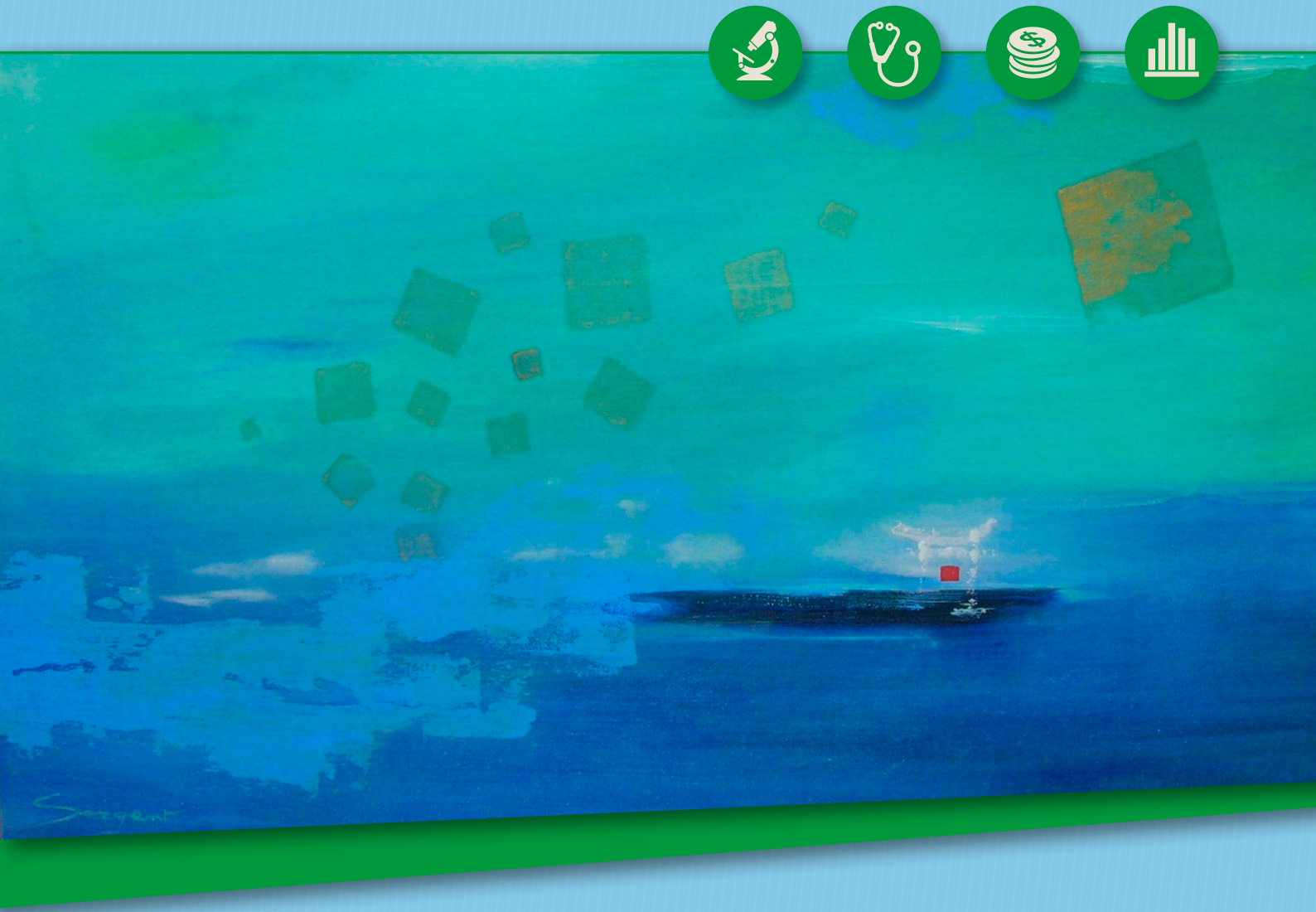
HEALTH FINANCING WORKING PAPER NO 7

TOWARDS UNIVERSAL HEALTH COVERAGE: THINKING PUBLIC

OVERVIEW OF TRENDS IN PUBLIC EXPENDITURE ON HEALTH (2000-2014)



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SUMMARY

Key Messages

- Public financing is central to making progress towards universal health coverage (UHC).
- Despite its known importance for UHC, the role of public funds from *domestic* sources to finance health stagnated between 2000 and 2014 in low-and middle-income countries (LMICs).
- There is no evidence that the replacement of private with *domestic* public financing started, especially in low-income countries (LICs).
- Per capita public expenditure on health, net of external aid, increased less rapidly than overall public spending between 2000 and 2014.
- Domestic budget prioritization towards health is subject to sharp decline and high volatility between 2000 and 2014 in LICs.
- External health aid negatively impacts the level of *domestic* resources allocated and spent on health.
- More public revenues do not necessarily lead to higher budget prioritization for health, while debt service tends to slightly reduce budget allocations to health across countries LMICs.
- *Domestic* public funds are disproportionally spent on non-discretionary health expenditure and higher-end care, reducing opportunity for better efficiency and equity in spending.
- Monitoring and evaluation strategies should be refined to provide a more accurate and comprehensive picture of public financing for health on the road to UHC.

ABSTRACT

Background: Past quantitative research on health financing has focused mostly on the level and distribution of total expenditure, with little emphasis on the specific role of public funds, despite their known importance for universal health coverage (UHC). Achieving a better understanding of public financing for health in the context of the overall macro-fiscal environment is of fundamental importance to the development of future health financing policy, notably in low- and middle-income countries (LMICs).

Objective: The main objective of the study is to examine key dimensions of the changing relation between public financing for health and the economy, the budget and sector financing over the period 2000-2014. The study specifically examines trends in public expenditure on health from *domestic* sources, separating out external sources channeled through the budget, in the context of transitioning from health aid.

Methods: As a preliminary step, we separated public expenditure on health (PEH) into *domestic* and external sources. We analysed patterns and elasticities of PEH, from both *domestic* and all sources, in the context of macro-fiscal conditions for the period 2000-2014 and for sub-periods by country and income group. We then undertook a more detailed examination of the levels and trends in budget prioritization towards health, from both *domestic* and all sources, and their evolving relationship with per capita spending. We also used panel data analysis to explore the relationship between budget prioritization for health and a set of macro-fiscal and health financing factors to identify possible determinants of higher prioritization across LMICs between 2000 and 2014. Finally, we analysed the specific role of public expenditure in the broader health financing landscape, and conducted a distribution analysis of *domestic* public funds on health by inputs, functions and levels of care. All analyses were conducted using the latest editions of WHO's Global Health Expenditure, IMF's Government Finance Statistics, and country Health Accounts databases.

Findings: Our analysis shows that the transition from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs) has been marked by an overall deterioration in the role of *domestic* public funds for health spending, especially in low-income countries (LICs). The period is characterized by reduced sensitivity of PEH to fiscal expansion and declining prioritization towards the sector, both contributing, among other factors, to weakening the relative contribution of public funds in financing the sector in LICs between 2000 and 2014. Prioritization of *domestic* budgets towards health in LMICs has been negatively affected by the level of external resources and service debt. Irrespective of their levels, *domestic* public funds have been predominantly spent on non-discretionary expenditures and high-end care, reducing opportunity for better efficiency and equity in spending.

Discussion: Taken together, these findings signal the need to find new ways to reinforce public commitments to the health sector, and refine health financing monitoring and advocacy strategies in support of countries moving towards UHC. To accelerate progress towards UHC, public financing should be at the centre of health financing policy and research. For a more comprehensive and accurate picture of public financing for health, future monitoring efforts should track budget allocations from *domestic* sources, combine relative and absolute measures, and aim for output-oriented reporting of expenditure.

1. INTRODUCTION

Optimizing health financing is central to making effective progress towards universal health coverage (UHC), and in particular to reducing the gap between the need for and use of services and improving financial protection.[1] The composition of health financing affects health system performance and a country's ability to achieve UHC goals.[2–4] While private funds play a role in all health systems, evidence shows that it is public, compulsory, pre-paid financing that helps countries move towards UHC.[5–7] Low levels of public financing are associated with reduced overall financial protection and worsened health outputs.[4,6,8–10]

Despite the acknowledged importance of public financing for health in the context of UHC, to date there has been limited quantitative research focused on public financing. With a few noticeable exceptions,[11-13] past quantitative health financing research has mostly focused on total health spending, examining trends and levels of health expenditure, with less attention being paid to the specific contribution of public funds.[14-16] Quantitative research has also focused on tracking external resources for health and their interaction with *domestic* funds.[13,16,17]

Public expenditure is governed by different dynamics to those governing general health spending. While there is extensive literature on the relation between health spending and economic growth,[15] research specifically focusing on the relation of public spending on health to income is more scarce and mixed.[11,12,18,19] There is also little systematic exploration of the elasticity of public spending on health relative to *domestic* finance and to factors other than income.[20] In general, despite a continuous push for higher health sector prioritization within budgets[21] at global and regional levels, published literature of health prioritization trends also remains scarce.[19,22,23] Additionally, a common challenge of past analyses of public expenditure on health has been the absence of disaggregation of public spending by source of funds. While crucial to inform future *domestic* resource mobilization strategies, very few attempts in the recent past[12,24] have been made to disentangle the respective contribution of *domestic* and external financing sources. For a sector that still largely depends on external aid in LMICs, analyses that merge *domestic* and external sources of public spending can provide a biased picture, e.g. budget prioritization may be over-estimated.[23]

To support progress towards UHC and achievement of the new Sustainable Development Goals (SDGs) target 3.8, there is a clear need to better understand the trends, factors and distribution of public financing for health at both the global and national levels. This paper puts public financing for health at the centre of the analysis and examines key dimensions of its changing relation to the macro-economy, the budget and overall sector financing over the past fifteen years (2000-2014). When data permits, it aims at bringing to light the actual scope of *domestic* resources in financing health.

2. METHODS

For the purpose of this analysis we defined public expenditure on health (PEH) as expenditure made on health care goods and services, and gross capital formation, by all institutional units of government, social health insurance funds and non-market, non-profit, parastatal entities.[25–27] As such, voluntary expenditure is considered private, and not included in the main estimations.

All health expenditure data comes primarily from WHO's publicly available Global Health Expenditure Database (GHED, June 2016 edition) based on the SHA.1 classification.[28] For the distribution by sub-components analysis, we compiled and used country Health Accounts (HA) data from LMICs that completed the production of SHA.11 for at least one year, as of December 2016. Macro-fiscal data was retrieved from the World Economic Outlook (WEO) and the Government Finance Statistics (GFS) databases of the International Monetary Fund (IMF), both as of November 2016.[29,30]

The data was analysed for the period 2000-2014 and three sub-periods 2000-2004, 2005-2009 and 2010-2014, for all income groups based on World Bank economic classification (GNI Atlas method) and WHO regions (where noted). Countries with a population of less than 600,000, as per the 2000-2014 average (United Nations, 2015 revision), were excluded from the analysis.

As a preliminary step, we separated PEH into *domestic* and non-*domestic* sources using GHED definitions and databases and building on previously used methods (see methodological appendix).[12,24] Due to limited data availability, we included all sources of funds for overall public expenditure.

We analysed patterns of PEH in the context of macro-fiscal conditions by using linear regression analysis to assess the elasticity of PEH, from both *domestic* and all sources, to macro-fiscal conditions by country, income group and WHO region, between 2000 and 2014. We also assessed "dynamic elasticities", as defined by Fleisher et al,[18] for three five-year sub-periods. Systematically documented, sample sizes for analysis components differed across variables, income groups and regions due to variations in data availability. Next, we undertook a more detailed examination of the levels and trends of budget prioritization for health, defined as the share of PEH, from all and *domestic* sources, relative to total public expenditure, and their evolving relation with per capita spending. For a sample of 104 LMICs, we then used panel data fixed and random effects analysis to explore the relationship between prioritization towards health and a set of macro-fiscal and health financing variables to identify potential determinants of higher prioritization across countries between 2000 and 2014. Finally, we analysed the specific role and use of public expenditure, from both all and *domestic* sources, in the broader health financing landscape, by tracing its comparative evolution in financing health. A distribution analysis of *domestic* public funds on health was also conducted by inputs, functions and levels of care.

3. RESULTS

PUBLIC EXPENDITURE ON HEALTH AND THE MACRO-FISCAL ENVIRONMENT

We found that PEH grew more rapidly than income in 2000-2014, with an estimated elasticity of PEH to GDP of 1.35 for LMICs and 1.32 for HICs for 2000-2014 (Table 1). Responsiveness to income was more marked in LICs (1.61) and the WHO African region (1.59) over the period, indicating that a 1% increase in per capita GDP translated to more than a 1% increase in per capita PEH.

Elasticity of PEH to total public expenditure was lower in general, at about 1.07 in LMICs and 1.17 in HICs. In other words, sector expenditure typically grew at the same pace as overall public expenditure in LMICs between 2000 and 2014, with a 1% increase in per capita public expenditure resulting in a roughly 1% increase in per capita sector spending.

When disaggregated by sub-periods, the results indicated that while LICs demonstrated more rapid increases in public spending for the sector relative to fiscal expansion in the

Table 1. Median public expenditure on health (PEH) elasticity against income and total public expenditure (all per capita), by income group and WHO region, 2000-2014

	Elasticity to expenditure				Elasticity to income			
	All sources		*Domestic* sources		All sources		*Domestic* sources	
	Median	Sample size	Median	Sample size	Median	Sample size	Median	Sample size
By income group								
High	1.17	47	1.18	47	1.32	47	1.38	47
Upper middle	1.08	41	1.00	20	1.25	41	1.35	29
Lower middle	1.05	42	1.17	24	1.35	42	1.69	37
Low	1.13	29	0.93	17	1.61	29	2.24	27
LMICs	1.07	112	1.01	61	1.35	112	1.47	93
By WHO region								
AFR	1.04	44	0.95	28	1.59	44	1.81	40
AMR	1.08	25	1.17	14	1.34	25	1.40	19
EMR	0.97	20	0.88	11	1.44	20	1.44	15
EUR	1.14	47	1.18	38	1.25	47	1.33	44
SEAR	1.16	9	1.39	6	1.21	9	1.49	8
WPR	1.15	14	1.27	11	1.33	14	1.63	14

Source: authors, from GHED and GFS

period 2005-2009 (e=1.38), the estimates dropped below 1 from 2010 onwards (e=0.93), indicating that per capita sector spending grew less rapidly than per capita overall public spending after 2010.

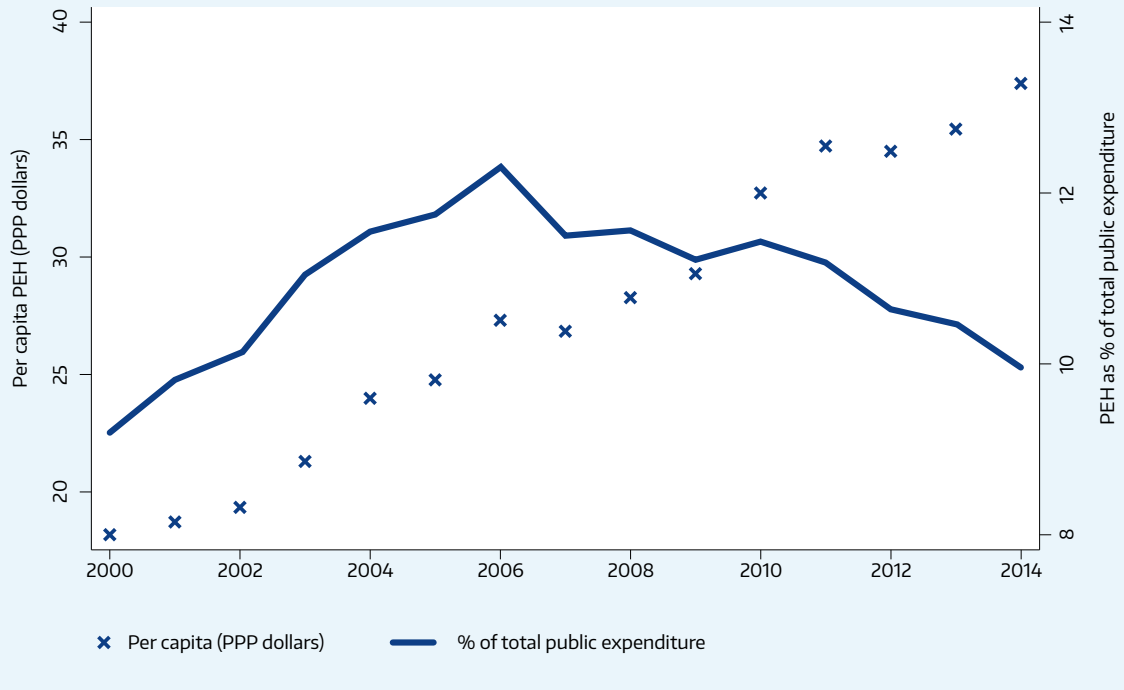
When data was disaggregated by source and only included *domestic* sources, the analysis showed reduced sector expenditure elasticities relative to public expenditure, typically in aid-dependent settings, i.e. LICs and the Africa region (AFR). Elasticity estimates are below 1 (0.93 and 0.95, respectively, for low-income and AFR countries) for 2000-2014, indicating that PEH, net of external aid, grew less rapidly than overall public expenditure in those countries (Table 1).

PUBLIC EXPENDITURE ON HEALTH AND THE BUDGET

Despite a strong political push at both the global and regional levels to prioritise spending on health,[1,21] the share of health in total public expenditure only modestly increased between 2000 and 2014 in LMICs, from 9 to 10% of total public expenditure, with important variations from year to year.

After a sharp increase in the early 2000s, budget prioritization towards health in LICs actually started to decrease in the late mid-2000s (2006-2008) (Figure 1). When ***domestic*** sources only are considered, the decrease is even more marked, leading to a health share below 6% in 2014 on average, after a sharp

Figure 1: Change in per capita public expenditure on health (from all sources) and as a share of total public expenditure in low-income countries, 2000-2014



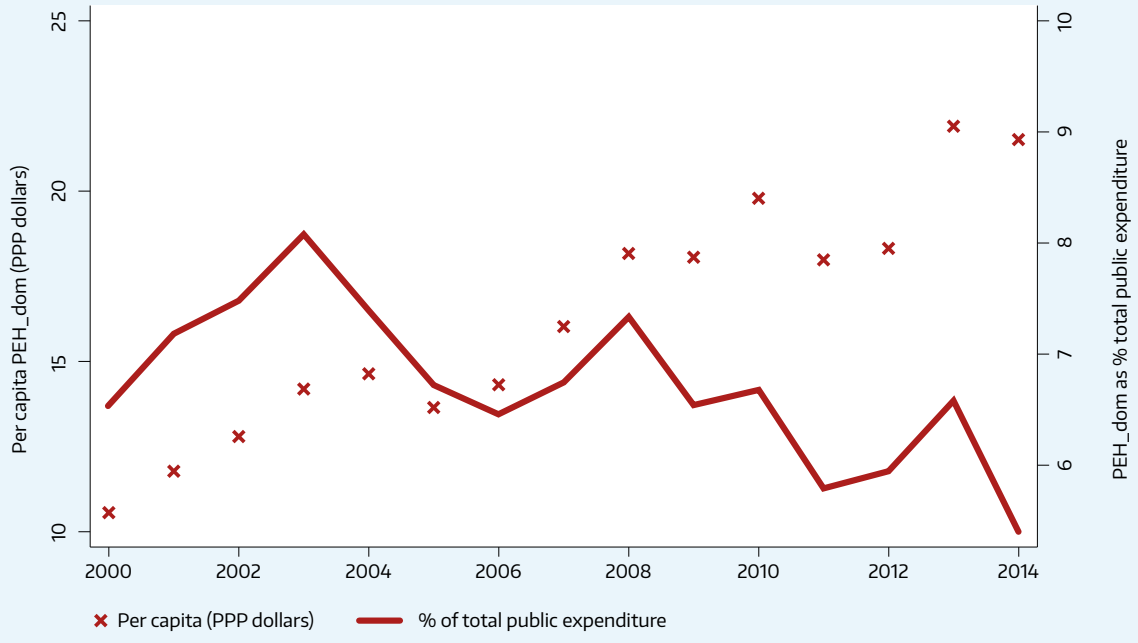
Source: authors, from GHED

increase in the early 2000s (Figure 2). There was also a noticeable volatility in the level of prioritization of health in country budgets from year to year, with obvious implications for resource predictability in the sector (Figure 3).

Because the sector resource envelope depends on both overall fiscal capacity and budget prioritization,[31] budget de-prioritization, as observed, does not necessarily mean less PEH in absolute terms,[31,32] and vice versa. Indeed, while prioritization from both all and *domestic* sources decreased, per capita spending continued to grow since the mid-2000s at a relatively similar pace throughout the 2000-2014 period (Figures 1&2). As noted in recent analyses.[33] Our analysis further showed that the ratio of public expenditure on health to total public expenditure had only a modest impact on the level of actual per capita spending, therefore calling for caution when interpreting it as a single tracing indicator.

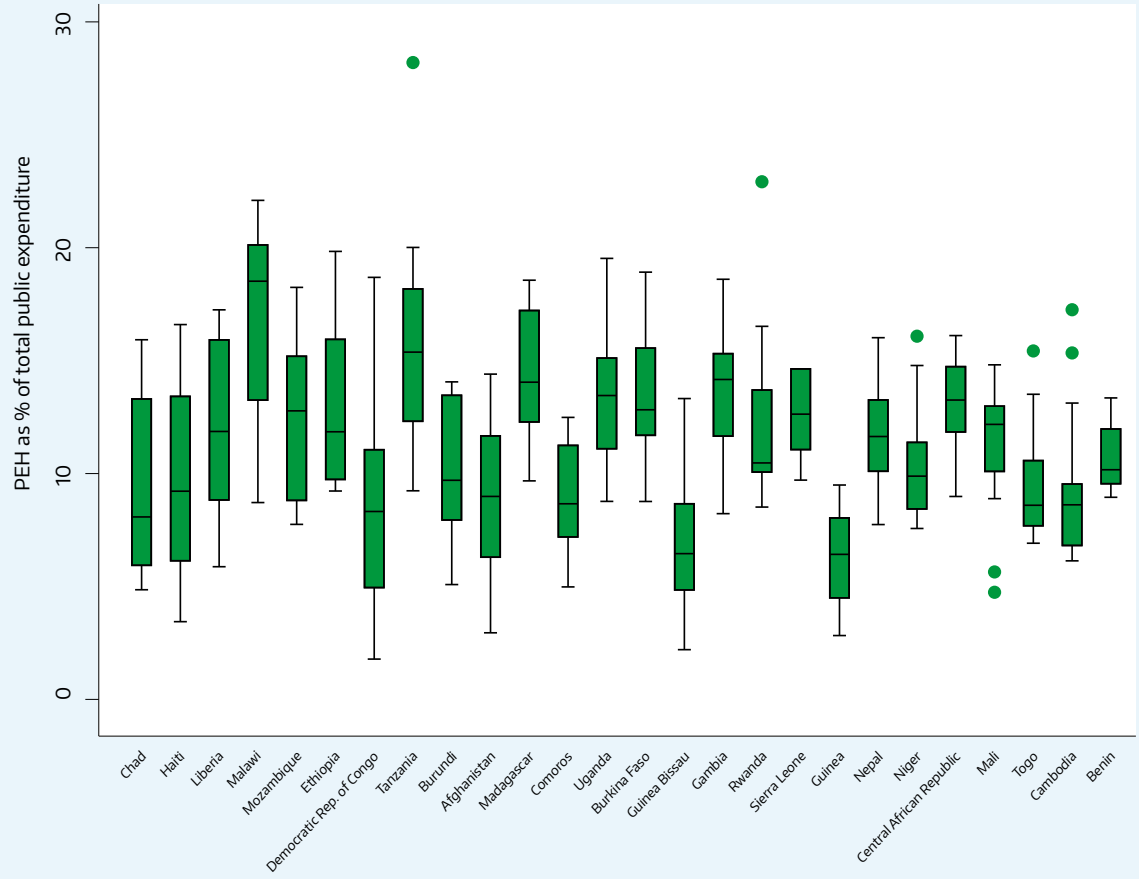
As for the factors that influenced prioritization, finding estimates obtained from the fixed-effects model[34] indicated that: i) more external resources led to higher prioritization for health in budgets; ii) favourable fiscal conditions did not seem to positively influence the level of prioritization (a 10% increase in government revenues as a share of GDP led to about 0.3% decrease in budget prioritization); iii) higher debt service acted as a deterrent for prioritization, but the effect was very limited (budget prioritization for health decreased by 0.5% when debt as a share of GNI increased

Figure 2. Change in per capita public expenditure on health from *domestic* sources only and as a share of total public expenditure in low-income countries, 2000-2014



Source: authors, from GHED

Figure 3. Variation in budget prioritization towards health (from all sources) in low-income countries, 2000-2014



Note: Outliers plotted as individual points.
Source: authors, from GHED

by 10%); and iv) high OOP spending did not incentivize higher prioritization of budget towards the sector (Table 2, Model A).

Findings obtained for PEH from *domestic* resources only (Table 2, Model B) provided similar directions in general, with the noticeable exception of the role of external aid. The level of external resources for health had a significantly negative influence on the degree of budget prioritization towards the sector, when only *domestic* sources of expenditure were considered. On average, an increase of 10% in per capita in external health aid resulted in a 1% decrease in budget prioritization for health from *domestic* sources.

PUBLIC EXPENDITURE ON HEALTH AND OVERALL SECTOR FINANCING

When PEH from all sources is considered, there was a concomitant decrease in out-of-pocket (OOP) spending and an increase in PEH between 2000 and 2014 (Figure 4).

Table 2. Factors of budget prioritization towards health in LMICs

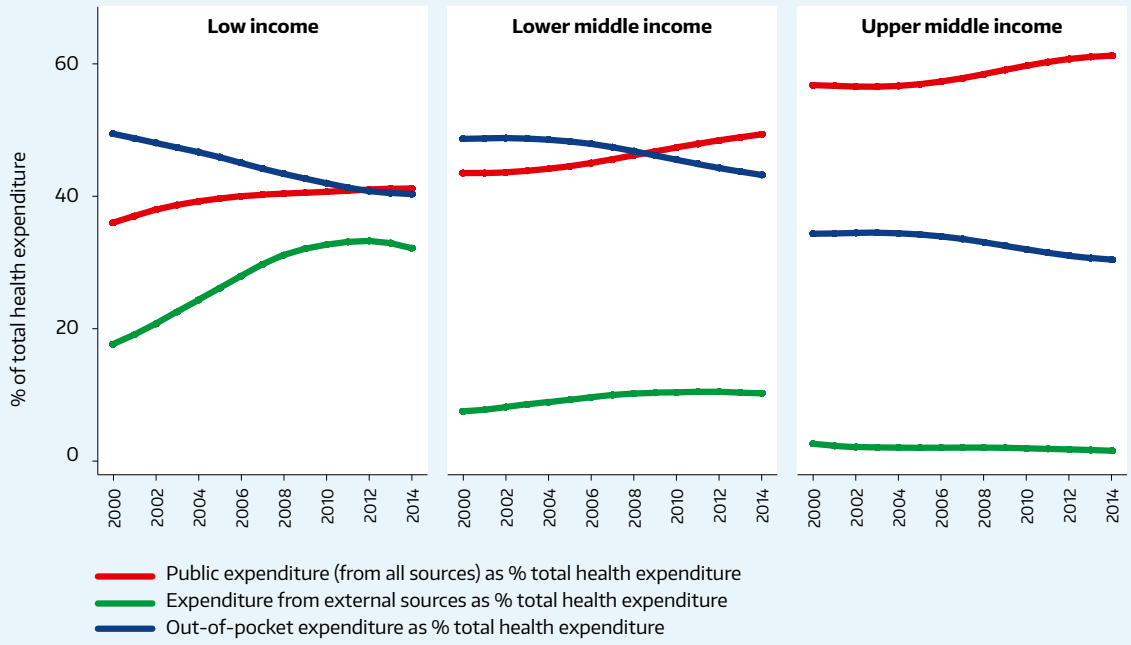
Explanatory factors	Model A (n=104) Overall sources				Model B (n=90) *Domestic* sources			
	Fixed effects (SE)	p value	Random effects (SE)	p value	Fixed effects (SE)	p value	Random effects (SE)	p value
External health aid per capita (log)	0.044 (0.011)	0.00	0.039 (0.017)	0.02	-0.106 (0.027)	0.00	-0.111 (0.038)	0.00
Revenue as % GDP (log)	-0.214 (0.036)	0.00	-0.224 (0.058)	0.00	-0.240 (0.087)	0.01	-0.200 (0.093)	0.03
Total debt service as % of GNI	-0.001 (0.000)	0.00	-0.000 (0.000)	0.01	-0.001 (0.000)	0.01	-0.001 (0.000)	0.12
OOP expenditure as % of total health expenditure	-0.236 (0.034)	0.00	-0.275 (0.059)	0.00	-0.359 (0.078)	0.00	-0.390 (0.087)	0.00

SE = Standard error
Source: authors, from GHED and GFS

However, when external sources of PEH are removed, the relative importance of PEH in financing health stagnated (Figure 5). PEH, net of external health aid channelled through the budget, represented less than 25% of total health expenditure over the full period, a particularly low share compared to higher income groups or countries that have made significant progress towards UHC.[35] When *domestic* sources only are considered, there is no such evidence that the replacement of private health financing with public, compulsory sources – characterized as the "health financing transition" by Savedoff and Fan – effectively started in LICs.[36] The relative reduction in OOP spending observed over the period was more likely to be linked to the increases in off-budget external health aid, covering in part drugs and commodities.[36,37]

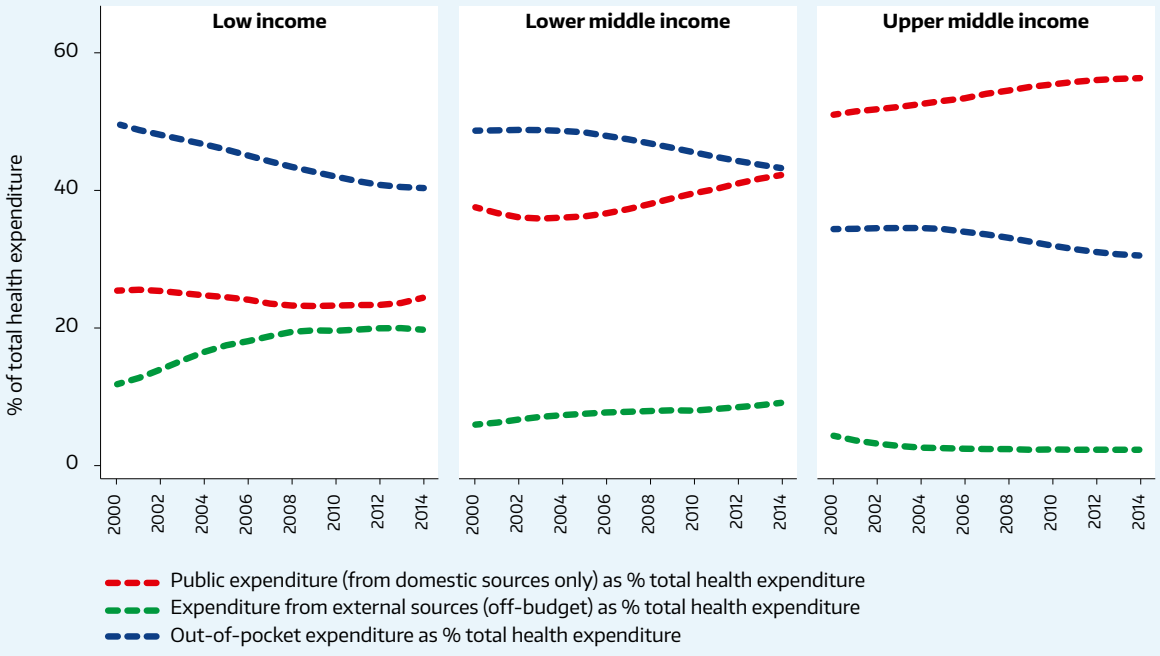
The sub-components distribution analysis further indicated that overall in LMICs, for every $100 allocated to current health expenditure from *domestic* public funds, less than a dollar was allocated to capital spending for the sector, often funded instead through external sources. Disaggregating current public funds on health by inputs revealed that a dominant share was spent on health personnel costs (58%), the rest being spread between pharmaceuticals (12%) and other types of inputs (30%). When current funds are disaggregated by function, curative care was by far the driving expenditure (70%), while preventive represented about 8% of the total. Detailed analysis by levels of care also revealed that only 33% of current public funds were spent on primary health care, the rest being allocated to higher levels of health care (e.g. tertiary) (Figure 6).

Figure 4. Change in total health expenditure from public (all sources), private (OOP) and external sources, 2000-2014, by income levels



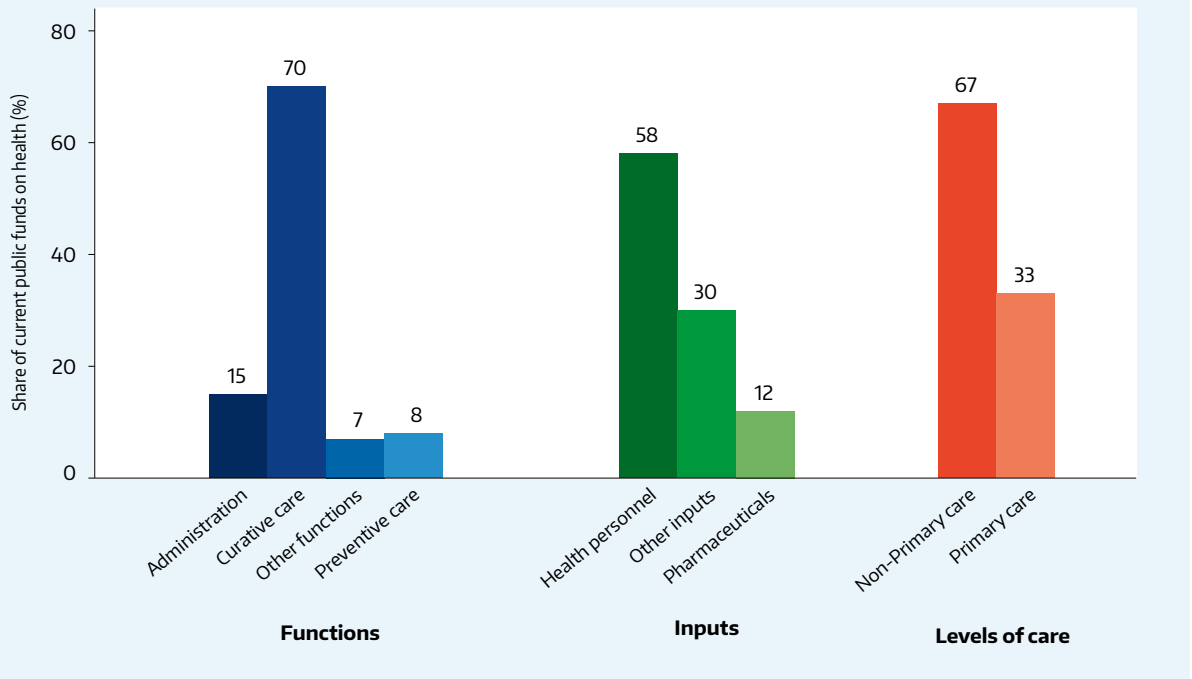
Source: authors, from GHED, WHO
Note: total is different from 100%.

Figure 5. Change in total health expenditure from public (*domestic* sources), private (OOP) and external (off-budget) sources, 2000-2014, by income levels



Source: authors, from GHED
Note: total is different from 100%.

Figure 6. Distribution of *domestic* public funds on health by functions, inputs and levels of care in LMICs, sample median, as of 2014 (or latest available) (n=37)



Source: authors, from country Health Accounts data

4. DISCUSSION

Our findings suggest a number of important changes in the relationship between PEH and the macro-fiscal and health financing environment between 2000 and 2014, which may be useful for health financing policy and research in the context of the SDGs and UHC.

Overall, by delineating sources of public expenditure on health, the study is able to bring to light the actual role of *domestic* public funds in financing health, what past research was unable to identify. Our analysis shows indeed that the transition from the MDGs to the SDGs has been marked, in certain aspects, by a deterioration in the role of *domestic* public funds in financing health, especially in LICs. The period was characterized by reduced sensitivity of public expenditure on health to macro-fiscal expansion, as well as declining prioritization towards the sector. Coupled with other factors, these contribute to weakening the relative contribution of *domestic* public funds in financing the sector, as evidenced by the stagnating share of public expenditure from *domestic* sources in total health expenditure in 2000-2014. When external sources are treated separately, there is no evidence of an effective "health financing transition" from private to public sources for financing health in LICs.

While the priority given to health in budgets is largely dependent on country-specific policy choices and socio-political imperatives and values,[20] our analysis revealed key drivers of prioritization that were discernible across LMICs and offered new information for policy makers and the broader health community on the underlying dynamics of budget prioritization. In this respect, our study highlighted three key research and policy messages. First, adding to the existing literature on fungibility which indicates that higher external health aid is not necessarily associated with higher PEH,[11,13,41] we showed that the level of external aid earmarked to the sector actually reduced the degree of budget priority. Second, in line with findings from the limited research that has been done on the topic,[11,19] the study also indicated that favourable fiscal conditions did not necessarily lead to greater budget prioritization for health. Third, our analysis showed that debt service deterred higher prioritization for health over the period. This may have reflected possible pressures from overall fiscal consolidation on health spending in LMICs over the last fifteen years, something not systematically observed in previous quantitative analyses.[11,23]

Beyond the main results, the study also has important policy and methodological implications. Sensitivity analyses of public expenditure on health to national income and overall public expenditure provide distinct results, confirming the importance of exploring drivers of sector spending beyond income growth. While there is a widely recognized effect of income on the level of sector spending,[31,38] there is also a need to further research the critical transformation of growth dividends into actual public revenues, and ultimately sector expenses. Far from being automatic, these "gains" largely depend on the nature of fiscal policies and the effectiveness of tax collection efforts, and affect the level and quality of the sector's public spending.[39,40] While important for future research, the

focus on the mobilization and effective use of *domestic* public revenues should also be of greater interest to health policy makers and at the core of enhanced collaboration between Ministries of Health and Finance.[40] From an analytical standpoint, taking into account *domestic* revenue and expenditure, rather than solely considering income growth indicators as part of elasticity analyses, is necessary when considering scenarios for expanding fiscal space for health.[31,32]

Finally, the study draws attention to three key monitoring issues. First, it underlines the importance of tracking domestically funded public expenditure and separating external sources. Our analysis revealed a different picture of PEH – as a share of overall public expenditure and of total health expenditure – than studies that merged all sources. The transformation of the existing classification of health accounts into the new SHA.11 logic[25] will allow for more systematically identifying the sources of funds for public expenditure on health. Future monitoring and research efforts should take advantage of this refined classification to further understand the respective role of *domestic* and external funds in financing public spending on health, especially in countries transitioning from aid dependency.

Second, there is a need to track changes in the contribution of PEH in both absolute and relative terms to have a better indication of actual spending. Focusing solely on the ratio of health expenditure to total public expenditure (e.g. the Abuja target) can be misleading when interpreted in isolation; for example, the ratio can plateau or decrease, while per capita public expenditure on health continues to increase. Conversely, looking only at absolute or per capita spending would not reveal the decreasing influence of public sources in financing the sector. Our study provides a strong rationale for more comprehensive monitoring systems of PEH that combine both relative and absolute measures at country, regional and global levels. More broadly, it calls for refinement in the use of targets that will no longer be applicable in the same way as before. For example, the ratio of PEH from domestic sources to total public expenditure is no longer comparable to the established Abuja target which includes all sources of public expenditure.

Third, building on existing country health accounts data, our study shed light on the actual use of *domestic* public funds by type and level of care in a sample of LMICs. Making this information more systematically available and usable to policy-makers is essential to inform future budget allocation decisions. Better aligning expenditure tracking systems with evolving budget structures (e.g. output-oriented classifications) is also encouraged for more consistency and ultimately to better equip decision making.[42]

The main limitations of the study relate to data: the quality of GHED and other estimates varies by country, and our estimations of PEH from *domestic* sources may not coincide, in particular, with country data (when available) for a number of reasons. Although we tested and compared different study methods and econometric models, based on literature and data availability, alternative methods may yield different results, as observed for any econometric model. Particularly in the model we designed for determinants of prioritization, we made every effort to take into account both heterogeneity and endogeneity issues and to test the sensitivity of both our fixed and random effects models. Finally, as the focus of our study was on the change since the adoption of the MDGs

(2000) until 2014, we did not consider or predict longer-term impacts.

In conclusion, despite study limitations especially with regard to the varying quality of GHED and other estimates across countries, recent changes in the relationship between PEH and its macro-fiscal and health financing environment call for a renewed emphasis on public funds at the core of health financing research and policy. Advocacy and monitoring strategies for public spending should be refined, taking into consideration key missing components (domestically funded, absolute and relative estimates, aligned budget and expenditure classification) to provide a more comprehensive and accurate picture of public financing on health on the road to UHC.

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APPENDIX

ESTIMATION APPROACH FOR PUBLIC EXPENDITURE ON HEALTH FROM *DOMESTIC* SOURCES

Public expenditure on health, as defined in the GHED, includes external sources of expenditure. As per the GHED's Indicator Code book (WHO, 2015), general government expenditure on health is the sum of health outlays paid for in cash or supplied in kind by government entities, such as the Ministry of Health, other ministries, parastatal organizations or social security agencies. It includes all expenditure made by these entities, regardless of the source, including any donor funding passing through them.

For the purpose of the analysis, we used the label "public" instead of "general government" to explicitly acknowledge that expenditure from social health insurance funds is included in the estimates.

The methods used to estimate public expenditure on health from *domestic* sources ($PEH_{\_dom}$) included the following steps.

Building on previously used methods,[12,24] it was first assumed that:

$PEH_{\_dom} = PEH - PEH_{\_ext}$, where:

PEH = Total public expenditure on health (existing variable in GHED under label "general government expenditure on health"), and:

$PEH_{\_ext}$ = Total public expenditure on health from external sources (variable to be estimated)

And where:

$PEH_{\_ext}$ = EXT – NGO, where:

EXT = Total health expenditure from external sources (existing variable in GHED under label "rest of the world" funds/external resources; and:

NGO = Total expenditure on health by non-profit institutions (existing variable in GHED under label "non-profit institutions serving households" (e.g. NGOs)). It was here assumed that health expenditure from non-profit institutions is primarily financed by external aid.

Quality checks were performed for the whole dataset and on a case-by-case basis, and consisted of systematically identifying countries with abnormal negative values (i.e. when PEH_ext≥ PEH which would mean PEH_dom ≤0 and/or NGO ≥ EXT which would mean that PEH_ext≤0) and outliers, which were ultimately removed from the sample.

After estimating $PEH_{\_dom}$ in absolute terms following the steps mentioned above, a final step estimated $PEH_{\_dom}$ in relative terms (% Total health expenditure, % GDP and % Total public expenditure) using existing GHED variables.

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