other priorities (Morrissey, 2006). However, there is no consensus on a measure of fungibility, or a threshold beyond which DAH is considered fungible. Many studies have assessed the degree of DAH fungibility by asking the question: does an extra dollar of DAH result in an extra dollar of health expenditure by the government? To answer this question, most studies have used multi-country data, running regressions to assess the relationship between DAH and government health expenditure across different time points (Dieleman and Hanlon, 2013; Farag et al., 2009; Lu et al., 2010; Stuckler, Basu and McKee, 2011; Van de Sijpe, 2013). These studies generally conclude DAH is fungible, although the magnitude of the effect varies between a US\$0.27–US\$1.65 decrease in domestic expenditure on health per dollar of DAH. There has been some debate as to the validity of these studies due to concerns about the accuracy and completeness of the data they are based on, their methodological approaches, including their handling of missing data and regression models, as well as the risk of endogeneity and ambiguity as to the direction of causality (Ooms et al., 2010; Roodman, 2012; Sridhar and Woods, 2010). Although some of the authors have responded to these criticisms (Dieleman et al., 2013), doubts remain on whether cross-country studies can disprove the null hypothesis (that DAH is not fungible). Further, these studies highlight the heterogeneity of results across countries (Jones, 2005; Ooms et al., 2010), but, generally do not examine the drivers of these differences. There is therefore a need to go beyond cross-country analyses and investigate DAH fungibility from the perspective of a recipient country, and explore the mechanisms behind the broader econometric findings using quantitative and qualitative methods.

There has been one country case study of DAH fungibility in Vietnam, which analysed the effect of two World Bank health projects on government expenditure, and found DAH was not fungible between sectors, but was fungible within the health sector across provinces (Wagstaff, 2011). However, this study did not explore the reasons that led to fungibility. Further, three case studies examining the additionality of HIV development expenditures in Honduras, Rwanda and Thailand found no evidence of government substitution, but did find DPs substituted their HIV funding to other priorities as a response of increased HIV funding from the Global Fund to Fight Aids, TB and Malaria (Garg et al., 2012). There is therefore a dearth of data on country level factors that may lead to fungibility, the mechanisms through which it occurs and the implications it has for health policy; although these are recognized to be essential to understand fungibility (Harper, 2012). Addressing this gap can help those designing strategies to deal with fungibility, including changing the channel and mechanisms of DAH disbursement or co-financing arrangements (Leiderer, 2012; The Global Fund to fight AIDS Tuberculosis and Malaria, 2013).

This study intends to address some of these knowledge gaps by using the Tanzanian health sector as a case study. We first use a mix of quantitative and qualitative methods to assess whether trends on domestic and external expenditures in Tanzania are consistent with DAH fungibility. We then explore qualitatively the perceptions of stakeholders on the processes that may lead to substitution of government funds.

2. Study setting

Tanzania (mainland) was selected as the case study country because it is one of the top recipients of DAH globally and is heavily dependent on external health funding, which accounted for 30–48% of total health expenditure between 2003 and 2013 (World Health Organisation, 2015).

A multitude of actors are active in the Tanzanian health sector. These include DPs: bi-lateral and multi-lateral agencies, and private foundations; all levels of government: Ministry of Finance, Prime Minister's Office Regional Administration and Local Government (PMO-RALG), Ministry of Health and Social Welfare (MoHSW) and regional and council health management teams; and non-government agencies, including faith-based organisations, civil society organisations, non-government organisations (NGOs) and the private, for profit sector.

The Tanzanian health sector is funded from a mix of domestic and external funds. Domestic funds are mainly generated through taxation. DPs funding the health sector directly do so using three different modalities. The first is the basket fund, which was established in 1999 and is earmarked pooled health sector funding allocated to the MoHSW, PMO-RALG and regional and local authorities. In addition, DPs provide funding for vertical projects directly to the MoHSW, regions and districts; and off-budget funds channelled through non-government agencies. Finally, from 2001 DPs have been providing unmarked General Budget Support (GBS) to the Ministry of Finance.

DPs and the government have worked under a Sector Wide Approach (SWAP) in the health sector since 1998, with the aim of alignment in support of the government's health and financing policies, using harmonised procedures and country public financial management systems (Hobbs, 2001). The Tanzanian health sector underwent a decentralisation reform in 1994, known as "Decentralisation by Devolution" that decentralised financial and budgeting to the district level (Ministry of Health and Social Welfare, 2008).

3. Methods

3.1. Methodological approach

Given the lack of sufficient historical data on domestic and external health financing and difficulty in controlling confounders, we did not seek to quantitatively establish a causal relationship on whether DAH results in substitution. Instead, we first provide a descriptive (primarily correlative) account of domestic and external health expenditure trends as sources and agents, where we compare trends in total domestic and external health expenditure and the relative shares each represent to give an indication of how they change in relation to each other and as an overall priority to DPs and government. Although descriptive in nature, these analyses allow for the exploration of potential substitution across sectors and sub-sectors. This is complemented through in-depth interviews exploring possible explanations for the trends, and mechanisms of possible causality, including a focus on stakeholders' perceptions on whether fungibility is taking place in the Tanzanian health sector. This is used to develop an in-depth exploration of the potential mechanisms and governmental processes that may lead to DAH fungibility in an effort to unpack the potential causal pathway.

We used a modified sequential transformative strategy to combine quantitative and qualitative methods, as described by Creswell (2003). This strategy involves carrying out the two methods in sequential stages of data collection (quantitative followed by qualitative), and provides a degree of flexibility to

investigate findings as they emerge (Creswell, 2003). Integration took place during the analysis and interpretation phase, using a technique influenced by the works of O’Cathain et al., which involved significant iteration between the quantitative and qualitative analyses, both to explain the findings of either method, and to inform trends or themes to be explored (“following a thread”) (O’Cathain et al., 2008, 2010).

3.2. Quantitative methods

We present and analyse trends in domestic and external expenditure at the sector and health sub-sector levels, and the relative shares each represent of total expenditure. The time period of analysis was from 2001 to 2010 as a full dataset on expenditures was only available up until 2010 (2001–2008 for HIV and 2004–2010 for Development Assistance for Health channelled through the government (DAH-G)). The quantitative indicators used are summarised in Box 1.

Box 1

Quantitative indicators

1. *Total Government Expenditure (TGE)*: Total expenditure channelled through government sources (all sectors). Obtained from the Government of Tanzania’s Budget Speeches for the years 2001–2010.
2. *Government Health Expenditure as a Source (GHE-S)*: Government expenditure on health raised domestically. Calculated by subtracting the estimated proportion of GBS spent on health from the domestic health expenditure reported in the annual health sector Public Expenditure Review for 2001–2010.
3. *Government Health Expenditure as an Agent (GHE-A)*: Health expenditure channelled through the government ($GHE-A = GHE-S + DAH-G$). Extracted from the World Bank’s Tanzania’s Public Expenditure Review for 2001–2010 and calculated from our own data sources (please note this is not directly comparable to adding up GHE-S and DAH-G from the calculations reported in this paper, see [Supplementary methods and supplementary Table 3]).
4. *Government expenditure on HIV as a source*: Government expenditure on HIV raised domestically. Obtained from the Tanzanian Multi-Sectoral HIV/AIDS Public Expenditure Review for 2001–2008
5. *Government expenditure on HIV as an agent*: HIV expenditure channelled through the government. Calculated by adding up 4 and 10.
6. *Official Development Assistance (ODA)*: Disbursements from official agencies administered with the aim of promoting economic development and welfare that are concessional (with a grant element of at least 25%) (Organisation for Economic Co-operation and Development). Obtained from the OECD’s Creditor Reporting System database for the years 2001–2010. Reported as a total and for four sectors (health, education, agriculture and water).
7. *ODA channelled through the government (ODA-G)*: ODA delivered through government channels. Obtained from the Government of Tanzania’s budget speeches for 2001–2010.
8. *Development Assistance for Health channelled through the Government (DAH-G)*: All financial and in-kind

contributions from channels of assistance by official agencies to Tanzania with the aim to achieve health improvements or to finance health-related global public goods (including research, disease surveillance, monitoring and evaluation) that are delivered through government channels. Obtained by extracting DAH projects from the CRS for 2001–2010 through a mixture of keyword and line-by-line searches and manually re-coding the channel field to identify funds disbursed through the government.

9. *Development Assistance for Health delivered outside of the government (DAH-NG)*: This was calculated by subtracting DAH-G from total DAH.
10. *DAH to HIV*: DAH to Tanzania targeted specifically to HIV/AIDS related activities. Extracted from the CRS, IHME and AidData databases for 2001–2008 and manually selected projects targeted to HIV.
11. *DAH-G for HIV*: DAH-G to Tanzania targeted specifically to HIV/AIDS related activities. Extracted from by selecting HIV projects from DAH-G (see 8).

At the sector level we first compared expenditure on health with expenditure on other sectors (agriculture, education, health and water) in relation to total expenditure – Official Development Assistance (ODA) for external funding and Total Government Expenditure (TGE) for domestic funding for the period 2001–2010. These sectors were selected because they were reported by DPs and government representatives to be of priority, and are those selected by the World Bank for their Public Expenditure Review (PER).

We distinguish between government expenditure on health as an agent (GHE-A), which measures any health expenditure channelled through the government and government expenditure on health as a source (GHE-S), which captures health expenditure from the government revenue earnings. Data on government sector level expenditure as an agent were obtained from the World Bank PER (World Bank, 2011). TGE data were obtained from the Government of Tanzania Budget Speeches (Parliament of Tanzania). One caveat of these data is that government expenditure from the budget speeches includes external funds channelled through the government as GBS; given that we compare the relative share of the different sectors and that we assume GBS is distributed following budgetary allocations (see below), we made no adjustment for this. ODA data were obtained from the Organisation for Economic Co-operation and Development’s Creditor Reporting System (OECD-CRS). ODA data were classified into sectors based on the CRS sector codes, without undertaking any re-coding or adding additional data from different sources.

We then examined trends in health expenditure channelled through the government in more detail. We compared trends in GHE-S and DAH delivered through the government and through non-government channels (DAH-G and DAH-NG respectively). GHE-S, DAH-G and DAH-NG were calculated in real terms and as a proportion of TGE to account for increases in the government’s budget. DAH-G was also calculated as a proportion of ODA delivered through the government (ODA-G). ODA-G was extracted from the Budget Speeches.

Data constraints meant GHE-S was difficult to obtain. Many studies use World Health Organisation’s National Health Accounts figures (NHA) (Frag et al., 2009; Ke et al., 2011; Stuckler et al., 2011); however, these figures have been criticised for using imputation methods that are not standardised (Lu et al., 2010). Others estimate GHE-S by deducting DAH-G from GHE-A

(Dieleman and Hanlon, 2013; Lu et al., 2010). Here, we obtained GHE-S from the Tanzanian health sector PER (Ministry of Health and Social Welfare, 2012). The PER distinguishes between GHE-S (although this includes GBS), DAH delivered as vertical projects and basket funding. In order to avoid double counting, the proportion of GBS allocated to the health sector was calculated by assuming it was allocated according to the percentage of government expenditure on health (a method previously used by (Powell-Jackson et al., 2006)) and subtracted it from the GHE-S figure found in the PER.

There are three global sources for data on ODA: OECD-CRS, AidData and the Institute for Health Metrics and Evaluation (IHME) DAH databases (see [Supplementary Methods] for detailed description). To estimate DAH-G we extracted data from the CRS and AidData (for DPs not included in the CRS). We did not include IHME data as it does not contain project-level information. We classified projects as DAH using a mix of line-by-line coding and keyword searches. Extensive efforts were used to manually recode the database to identify DAH-G and DAH-NG (see [Supplementary methods]). We only re-coded data from 2004 as the data from the CRS and AidData databases were too incomplete for prior years [supplementary Fig. 1].

Annual trends on health sub-sector expenditure were only available for spending on HIV for 2001–2008, and reproductive health and malaria for three points in time between 2000 and 2010. We extracted data on domestic and external expenditure on reproductive health and malaria from the NHA (as we deemed this more accurate than the CRS). We extracted data on DAH for HIV from all three ODA databases by selecting all projects that specifically targeted HIV through a combination of line-by-line coding and keyword searches (see [Supplementary methods]). Data on domestic HIV expenditure and DAH-G for HIV were obtained from HIV PERs (although these include GBS) (TACAIDS, 2008). External (DAH and DAH-G for HIV) and domestic expenditure on HIV were presented as absolute amounts, as a proportion of DAH-G and GHE-S respectively and as components of government expenditure on HIV as an agent.

All expenditure figures were converted to constant 2010 US dollars using World Bank conversion rates and OECD deflators to allow for comparison of different data sources and to adjust for inflation.

3.3. Qualitative methods

22 interviews were conducted with DPs, government officials from the MoHSW, PMO-RALG, representatives of regional and council management teams, and non-government stakeholders during the period of April–June 2012 (Table 1). Respondents were initially sampled purposively to represent stakeholders involved in health budgeting decisions in Tanzania. Contact-tracing was subsequently used to identify further respondents. No reward was offered for taking part, which meant one person at the council level refused to participate. Interviews were conducted by MMA face to face, in English and lasted for about an hour. When respondents consented, interviews were recorded and transcribed. Otherwise, detailed notes were taken and immediately typed up. Government stakeholders did not give permission to be quoted, therefore their responses are only included in the narrative.

The transcripts were analysed inductively using thematic content analysis, which allows for the identification and analysis of themes within the data (Braun and Clarke, 2006). We used a mix of deductive and inductive approaches to identify important themes. We started with three macro-themes, based on the interview guide and the literature: whether DAH funds are perceived to be fungible, the reasons and the implications of DAH fungibility in the

Table 1
Interview participants.

Stakeholder type	In-depth interviews
Government	12
Bi-lateral DP	5
Multi-lateral DP	2
Non-government	3
Total Interviews	22

Tanzanian health sector. Within these macro-themes, sub-themes were identified inductively. The coding tree was devised by MMA and approved by all authors. The NVIVO software was used to manage the data. Constant comparative method (Boeije, 2002) was used to enhance internal validity, by testing hypotheses from one part of the data on the others. Deviant case analysis (Silverman, 2013) (exploring cases that fitted and contradicted emerging hypotheses) was undertaken to ensure the views of all stakeholders were represented.

Ethical approval was obtained from the Ethical Review Boards of the London School of Hygiene & Tropical Medicine, the Ifakara Health Institute and the Tanzanian National Institute of Medical Research.

4. Results

4.1. Are DAH funds fungible?

4.1.1. Sector substitution

In the time period 2001–2010 TGE increased from \$2.5 to \$8.2 billion. Over the entire period education was the top government priority, increasing from \$482 million to \$1.58 billion and making up about 20% of TGE. GHE-A had a lower, but similar pattern of expenditure. It increased in absolute terms, but as a share of TGE it remained fairly constant at around 8% [Supplementary Table 1 and Fig. 2]. External financing trends were slightly different. The top priority for external financing was initially education from 2001 to 2004 increasing from \$59 million to \$263 million (18% of ODA in 2004), after which it fluctuated between \$95 million and \$235 million (8% of ODA in 2010) (see Fig. 1b and [Supplementary Table 1 and Fig. 2]). In contrast, external funds to health increased steadily 10-fold from 2001 to 2010 (\$71 million to \$742 million), becoming the biggest external priority at 25% of total ODA by 2010 (Fig. 1 and [Supplementary Fig. 2 and 3]).

Exploring the health sector in more depth, we found GHE-S was fairly stable at 5–6% of TGE between 2004 and 2006, but slowly decreased to 4.5% by 2010 (Fig. 2). In contrast, DAH-G experienced a 311% increase (from \$142 to \$441 million), and as a proportion of total ODA-G increased from 9% to 44% between 2004 and 2009 (Fig. 2a, [Supplementary Table 2]). DAH-G and DAH-NG were initially constant as a proportion of TGE, but after 2006 DAH-G increased whilst DAH-NG decreased (Fig. 2b).

These results show that despite external funding for education decreasing, the government still managed to keep expenditure on education at 20% of TGE (Fig. 1a). In contrast, GHE-A remained constant at 8% of TGE (Fig. 1a), whilst DAH-G increased substantially and GHE-S decreased as a proportion of TGE post 2006 (Fig. 2). This suggests some substitution of domestic resources from health to education.

When asked about DAH fungibility, different stakeholder groups had contradicting views. Government respondents on the whole did not believe the government substituted external funds. The main reasons given for this were that health was a priority sector for the government and that GHE-S has been rising steadily. However, they did acknowledge the government had many

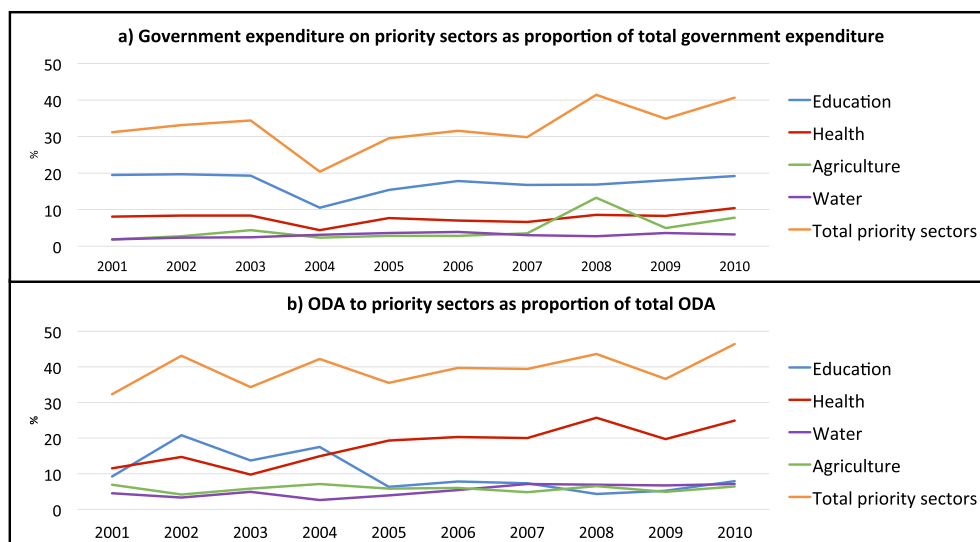


Fig. 1. Sectoral allocation of external and domestic resources in Tanzania in the time period of 2001–2010.

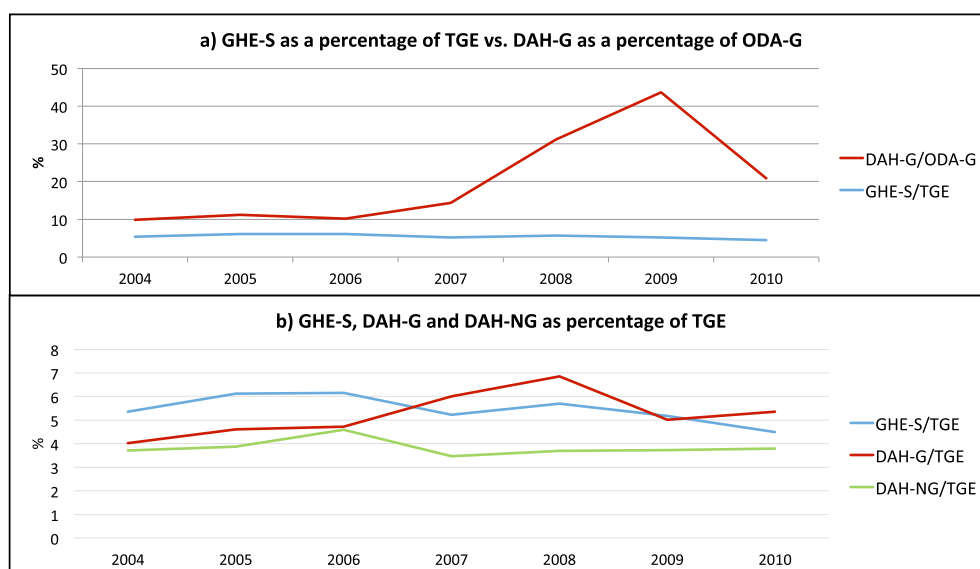


Fig. 2. Trends in GHE-S, DAH-G and DAH-NG in Tanzania in the time period of 2001–2010.

demands at the central level, for instance to invest in infrastructure and agriculture, and one respondent from the central government admitted education was a higher government priority than health.

In contrast, most DPs believed DAH was fungible because as a proportion of TGE, GHE-S had actually decreased, often quoting the Abuja target of allocating 15% of TGE to the health sector as their expectation for the government ([Abuja Declaration on HIV/AIDS Tuberculosis and other related infectious diseases, 2001](#)).

“... (the government) share of the total (health expenditure) has been going down. The general response from finance is that in relatively good economic growth, that (as) the overall government budget is going up, therefore you’re getting a smaller share of a growing budget. Certainly that’s true, but that is not the idea. I mean the idea was the Abuja target.” (DP)

Finally, a non-government stakeholder believed substitution was taking place because they perceived the government’s

behaviour as deliberately reducing its share of the health budget in response to DAH.

“All the time, of course. That’s how it is. All the money you provide to the health sector, I mean, the government takes it out in the other end.” (Non-government)

4.1.2. Health sub-sector substitution

Within the health sector, the increases in DAH-G varied across different disease areas. DAH-G for HIV and GHE-S for HIV increased from \$23million to \$363 million and from \$9 million to \$18 million respectively between 2002 and 2010 ([Fig. 3a](#)), suggesting some crowding in. However, the rate of increase differed substantially, and as DAH-G for HIV increased faster than GHE-S for HIV, government expenditure on HIV as an agent became highly DP-dependent (GHE-S for HIV has remained below 5% of GHE-A for HIV since 2007) ([Fig. 3b](#)).

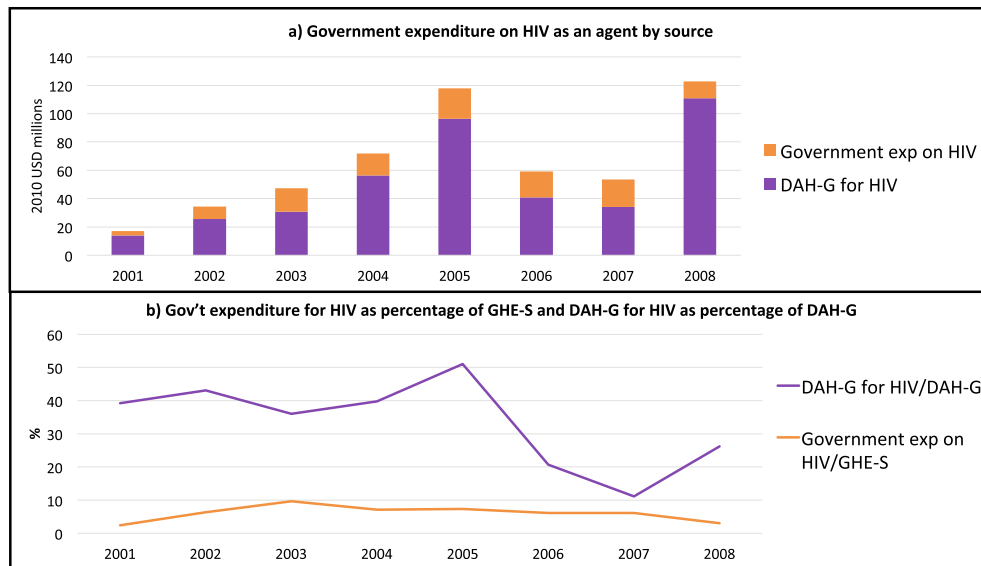


Fig. 3. Trends in external and domestic funding for HIV in Tanzania funding comparison between domestic and external sources in the time period of 2001–2010.

Examining the way DAH for HIV was channelled, we found that only 30–50% was delivered through the government (data not shown). DAH for HIV delivered through the government as a proportion of DAH-G was initially steady at around 40–50% but decreased to 11% in 2007, before rising again to 26% in 2008 (Fig. 3b). Decreases in DAH-G for HIV (in absolute numbers and as a proportion of DAH-G) after 2005 took place at the same time as decreases in GHE-S for HIV from \$18 million to \$8 million; and substantially drive the overall trends in health sector wide expenditure. External expenditure on malaria and domestic and external expenditure on reproductive health increased between 2002 and 2009, whilst domestic funding of malaria stagnated between 2002 and 2005 and decreased in 2009 [Supplementary Fig. 4], suggesting some substitution of government funding for malaria.

The degree of fungibility of sub-sector funds, both vertical programmes and (pooled) health basket funds was also discussed with respondents. DPs perceived HIV funds were fungible, with a DP suggesting the reason why the government was not spending more on HIV was the fact that it was heavily funded by DPs.

“I’m sure that the government would spend more on HIV if there wouldn’t be so much funds from the donors.” (DP)

Equally, a DP funding reproductive health programmes believed there was evidence of fungibility in this sub-sector, because for every dollar they invested the government took “a dollar out”. Interestingly, sub-sector fungibility was not restricted to vertical programmes. Some DPs reported concerns regarding the additionality of basket funding, particularly of funds earmarked for drugs and medical supplies.

“(…) it’s an increasing concern (…) that as the basket fund is going up—specifically as basket fund support for drugs and medical supplies (…)—ministry of finance support for those things have been going down.” (DP)

As with overall health sector expenditures there was some degree of difference in the definition of fungibility between respondents. Although some degree of substitution seemed to be taking place, DPs and non-government stakeholders perceived this as DAH fungibility, whereas government representatives did not.

4.2. What government processes may lead to substitution of funds?

We explored the mechanisms leading to fungibility of DAH funds in the Tanzanian health sector and sub-sectors with respondents. The answers provided fall under two categories: rational decision-making and macro-economic factors (debt servicing).

4.2.1. Rational decision-making

The substitution of government funds can take place at two stages during the budget allocation process: during negotiations of each sector for resources from the central government and during the health sector allocation of its funds. When asked about the first phase, respondents identified the Ministry of Finance as being the government institution with overall power to decide on budgeting priorities. Respondents reported that during the budgeting process there was competition between the different ministries, and the fact that health was seen as favoured by external resources reduces its bargaining power.

“... the Ministry (of finance) has been responding (to questions about fungibility) by saying that the government thinks that the Ministry of Health is privileged with many donors who are ready to help, and that there are other ministries which are not as privileged.” (Non-government)

Many respondents described the government’s behaviour as “playing a wait and see game”, first establishing how much DPs allocate to health and reallocating its resources accordingly. Indeed, a non-government respondent believed DAH fungibility was exacerbated by DP earmarking, which resulted in the government re-directing its resources to areas that cannot be funded externally.

“... (if) you’ve got something (...) that is a priority of yours but you can’t get an ‘X’ amount of money for, then obviously, you’re going to try and shift your own money more into those areas, while the donors fund the areas which are attractive to them.” (Non-government)

Although many respondents discussed substitution of domestic funds with concern, a DP perceived this to be rational decision-

making from the government, comparing it to a household budget planning.

“I would always think if you’re looking at it from a household perspective, if your child for example is offered a scholarship, then you are not going to just continue spending as much money on tuition fees as you would have if the scholarship wouldn’t have been there.” (DP)

The second stage of resource allocation took place during the health SWAP dialogue, where DPs, government and non-government stakeholders were present. Respondents reported that DPs and the government arrived at the SWAP budget process with misaligned priorities, resulting in a process of negotiations. Government respondents acknowledged the government takes into consideration which sub-sectors receive DP funding before allocating its own resources. Interestingly, despite DPs discussing fungibility of sub-sector funds with concern, when allocating basket resources with respect to other external funds, DPs “coordinated” the basket to avoid duplication.

“Also malaria is a priority, but the Global Fund provide a lot of funding for it, so (government and DPs) discuss on other priorities. Why put money into malaria if the Global Fund will? It would be a waste of (the) basket fund.” (Anonymous)

4.2.2. DAH fungibility and debt servicing

Substitution was not always perceived to be a deliberate policy from the government as a response to external financing. A non-government stakeholder attributed reductions of the domestic health budget as a result of macro-economic factors, such as debt repayment.

“(...) this year (...) debt servicing is taking the lead (...) I wouldn’t say that is (...) the reason the government is not prioritizing health, but maybe that would indicate that the government is forced to prioritize its financing in sectors other than health.” (Non-government)

In fact, in a letter to the International Monetary Fund (IMF) in December of 2011 ([International Monetary Fund, 2011](#)), the Government of Tanzania acknowledged experiencing a higher deficit than planned and pledged to take fiscal measures and to cut costs in the “decentralisation program for social programs”.

A reduced health budget was also perceived to have resulted in policymakers re-adjusting sub-sector expenditure. One DP explained that once they met all their recurrent costs, the MoHSW had limited flexibility on the areas where they could cut their budget.

“(the government) doesn’t have that much flexibility in their budget and (drugs and medical supplies) is one of their areas of flexibility ...” (DP)

This DP felt that this lack of flexibility explained the budget cuts for drugs and medical supplies reported above, rather than a deliberate response to an increased contribution from the basket fund to this area.

4.3. Efforts to curb DAH fungibility

Although DPs reported understanding the reasons for government substitution of funds, they were nonetheless worried and felt

it had consequences for DP-government relationships and DP funding decisions. For instance, a DP who was concerned about the additionality of their vertical programmes reported that substitution would result in DPs withdrawing their funds.

“(...) if I’m playing devil’s advocate I would say (substitution)’s a smart thing to do. But at what point does it then have political, non-tangible results, that people stop putting in their dollar?” (DP)

DPs have therefore adopted three different strategies to prevent fungibility from taking place. First, in an effort to increase health sector funding they have retained control of their resources by earmarking their funds and delivering them as pooled basket funds or projects, rather than unmarked GBS, which could be re-directed to other sectors by the government (although this does not prevent the government from substituting its own funds).

“At one time (DPs) wanted to move away from (the) basket fund to GBS, but they realised it would be a tragedy for the health sector. The Ministry of Finance (has) many children to feed.” – (Anonymous)

Indeed, according to CRS data GBS increased from \$52 to \$762 million between 2002 and 2009 before decreasing to \$451 million in 2010.

Second, at the time of fieldwork (2012), DPs were reported to have attached conditions for matched funding from the government to their funds to ensure DAH was additional. However, not everyone agreed with this practice, as one non-government respondent explained, it is against the Paris Declaration’s principle of country ownership ([OECD, 2005](#)).

“... (DPs) are trying to force the government to (match) the amount of money (...) they put into the drugs budget. But I think that goes right against (the) Paris (Declaration); that it should be for the government to decide. Because essentially if the government (were) to put more money into drugs (...) that money would be coming from something else. And that means (...) they would have to reduce the number of staff (...); or (...) take it from other areas of supplies (...).” (Anonymous)

Third, knowing that funding decisions are taken by the Ministry of Finance, DPs have supported the MoHSW in their negotiation of their budget.

“They (the MOHSW) said, ‘We’re going to meet with the Ministry of Finance to make our case for more resources’. So we provided them with a letter from the development partners (that) said, ‘We have an expectation that you put more money into the health sector.’” (DP)

In this particular case (in the 2012 budget) the MoHSW was able to make a case to receive more funding, although it is impossible to know the extent to which the DP letter played a part in that decision.

Overall, respondents had doubts regarding the success of these strategies, and were unsure whether there was anything DPs can actually do to stop DAH substitution, except for withdrawing their funds.

“(...) there is nothing (DPs) can do to stop the government from behaving the way it is behaving. Then one would (...) propose that donors cut their assistance. If by donor putting in more money the government reduces its (funding to health), then the opposite is also true.” (Non-government)

This respondent expected the government to increase GHE-S if DPs withdraw their funds. However, DPs did not agree this would be the case. One DP interviewed was unsure withdrawing DAH would provide “an incentive for the government” to increase budgetary allocation to the health sector or whether it would simply result in “bad outcomes”.

5. Discussion

This paper explored the degree of DAH fungibility in Tanzania, and the causes and implications of government substitution of domestic funds. We found expenditure patterns consistent with DAH fungibility, but our results suggest this is a result of the interplay of misaligned priorities and a resource-allocation process under scarcity. Our findings suggest the displaced funds may be going to education, rather than non-social sectors.

The expenditure tracking results suggest that from a broad social sector perspective there is no evidence of displacement of government financing across sectors between 2001 and 2010. When examining sector-level expenditures, we found DPs initially favoured education, but switched to health around 2004, whereas the government favoured education and agriculture throughout. We find a pattern of expenditure for and within the health sector that is consistent with fungibility, primarily occurring in more recent years and aligned with an increase in DAH. Our qualitative results generally support this, with DPs and non-government stakeholders describing DAH doing “a dollar in a dollar out” and the government (although denied they substituted DAH) describing a process of resource allocation where it decided how much to allocate to the different priorities once it knew what resources were available. The literature on DAH fungibility also supports this, with cross-country studies finding DAH displaces government funding for health (Dieleman and Hanlon, 2013; Ke, Saksena and Holl, 2011; Lu et al., 2010; Mishra and Newhouse, 2007) and Farag et al. (2009), who concluded DPs prioritise health more than the government. We found mixed results from the sub-sector analyses; whilst quantitative data suggest there was no fungibility of HIV external financing (also supported by two studies in the literature (Garg et al., 2012; Harper, 2012)), participants believed HIV, reproductive health and basket funding were all fungible.

We identified two mechanisms leading to DAH fungibility. First (and mostly assumed in the literature), as a deliberate policy during the sector and sub-sector resource allocation processes. Although displacement of domestic health financing is generally perceived to be harmful in the literature, both in the short and long term (Dieleman and Hanlon, 2013; Farag et al., 2009), we find the behaviour of the government to be in line with economic theory (also discussed by Dieleman and Hanlon (2013)). If the Government of Tanzania aims to maximise welfare, and receives funds earmarked for health but not for other sectors, it could be expected to re-allocate its own resources to other social sectors. Often there would be concern about government expenditure decreases to non-social sectors, but we found no evidence of this. If DPs are also trying to maximise the welfare of the recipient population, then the reallocation of government resources differently across the social sectors may not be necessarily harmful. In addition, we found broader macro-economic policies, such as debt servicing, lead to substitution. This is in accordance with Stuckler et al. (2011), who found DAH was more fungible in countries that borrowed money from the IMF than those that did not.

A further interesting finding is that by insisting their funds are additional, DPs expect the government to coordinate domestic resources differently to how they coordinate external resources. DPs coordinate basket fund resources by not investing them in areas like malaria, which is funded by the Global Fund – a behaviour that

may be described as “fungible” if done by the government. In fact, two recent studies in three countries and at the global level have found DP substitution with increases in DAH to HIV displacing DAH to other health priorities (Garg et al., 2012; Shiffman, 2008). It would therefore be worth investigating further the existence and impact of DP substitution, particularly at the country level.

Finally, reflecting on whether anything can and should be done to influence government resource allocation to prevent DAH fungibility, we found that it may not be necessarily perverse to Tanzania’s development. This is supported by some authors, who have argued substitution may be rational (McGillivray and Morrissey, 2000; Waddington, 2004), and two studies which found no difference between the impact fungible and non-fungible aid has on growth (Pettersson, 2007) or on under-five mortality (Wagstaff, 2011). In contrast, others have expressed concerns regarding the non-additionality of DAH (Lu et al., 2010), or corruption if DAH is displaced from the government coffers (Lahiri and Raimondos-Moller, 2004). We found DAH fungibility was detrimental to DP-government relationships and therefore worth addressing.

Our findings suggest the three strategies used by DPs in Tanzania to prevent fungibility have not been successful. We did not find any substantial difference in the government’s response to different development assistance modalities, suggesting DPs’ earmarking of DAH may not prevent its substitution, in line with Waddington’s conclusion that fungibility actually decreases the effectiveness of earmarking (Waddington, 2004). DPs’ requests for matching of funds are against the principle of country ownership of international declarations (OECD, 2005) and were criticised by in-country stakeholders for having the potential to cause harm if essential services were cut as a result. Finally, the suggestion of some non-government respondents for DPs to withdraw their funding has already been shown empirically to not result in increased government funding for health (Dieleman and Hanlon, 2013).

There is no consensus in the literature on how best to tackle DAH fungibility, with recommendations from studies generally discussing whether DPs should work with governments (Lu et al., 2010; Sridhar and Woods, 2010), do so through innovative financing mechanisms (Farag et al., 2009), or improve current mechanisms of working with governments (Dieleman and Hanlon, 2013; Stuckler et al., 2011). We support the latter group of authors and recommend DPs to better engage in the dialogue with the government, not just at the level of the health sector but also at the macro-economic level with the Ministry of Finance, and jointly decide who will finance which priorities. We would also recommend agencies take into account countries’ fiscal health when requesting match-funding agreements.

This research has several methodological limitations. Quantitative data were obtained from different sources to select the most complete set of data. However, DAH figures obtained from the CRS will be an underestimate because regional projects were not included; domestic and external HIV expenditures are also an underestimate because they do not include broader health system expenditures; and in general the completeness of the CRS has improved in recent years, making later data more reliable. The shorter period of data availability for HIV (2000–2008) and DAH-G (2004–2009) also limited our ability to make conclusions during earlier years of the analysis. Domestic data were hard to obtain. We used sources we considered most complete and government sanctioned, but were unable to check for inaccuracies as data were only available as aggregates. However, we believe our method of estimating GHE-S is more accurate (although resource intensive) than those used in the fungibility literature because we were able to base them on estimates of government expenditure as a source

(rather than agent) and we adjusted for GBS. The qualitative analysis also has some limitations. First is the absence of the voice of the Government of Tanzania. Although representatives from different government agencies took part in the study, they did not consent to be recorded or directly quoted. We have presented their perspectives in the narrative of this paper, but the quotes are predominantly from DPs and non-government stakeholders. Second, interviews were conducted in English, which may have influenced how comfortable respondents felt in sharing their views. Third, MMA conducted all the interviews, and may have influenced both the data generated and how it was analysed. Finally, given that fungibility is context specific, there may be questions about the generalisability of the results reported here. We hope our findings are useful to countries with similar government and DP structures and to the wider research community to interpret the results from cross-country models.

Notwithstanding these limitations, this research has provided an insight into fungibility from the perspective of a recipient country. Our approach of analysing trends in financing in combination with a qualitative exploration of the perceptions of national stakeholders can provide useful information on the drivers and consequences of substitution, rather than a binary answer of whether it is taking place. Future cross-country studies of DAH fungibility would benefit from taking a broader macro-economic perspective that includes other sectors in their analysis. Although data on government expenditure are limited, IMF and World Bank databases contain sectoral expenditures, and the CRS provides ODA disbursements for all sectors. It would be particularly interesting to investigate the amount of government expenditure that is displaced to debt repayments to international financial institutions, as well as the degree of displacement to other social sectors. Finally, we feel further research is most needed to qualitatively understand fungibility. This paper takes a first step, but further country and sector-specific case studies are needed to construct a body of evidence to understand the impact of fungibility and whether and how it should be tackled.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2016.05.006>.

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