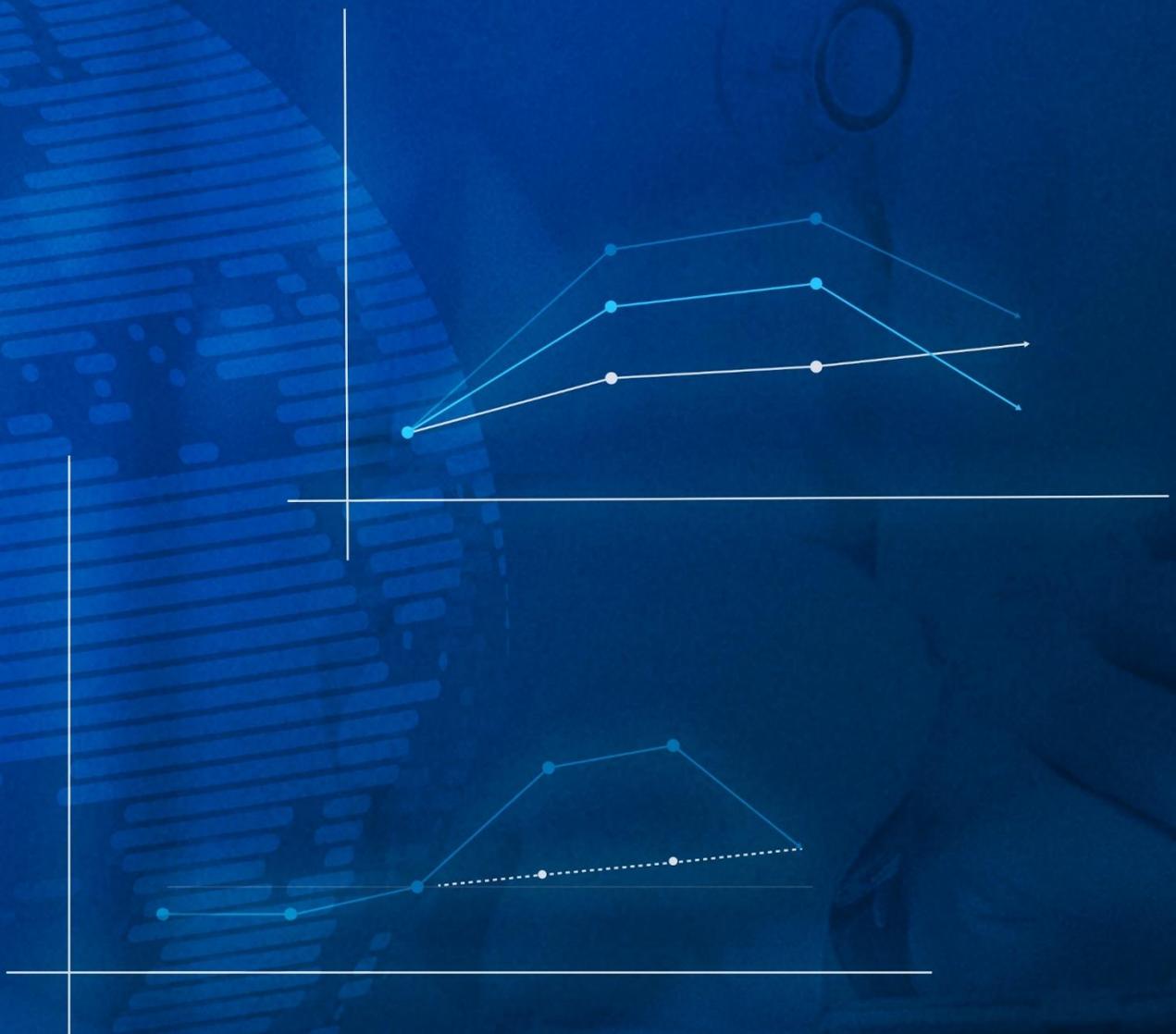


# Health Financing in a Time of Global Shocks

## STRONG ADVANCE, EARLY RETREAT

*Double Shock, Double Recovery Paper Series*



# **Health Financing in a Time of Global Shocks**

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**Double Shock, Double Recovery Paper Series**

**Christoph Kurowski, Anurag Kumar, Julio Mieses,  
Martin Schmidt, Denise V. Silfverberg**

**May 2023**

## Health, Nutrition and Population Discussion Paper

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## Health, Nutrition and Population Discussion Paper

### From Double Shock to Double Recovery Series

#### Health Financing in a Time of Global Shocks Strong Advance, Early Retreat

Christoph Kurowski, Anurag Kumar, Julio Mieses, Martin Schmidt, Denise V. Silfverberg

#### Abstract

This latest paper of the *Double Shock, Double Recovery* series, “Health Financing in a Time of Global Shocks,” is a first attempt to comprehensively gauge how government health spending has fared in developing countries over the past three years – a period when the world faced shocks in swift succession. Throughout this challenging period, public investments in health have been critical to buffer their effects on human capital, most importantly, by controlling the COVID-19 pandemic.

The study included 78 developing countries. The analysis focused on central government spending on health, considering its levels as well as its shares in general government spending. It drew on data from nearly 2,000 budget documents; both data and documents all made available here <https://datacatalog.worldbank.org/search/dataset/0064552> to facilitate further research.

The study showed that real per capita central government health spending generally soared during the first two years of the pandemic. In 2020, it grew in per capita terms on average across all countries by approximately 21 percent, and in 2021, it stood at 25 percent above 2019 levels. The increase was primarily driven by governments prioritizing health in their spending.

The initial strong advance in real per capita government health spending lost momentum in the third year of the pandemic, turning into an early retreat. On average, it contracted, from its peak of 25 percent to only 13 percent above the 2019 level, and close to its pre-pandemic trajectory. The reversal was even starker in the priority that governments gave to health. On average, the central health share in general government spending tumbled, from its maximum of 17 percent to only 5 percent above the 2019 baseline, falling back to its pre-pandemic trajectory. Hence, it was no longer the prioritization of health, but growth in general government spending that primarily helped bolster 2022 central government health spending above the 2019 level.

The rapid decline of real central government health spending may have been a risky and costly retreat. In 2022, as governments were grappling with new spending demands – due to energy and food price hikes, and rapidly rising debt service costs – the Omicron caused another wave of COVID-19 infections and death worldwide, and many health systems struggled to cope with the backlog of non-COVID-19 services.

The stark reversal in the priority given to health in government spending does not bode well for global health security and progress toward the health-related Sustainable Development Goals (SDGs), especially in countries where the macroeconomic outlook remains concerning, and the capacity to increase government spending limited. Rapid action of governments will be necessary in many developing countries to reverse this latest trend and secure the prioritization of health in government spending to put their countries and the world on a new, pandemic proof and sustainable development trajectory.

**Keywords:** Central government health spending, COVID-19, economic crisis, government health expenditure, landing, response

**Disclaimer:** The findings, interpretations, and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

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## ACRONYMS AND ABBREVIATIONS

CGHS	Central Government Health Spending
COVID	Corona Virus Disease
GDP	Gross Domestic Product
GGE	General Government Expenditure
GGR	General Government Revenue
GHED	WHO Global Health Expenditure Database
HIC	High-Income Country
HNP	World Bank Health, Nutrition, and Population Global Practice
IDA	World Bank International Development Association
IHME	Institute of Health Metrics and Evaluation
IMF	International Monetary Fund
LIC	Low-Income Country
LMIC	Lower-Middle-Income Country
NHA	National Health Accounts
OECD	Organisation for Economic Co-operation and Development
PER	Public Expenditure Review
PHRD	Government of Japan's Policy and Human Resources Development Fund
SHA	System of Health Accounts
SHI	Social Health Insurance
SDG	Sustainable Development Goal
UMIC	Upper-Middle-Income Country
WEO	World Economic Outlook
WHO	World Health Organization

## INTRODUCTION

In the past three years, the world has faced emergencies in swift succession. In the first place, the COVID-19 pandemic caused a historic double shock – health and economic. As of April 30, 2023, the pandemic had officially claimed close to 7 million lives with the true toll closer to 20 million (WHO 2023a) (Ghebreyesus 2023). At the same time, COVID-19 brought the global economy nearly to a halt, triggering a recession surpassing any economic downturn since World War II (Kurowski, Evans, et al. 2021a).

In early 2022, the Russian invasion of Ukraine dashed hopes for a rapid recovery from the global recession, causing abrupt price increases for energy, food, and other commodities. These price hikes came on top of inflationary pressures already building in higher-income countries, from strong fiscal stimuli and lingering global supply chain disruptions. When central banks responded by increasing interest rates, the costs of debt servicing and access to new finance mounted, and financial systems came under stress. In many places, natural disasters triggered by climate change caused additional suffering and economic loss.

Over the course of these successive shocks, the recovery from the global recession was slow and uneven. Trends in fiscal space also went in different directions. In some countries, per capita government spending expanded, while in others, it stagnated or contracted (Kurowski, Evans, et al. 2021a) (Kurowski, Evans, et al. 2021b) (Kurowski, Evans, et al. 2022). Thus, the latitude of governments to maintain and expand their spending on health differed substantially.

At the same time, however, government investments in health were critical to managing the series of shocks and buffering their effects on human development – most importantly, to control and eventually end the COVID-19 pandemic. Sustained investments in health will also be vital in the months and years ahead to make health systems pandemic proof, rectify setbacks on the road to achieving the sustainable development goals (SDGs) for health, and tackle other health threats to the precarious global economic recovery.

Against this background, “Health Financing in a Time of Global Shocks” is a first attempt to comprehensively gauge government health spending trends in developing countries over the past three years of successive health and economic shocks. The study included 78 low-, lower middle-, and IDA-eligible upper middle-income countries. The analysis distinguished between the response in 2020 and 2021, when COVID-19 was center stage among global public concerns, and the landing in 2022, when the pandemic continued to wreak havoc, however, when inflation, the risk of a debt crisis, geopolitical fragmentation, and climate change challenges came to the fore.<sup>1</sup>

The study complements global mechanisms to monitor health expenditure. These are well established, but the information they generate has a time lag of two years. Central to these efforts is the World Health Organization (WHO)-led Global Health Expenditure Database (GHED) initiative. The collaboration yields spending estimates, based on country health accounts, for a wide range of health spending indicators. The latest release of the GHED, in December 2022, included health expenditure data for

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<sup>1</sup> The number of COVID-19 deaths remained substantial in 2022, especially in the first months, though they declined overall compared with the peak in 2021. Globally, there were nearly 2 million reported deaths from COVID-19 in 2020 (the COVID-19 pandemic was officially declared in March 2020), increasing to over 3.5 million deaths in 2021 before declining to 1.25 million in 2022 (WHO 2023). The pattern was similar across countries. The reported COVID-19 deaths per million across all countries, on average, were 321 in 2020, rose to 708 in 2021, and then declined to 286 in 2022. In the 78 study countries, the pattern was similar, with the average reported COVID-19 deaths per million starting at 99 in 2020 and increasing to 311 in 2021 before declining to 78 in 2022.

2020, the first year of the pandemic, and actual 2020 data were limited to 68, mostly higher-income countries<sup>2</sup> (WHO 2022a).

## DATA AND METHODS

The study focused on central government health spending (CGHS). CGHS estimates included data on current health spending by central government ministries (most prominently the ministry of health, but also other ministries),<sup>3</sup> including central government transfers to social health insurance schemes and conditional transfers health to subnational governments. In general, CGHS estimates did not include obligatory contributions to social health insurance as well as spending on health of sub-national governments from their own revenues, however, for countries where subnational government health spending from own revenues constituted a large share of government health spending, the study made efforts to collect these additional data and, to the extent they have been available, included them in the CGHS estimates.<sup>4</sup>

CGHS estimates proved to be a solid proxy for government health expenditure. CGHS data strongly correlated with, and approximated government health expenditure data from the GHED, for 2019 and 2020.

The study compiled publicly available data on CGHS from 2017 to 2022 for all 95, low- (LICs), lower middle-(LMICs), and IDA-eligible upper middle-income countries (IDA UMICs).<sup>5</sup> It reviewed and drew on nearly 2,000 budget documents and budget execution reports. These data, including both budget allocation and expenditure (executed budget) numbers, documents, and reports are available in a public database to facilitate further research.<sup>6</sup>

For only 78 of 95 LICs, LMICs, and IDA UMICs, the study managed to compile CGHS datasets for 2019-22, the period of interest for this study (Map 1). Together, these countries cover around 85% of the population in LICs, LMICs, and IDA UMICs.<sup>7</sup> For the remaining 17 countries, data sets remained incomplete despite major efforts as budget documents remained unpublished, impossible to access

<sup>2</sup> Actual current health expenditure data were available for 68 countries, 34 of which were HICs and 14 UMICs. For an additional 49 countries, 12 of which were HICs and 20 UMICs current health expenditure data were partially estimated as not all actual data were available. The 2020 current health expenditure data were not available for five countries and were modelled in the remaining countries. Actual government health expenditure data (using FS1 and FS2 in the WHO GHED database) were available for 65 countries, 29 of which were HICs and 14 UMICs. Partial actual government health expenditure data were available for an additional 11 countries, 9 of which were HICs and UMICs. There was no FS1 and FS2 data for four countries. The 2020 government health expenditure data were either fully or partially modelled in the remaining countries, 52 of which were LICs and LMICs.

<sup>3</sup> Such as health spending by the Ministry of Defense or Ministry of Labor and Social Protection.

<sup>4</sup> The study used the term “CGHS” for all countries for consistency, even though 18 of 78 countries included sub-national government health spending from own revenues in their CGHS values. In addition to enhancing readability, CGHS was used because most countries do not include sub-national government spending on health from own revenues.

<sup>5</sup> IDA is the World Bank's fund for low and lower-middle income countries.

<sup>6</sup> A repository of the source documents is available and linked together with the Government Health Budgets and Spending Database in World Bank Open Data.

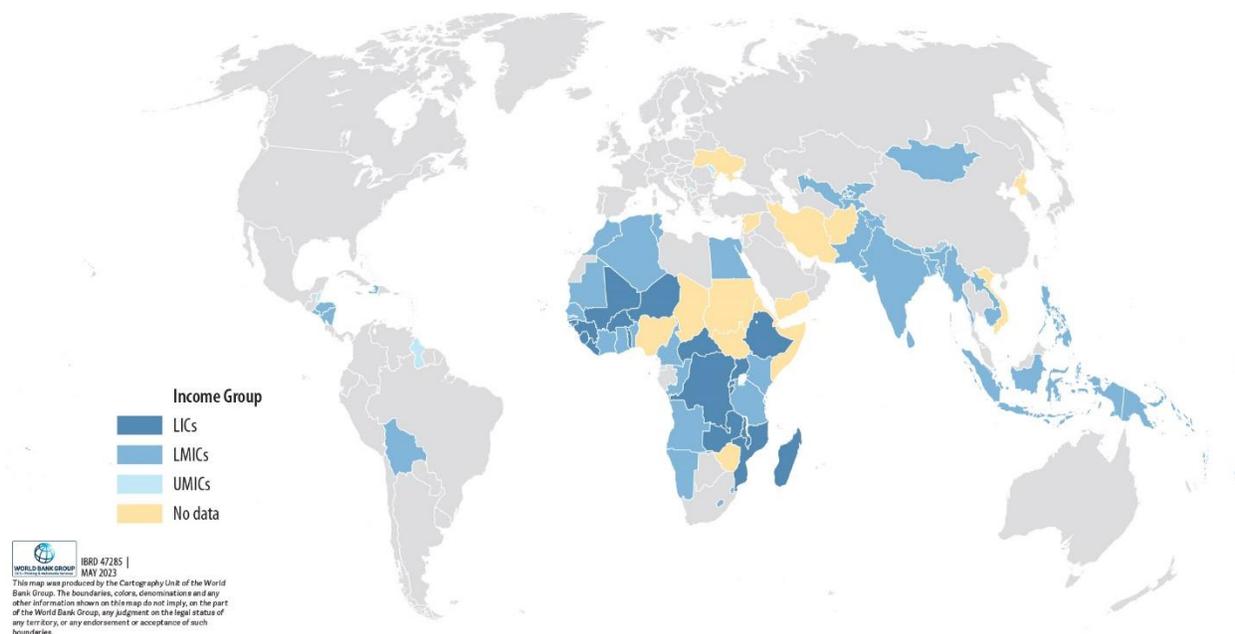
<sup>7</sup> The table below summarized the number of countries covered in this study by income-group for LICs, LIMCs, and IDA UMICs. The list of 78 countries and their income classification are in Annex 1.

Income - Group	Total countries	Countries covered in study (based on data availability)	Population covered in study (as percent of income-group's total population)
LICs	28	19	79%
LMICs	54	46	87%
IDA UMICs	13	13	100%

(e.g., conflict-afflicted situations), or datasets proved inconsistent, mostly due to macro-economic challenges (e.g., hyperinflation).<sup>8</sup>

Throughout this paper, CGHS indicates central government health spending (executed budgets), not budget allocations. Expenditure data were available for all 78 countries in 2019 and 2020, but only for 58 countries in 2021 and 17 countries in 2022. In contrast, budget allocation data (initial or final) were available for all 78 countries for all years. To fill this data gaps, the study exploited the relationship between budget allocation and expenditure to estimate central government health spending for the missing country-years.<sup>9</sup>

**Map 1. Countries covered in study by income group (LICs, LMICs, and IDA UMICs)**



*Source:* World Bank country classification by income level, 2022

*Note:* UMICs indicates only IDA-eligible UMICs in the map. No data indicates LICs, LMICs, and IDA UMICs where CGHS data are unavailable for one or more years between 2019-22. Please refer to Annex 1 for table on country by income group.

To gauge the prioritization of health in government spending, the study compared CGHS with general government expenditure (GGE) data. For estimates of general government expenditure, the study drew on the IMF’s World Economic Outlook (WEO) (IMF October 2022).

The study also collected publicly available information on components of government health spending other than those included in CGHS estimates. These comprised: (1) additional allocations for unforeseen payments, which included the share of contingency and special funds (emergency, disaster, and COVID-

<sup>8</sup> No or only partial data was publicly available for Afghanistan, Chad, Djibouti, Eritrea, Islamic Republic of Iran, Democratic People’s Republic of Korea, Lebanon, Federated States of Micronesia, Nigeria, and Vietnam; data challenges were encountered due to conflict-afflicted situations in Somalia, South Sudan, Sudan, Syrian Arab Republic, Ukraine, and the Republic of Yemen; and data was unreliable for Zimbabwe due to hyperinflation.

<sup>9</sup> The estimation used a panel regression model between central government health expenditure and budget allocation with country and year fixed effects. The model’s performance was tested using different samples of actual expenditure data; it found that predicted CGHS from budget allocations for health closely matched actual CGHS values. See Annex 2 for details.

19) that central governments allocated to health; (2) obligatory social health insurance (SHI) contributions; and (3) sub-national government spending on health from own revenues.<sup>10</sup>

The CGHS and these additional components of government health spending categories aligned well with the revenue classification of the System of Health Accounts 2011 (SHA 2011). It ensured comparability of estimates with information from health accounts, the GHED, and other international mechanisms to monitor health spending.

Compared to CGHS, however, the availability of data for these additional health spending categories was limited, often restricted to only a few of the 95 countries and not for all years (2019-22).<sup>11</sup> The compiled data for these spending categories were also included in the public database.<sup>12</sup>

The study, however, drew on the available data for government spending categories other than CGHS to further analyze the robustness of CGHS as a proxy for government health spending. These analyses assessed whether the trends observed for CGHS changed when complementing CGHS data with estimates for other components of government health spending. In the first place, this required producing estimates for health spending from contingency and special funds, obligatory social health insurance contributions, and own revenues of sub-national governments (annex 3). The robustness checks analyzed whether the incorporation of these components under two scenarios (a worst case, and a best case) would change a country's health spending growth category (low, moderate, high).

## STRUCTURE OF THE REPORT

The report is divided into four sections. Following this introduction, Section 2 presents the main findings, covering the trends in CGHS levels and shares, and unraveling the drivers of CGHS. It discusses both, the aggregate trends across the 78 countries, and the disparities between countries. Section 3 places the findings in context, comparing the government health spending trends to those in higher income countries, and to initial findings from the WHO for 2020. It also highlights the limitations of the study. The final section concludes, summarizing the complex patterns – where some show promise while others raise concern – and a reminder of the consequences of low investment in health.

Annex 1 describes the data collection framework and data availability. Annex 2 details the methodology used for estimating central government health expenditure from budgeted allocations, where expenditure data are not yet available as well as the country-level per capita USD values used in the analysis. Annex 3 discusses the methodology and presents detailed country-level results from robustness checks, incorporating estimates (and actual data, where available) on government health spending components beyond CGHS.

All values shown in the study are in real terms, expressed in constant 2022 \$,<sup>13</sup> unless explicitly stated otherwise. The local currency values were adjusted using the GDP deflator and converted into US dollars using the constant 2022 exchange rate.<sup>14</sup>

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<sup>10</sup> Contingency and special funds accounted for in the robustness checks are funds that sit outside the Ministry of Health or the health sector and are therefore not captured in CGHS.

<sup>11</sup> Data on sub-national government health spending from own revenue were available for 18 of 78 countries. Data on SHI contributions were available for 17 of the 78 countries. General special fund allocations – not specific to health – were available for 53 countries for contingency funds, 22 countries for emergency funds, and 14 countries for general COVID-19 funds. See Annex 1 and Annex 3 for details.

<sup>12</sup> The Government Health Budgets and Spending Database include data on obligatory social health insurance contributions; subnational health allocations and expenditures (from own revenues); and on-budget special funds (i.e., COVID-19 funds, emergency or disaster funds, and contingency funds). In addition, it also includes total central general government allocations and expenditure, and subnational general government allocations and expenditures.

## CENTRAL GOVERNMENT HEALTH SPENDING (CGHS)

This section presents trends in central government health spending (CGHS) levels and their share in general government expenditure (GGE). It also disentangles the role of the prioritization of health (CGHS share) vis-à-vis the overall government spending envelope in determining spending levels (CGHS levels).

The analysis focuses on the change relative to the pre-pandemic level. The relative change to the 2019 baseline – expressed as an index with 2019 set to 100 – facilitates the comparison of trends across countries and spending indicators (CGHS levels, CHGS shares, and GGE). The analysis of CGHS levels and shares, however, starts with a description of absolute trends.

The analysis concentrates on trends over the period 2019 to 2022, yet it also compares these most recent developments with pre-pandemic trends over the period 2017 to 2019.

To assess differences across countries, the analysis distinguishes between the initial response to the pandemic in 2020 and 2021, and what has been coined a country's landing in 2022, the year when the pandemic continued, but other global economic shocks came to the fore. For both response and landing, it categorizes change in CGHS levels and shares relative to the 2019 baseline as low, moderate, and high.

### CGHS LEVELS

The average per capita CGHS over all 78 study countries initially rose, but then started falling with 2022 levels still considerably above the 2019 baseline. It increased from \$92 in 2019 to \$107 per capita in 2020, before slightly declining to \$105 in 2021, and further dropping to \$101 in 2022 (Table 1).

The same broad pattern held across income groups, but with some differences in the trajectory:

- In LICs, the average per capita CGHS peaked in 2020 and fell rapidly in 2021. It rose from \$10.5 in 2019 to \$13.4 in 2020, before declining to \$12.2 in 2021 and to \$11.7 in 2022.
- In LMICs, per capita CGHS peaked in 2021 and then fell in 2022. It increased from \$55 in 2019 to \$62 in 2020 and to \$68 in 2021, before dropping to \$60 in 2022.
- In IDA UMICs, per capita CGHS peaked in 2020, fell in 2021, and stabilized in 2022. It increased from \$342 in 2019 to \$405 in 2020, declined to \$371 in 2021, and held steady in 2022 at \$374.

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<sup>13</sup> '\$' denotes US dollars throughout the report, unless explicitly mentioned otherwise.

<sup>14</sup> GDP deflator, 2022 foreign exchange rates, and country population used to convert to per capita numbers, were taken from the IMF World Economic Outlook.

**Table 1. Average Real per Capita CGHS, 2019–22, by Income Group<sup>15</sup>**

Country Income Group	2019	2020	2021	2022
LICs	\$10.5	\$13.4	\$12.2	\$11.7
LMICs	\$55	\$62	\$68	\$60
IDA-eligible UMICs	\$342	\$405	\$371	\$374
All countries	\$92	\$107	\$105	\$101

Source: Authors' calculations using Government Health Budgets and Spending Database

Note: Table shows simple average of real per capita CGHS (in constant 2022 \$) by income-group, and all 78 study countries

### Change relative to 2019

Similar to per capita CGHS trends, the average per capita CGHS index<sup>16</sup> – a measure of a country's real per capita CGHS relative to 2019 – showed a summit curve, with 2022 levels above the 2019 baseline. However, the rise was sharper and the drop deeper. The average CHGS index across the 78 countries rose to 121 in 2020 (equal to a 21 percent growth, on average, in per capita CGHS, relative to 2019), then further increased to 125 in 2021 before dropping almost halfway, to 113, in 2022 (Figure 1).

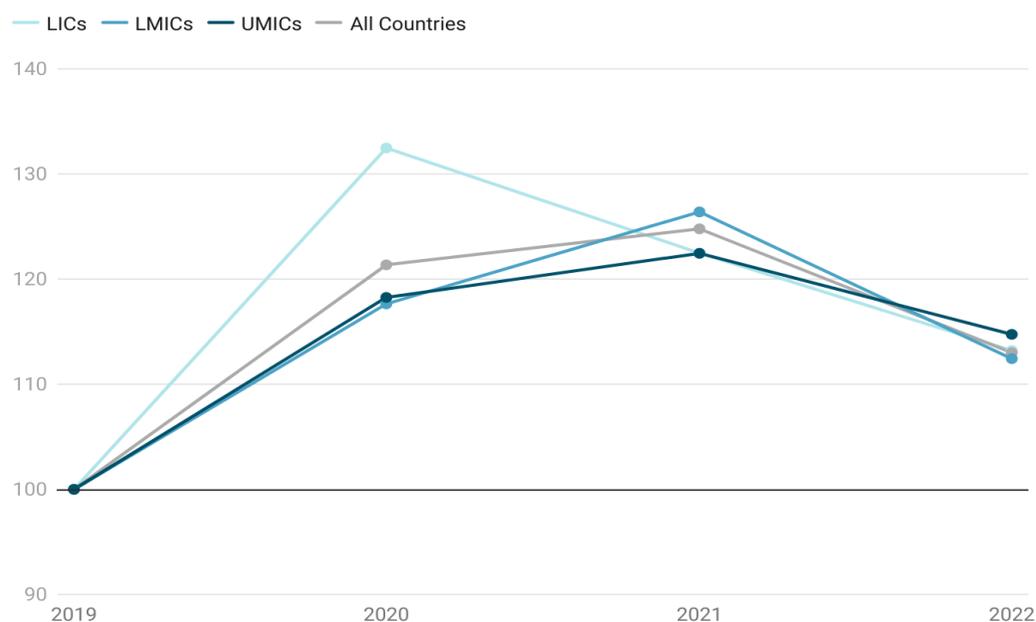
This general pattern also held across income groups, however, with some differences in their trajectory:

- In LICs, the average CGHS index rose sharply, peaking in 2020, and then steadily dropped more than halfway to the 2019 baseline in 2022. It rose to 132 in 2020, declined to 122 in 2021, and dropped to 113 in 2022.
- In LMICs, the average CGHS index peaked in 2021, before sharply dropping in 2022, more than halfway to the baseline. It climbed to 118 in 2020, and further rose to 126 in 2021 before dropping to 112 in 2022.
- In IDA UMICs, the average CGHS index also peaked only in 2021, and then dropped in 2022. It rose to 118 in 2020, then increased to 122 in 2021 before declining to 115 in 2022.

<sup>15</sup> The corresponding median per capita CGHS was \$34 in 2019, \$44.2 in 2020 and 2021, and \$37.2 in 2022. The higher average (as opposed to median) was driven by IDA UMICs.

<sup>16</sup> The average real per capita CGHS index (for any year) across all countries is not the same as change in average per capita CGHS between the specified year and 2019. More specifically, the former is the average across all countries of country-level CGHS growth, while the latter is the growth of average CGHS per capita across all countries (the average of growth is not the same as growth of averages). The average CGHS index is a more robust measure of per capita CGHS growth across countries relative to 2019. The growth of average CGHS per capita (Table 1) is skewed toward countries with a higher per capita CGHS.

**Figure 1. Average Real per Capita CGHS Index, 2020–22 (2019 = 100), by Income Group<sup>17</sup>**



Source: Authors' calculations using Government Health Budgets and Spending Database

Note: Figure shows simple average of real per capita CGHS index by income-group, and all 78 study countries

### Disparities in countries' response and landing

Per capita CGHS trajectories substantially varied across the 78 countries. To capture these disparities, countries were classified along two dimensions – response and landing.

**Response.** The response dimension categorized countries based on the government's health spending response during the initial two years (2020 and 2021) of the COVID-19 pandemic. Country responses were divided into three categories – high, moderate, low:

1. High response: The 2020 and 2021 per capita CGHS indices were above 100, and in at least one year above the average for the country's income group.<sup>18</sup>
2. Moderate response: The 2020 and 2021 per capita CGHS indices were above 100, but both were below the average for the country's income group.
3. Low response: The 2020 or the 2021 per capita CGHS index was below 100, that is, CGHS per capita fell below the pre-COVID-19 level in at least one of the two years.

Nearly half the countries (38 of 78) showed a high response, and over 20 percent (18 of 78), a moderate response (Table 2). Per definition, in these 56 countries (over 70 percent), the per capita CGHS was above the 2019 baseline during the first two years of the pandemic. The per capita CGHS index for this group of countries averaged 129 in 2020 and 137 in 2021.

In the remaining 30 percent of countries (22 of 78), the response was low, with per capita CGHS falling beneath 2019 levels in at least one of the initial two pandemic years. In six countries, the per capita

<sup>17</sup> The median CGHS index indicates a broadly similar trend compared with the average of the country-specific index. The median CGHS index was 119 in 2020, 118 in 2021, and 111 in 2022.

<sup>18</sup> The average per capita CGHS index was in 2020: 133 for LICs, 118 for LMICs and 118 for IDA UMICs; and in 2021: 122 for LICs, 126 for LMICs, and 122 for IDA UMICs.

CGHS dropped below 2019 levels only in 2020, in 11 countries, it dropped below 2019 levels only in 2021, and in five countries, it dropped below 2019 levels in both 2020 and 2021.<sup>19</sup> For the group of 22 countries, the average per capita CGHS index was 102 in 2020, and 93 in 2021.

**Landing.** The landing dimension categorizes countries based on the per capita CGHS index in 2022. Country landings were split into three categories – high, moderate, and low:

1. High landing: The 2022 per capita CGHS index was above the average for the country's income group.<sup>20</sup>
2. Moderate landing: The 2022 per capita CGHS index was greater than 100 but below the average for the country's income group.
3. Low landing: The 2022 per capita CGHS index was below 100 that is, CGHS per capita in 2022 was below the pre-COVID-19 level.

Over 40 percent of countries (32 of 78) showed a high landing, while nearly one-third, a moderate landing (25 of 78 countries) (Table 2). Per definition, in these 57 countries (nearly 75 percent), the per capita CGHS was above the 2019 level in 2022. The per capita CGHS index for this group of countries averaged 122 in 2022.

In the remaining roughly 25 percent of countries (21 of 78), the landing was low, with per capita CGHS falling below the 2019 level. For this group of countries, the per capita CGHS index averaged 87 in 2022.

#### Above and below the baseline

In 48 countries, both the response and landing were moderate or high (Figure 2, Table 2). In this group, the country's per capita CGHS index exceeded the pre-COVID-19 baseline in both the initial two years of the pandemic as well as in 2022. The per capita CGHS index averaged 131 in 2020, 140 in 2021, and 126 in 2022.

Conversely, in 30 countries, the per capita CGHS index fell below the 2019 level in at least one of the three years since the start of the pandemic. In this group of countries, the per capita CGHS index averaged 106 in 2020, 101 in 2021, and 93 in 2022. In eight of these 30 countries, the response was moderate or high, but the landing low. In nine countries, the response was low, but the landing moderate or high. And in 13 countries, both the response and landing were low, among them, five countries in which the per capita CGHS remained below the 2019 level in all three pandemic years.<sup>21</sup> In this group of 13 countries with both a low response and landing, the CGHS share index averaged 95 in 2020, 93 in 2021, and 87 in 2022

#### Country groups

The categorization of countries along the two dimensions of response and landing demonstrated the diversity of trajectories (Table 2). Countries fell into nine different groups. In two thirds of countries (52), the response and landing categories corresponded - a high response coincided with a high landing, a

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<sup>19</sup> The six countries with real per capita CGHS below 2019 levels only in 2020 include 4 LMICs (Bangladesh; Eswatini; Haiti; and Myanmar), and 2 UMICs (Belize; and Grenada). The 11 countries with real per capita CGHS below 2019 levels only in 2021 include 4 LICs (Congo, Dem. Rep.; Guinea-Bissau; Guinea; and Liberia), 4 LMICs (Kenya; Lesotho; Papua New Guinea; and Senegal), and 3 UMICs (Dominica; Maldives; and Tuvalu). The five countries with real per capita CGHS below 2019 levels in both 2020 and 2021 include 1 LIC (Burkina Faso), 3 LMICs (Comoros; Kiribati; and Tanzania), and 1 UMIC (Marshall Islands).

<sup>20</sup> The average per capita CGHS index was in 2022: 113 for LICs, 112 for LMICs, and 115 for IDA UMICs.

<sup>21</sup> The five countries with real per capita CGHS below 2019 levels in all three years (2020-22) include 1 LIC (Burkina Faso), 3 LMICs (Comoros; Kiribati; and Tanzania), and 1 UMIC (Marshall Islands).

moderate response with a moderate landing, and a low response with a low landing. The description of the groups is organized around landings, that is, the most recent government health spending effort.

**Table 2. Number of Countries, by CGHS Response and Landing**

		Landing: CGHS Index, 2022			All Countries
		High	Moderate	Low	
Response: CGHS Index, 2020 and 2021	High	28	6	4	<b>38</b>
	Moderate	3	11	4	<b>18</b>
	Low	1	8	13	<b>22</b>
All countries		<b>32</b>	<b>25</b>	<b>21</b>	<b>78</b>

Source: Authors' calculations using Government Health Budgets and Spending Database

### High landing

In the 32 countries with a high landing, the average per capita CGHS index was 135 in 2022 (Table 2, Table 3, Figure 2)). In these countries, the government health spending response was also substantial. The average per capita CGHS index climbed to 138 in 2020 and peaked at 151 in 2021.

Among the 32 countries with a high landing, nearly 90 percent (28 out of 32) also showed a high response. For this subgroup of 28 countries, the CGHS index was 143 in 2020, 155 in 2021, and 137 in 2022. In contrast, in the three countries with a moderate response, the average per capita CGHS index increased steadily, from 106 in 2020 to 122 in 2021, and further to 125 in 2022, yet, in the final year, still well below the average among the 32 countries with a high landing. Among countries with a high landing, only one country had an initially low response, with a per capita CGHS index of 91 in 2020, which then rebounded to 107 in 2021 and landed at 118 in 2022.

**Table 3. Average per capita CGHS Index, 2019–22, High Landing Countries, by Response Category**

		High Landing (32 Countries)			
		2019	2020	2021	2022
Response: CGHS Index, 2020 and 2021	High	100	143	155	137
	Moderate	100	106	122	125
	Low	100	91	107	118
All countries		<b>100</b>	<b>138</b>	<b>151</b>	<b>135</b>

Source: Authors' calculations using Government Health Budgets and Spending Database

Note: Table shows simple average of real per capita CGHS index

### Moderate landing

In the 25 countries with a moderate landing, the average per capita CGHS index was 106 in 2022 (Table 2, Table 4, Figure 2). In this group of countries, the initial spending response was also muted. The average per capita CGHS index peaked at 116 in 2020, falling to 109 in 2021.

Among the 25 countries with a moderate landing, more than 40 percent (11 of 25) also had a moderate response (Table 2). In these 11 countries, the average per capita CGHS index increased to 111 in 2020 and further to 114 in 2021 before falling to 106 in 2022 (Table 4). Nearly a quarter of fair landing countries (six of 25) showed a high response, with the average per capita CGHS index rising to 125 in 2020, leveling off in 2021, and sharply dropping to 109 in 2022. The remaining eight countries showed a low response. In these countries, the average per capita CGHS index increased to 116 in 2020, fell sharply to 91 in 2021, and landed at 104 in 2022.

**Table 4. CGHS Index, 2019–22, Moderate Landing Countries, by Response Category**

		Moderate Landing (25 Countries)			
		2019	2020	2021	2022
Response: CGHS Index, 2020 and 2021	High	100	125	123	109
	Moderate	100	111	114	106
	Low	100	116	91	104
All countries		<b>100</b>	<b>116</b>	<b>109</b>	<b>106</b>

Source: Authors' calculations using Government Health Budgets and Spending Database

Note: Table shows simple average of real per capita CGHS index

#### Low landing

In the 21 countries with a low landing, the average per capita CGHS index was 87 in 2022, that is, 13 percent below the 2019 baseline. In these countries, the response in the initial two years of the pandemic was slim. The average per capita CGHS index barely rose above the 2019 level, in 2020 to 102 and in 2021 to 105, before plunging in 2022 (Table 2, Table 5, Figure 2).

Among the 21 countries with a low landing, most countries (13 of 21) also had a low response. Among these 13 countries, the average per capita CGHS index steadily fell over the past three years to 95 in 2020, 93 in 2021, and 87 in 2022. Less than 20 percent of countries with a low landing (four out of 21) showed a moderate response with the average per capita CGHS index rising to 106 in 2020 and 108 in 2021 before dropping to 93 in 2022. Another four countries demonstrated a high response. Their average per capita CGHS index rose to 122 in 2020, further to 141 in 2021, before collapsing to 82 in 2022.

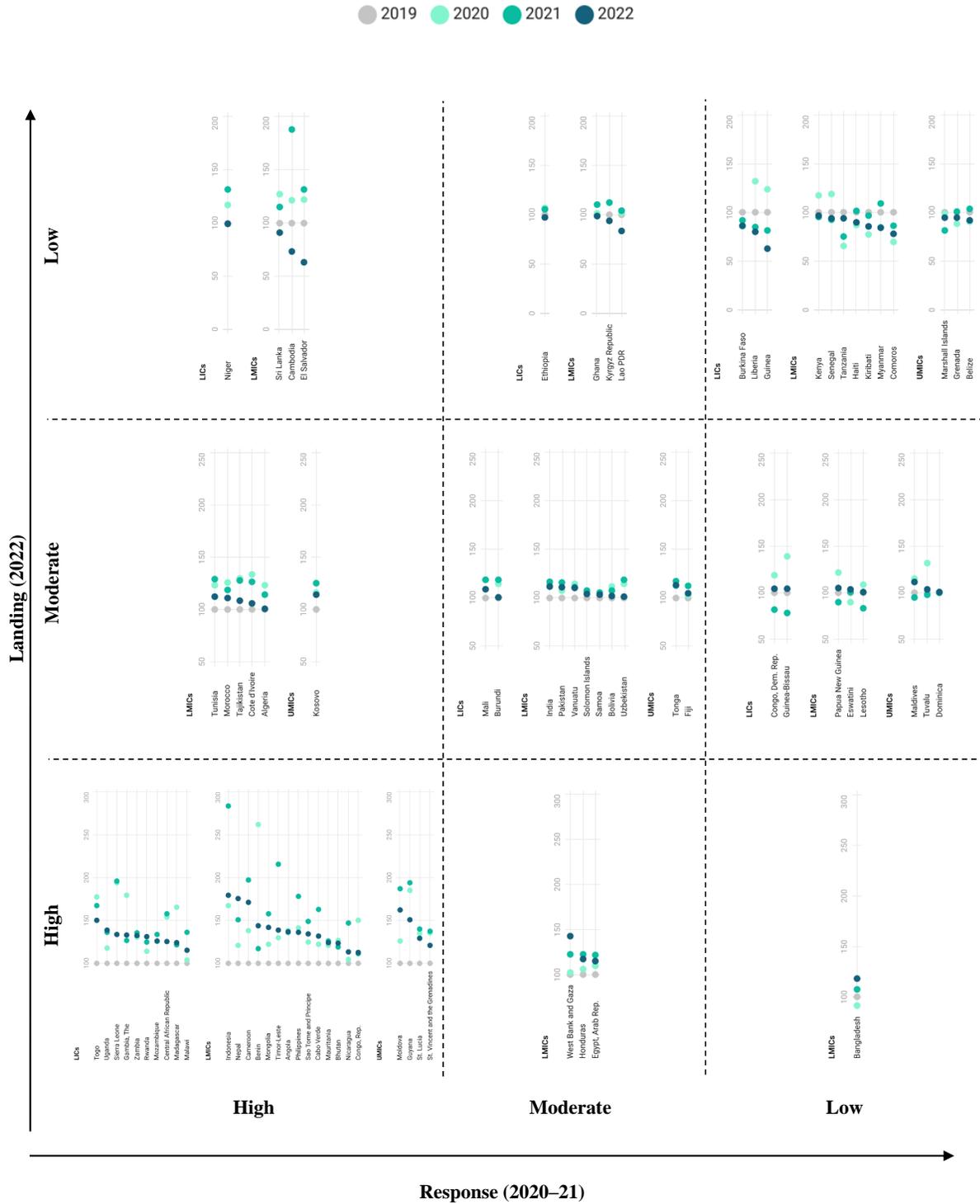
**Table 5. Average CGHS index, 2019–22, Low Landing Countries, by Response Category**

		Low Landing (21 Countries)			
		2019	2020	2021	2022
Response: CGHS Index, 2020 and 2021	High	100	122	141	82
	Moderate	100	106	108	93
	Low	100	95	93	87
All countries		<b>100</b>	<b>102</b>	<b>105</b>	<b>87</b>

Source: Authors' calculations using Government Health Budgets and Spending Database

Note: Table shows simple average of real per capita CGHS index

Figure 2. CGHS Index by Country, 2019–22 (2019 = 100), by Landing and Response Category

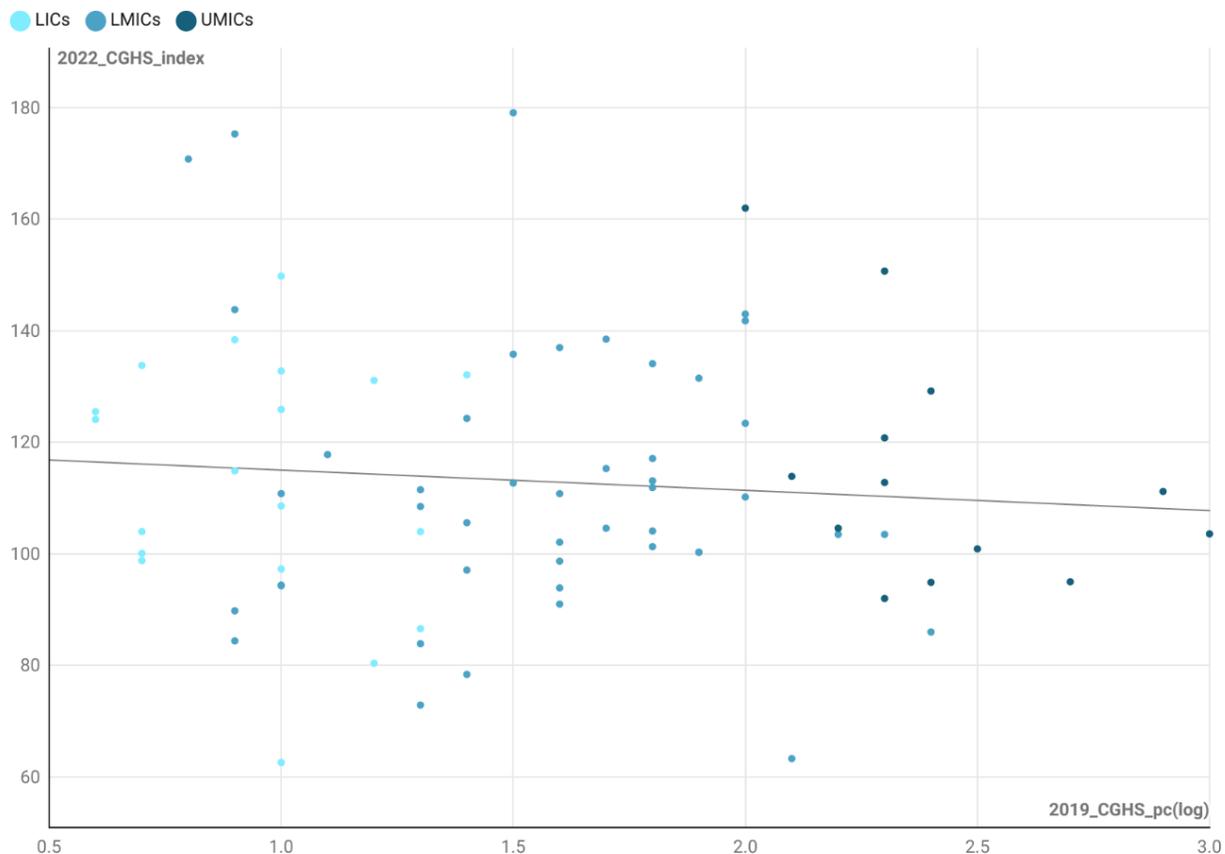


Source: Authors' calculations using Government Health Budgets and Spending Database

### Getting closer or drifting apart?

The large disparities in country trajectories resulted neither in a divergence nor convergence in per capita CGHS during the COVID-19 years (Figure 3). The growth in per capita CGHS from 2019 to 2022 (represented by the 2022 CGHS index) did not correlate with the per capita CGHS levels in 2019, that is, countries with a lower per capita CGHS in 2019 did not see a significantly slower or faster growth of per capita CGHS, on average during the COVID-19 years, compared to countries with higher per capita CGHS in 2019.

**Figure 3. 2022 CGHS Index and 2019 Per Capita CGHS (log 10)**



Source: Authors' calculations using Government Health Budgets and Spending Database

Notes:

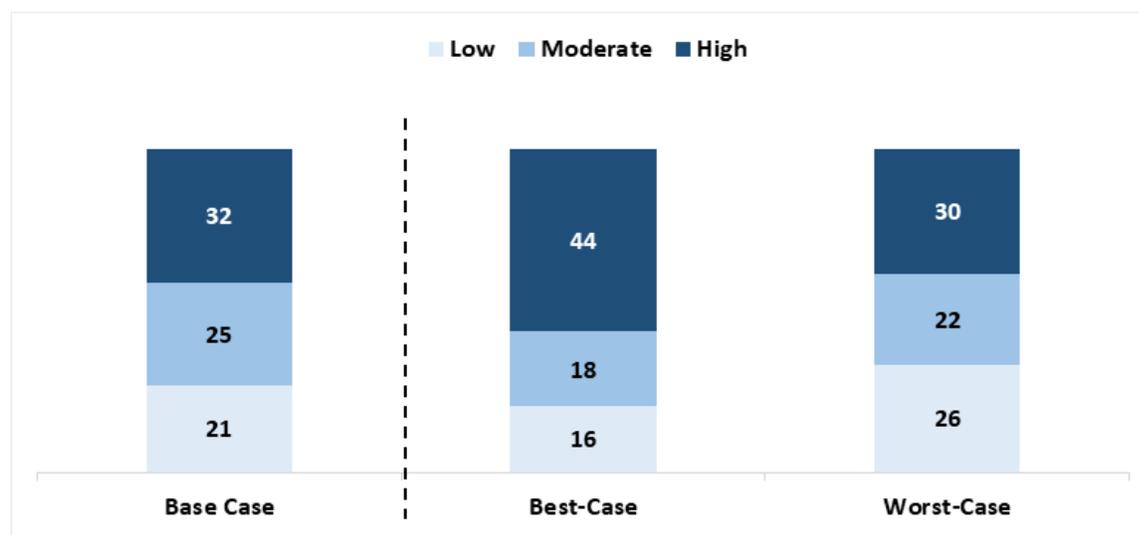
1. The x-axis shows the 2019 CGHS per capita (in 2022 constant US\$, expressed as log base 10). The 2022 CGHS index on the y-axis shows the real per capita CGHS growth over the 3-year period from 2019-22. The direction of the trend line indicates convergence (downward sloping) or divergence (upward sloping), while the steepness of the slope indicates the degree of convergence or divergence.
2. The relationship between the 2022 CGHS index and 2019 per capita CGHS (in log 10 terms) was weak, with a correlation coefficient of -0.09, and not statistically significant (at the 10% level).

### Beyond central government budgetary spending on health

Incorporating estimates for government health spending components beyond central budgetary spending on health (CGHS) into the analysis, did not substantially alter the distribution of countries across response and landing categories. Only a small share of countries moved between categories in both the best-case and worst-case scenarios. Additionally, over half the countries which moved were close to the cut-off points for their category. The movement in these countries was due to small changes in the index (when incorporating estimates for government health spending components beyond CGHS). Furthermore, the number of countries shifting in the best- versus the worst-case scenario was – with only one exception – fairly similar across categories, for both landing and response.

The number of countries with a high landing increased from 32 to 44 in the best-case scenario and decreased to 30 in the worst-case scenario (Figure 4). The large shift of 12 countries in the best-case scenario resulted from small changes in government health spending estimates at the cut-off between moderate and high landing.<sup>22</sup> The number of countries with a low landing moved identically in both scenarios. They increased from 21 to 26 countries in the worst-case scenario and decreased to 16 in the best-case scenario.

**Figure 4. Scenarios for Government Health Spending Levels: Landing, 2022**

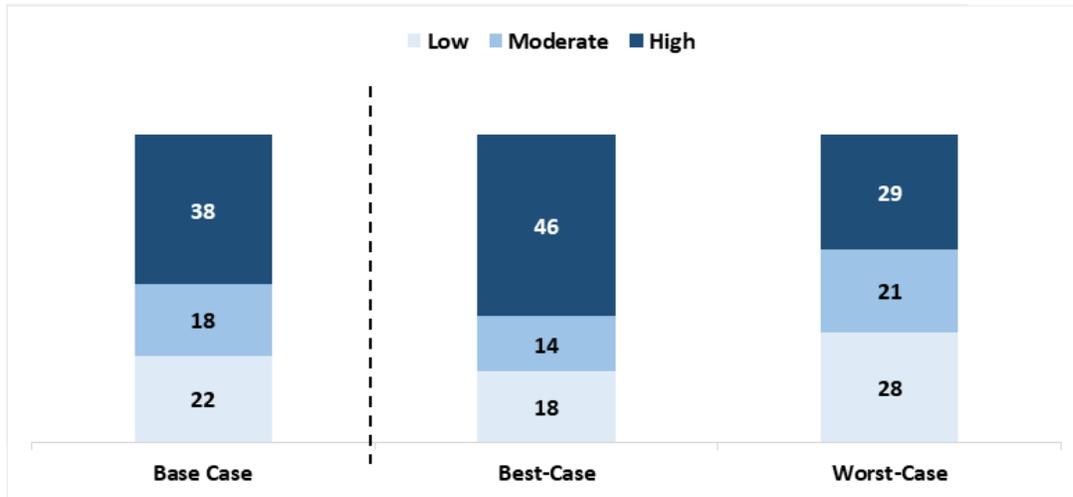


Source: Authors' calculations using Government Health Budgets and Spending Database

Similarly, the number of countries with a high response moved comparably – they increased from 38 to 46 in the best-case scenario, however, decreased to 29 in the worst-case scenario (Figure 5). The number of countries with a low response also moved similarly in both scenarios. They decreased from 22 to 18 countries in the base case scenario and increased to 28 in the worst-case scenario.

<sup>22</sup> The real per capita CGHS index in nine of the 12 countries moving to a high landing in the best-case scenario (from 32 countries in base case to 44 in best-case) was less than 5 percent below the cut-off between the high and moderate landing categories. Small increases in estimates for other government health spending components beyond CGHS moved them from a moderate to high landing in the best-case scenario.

**Figure 5. Scenarios for Government Health Spending Levels: Response, 2020–21**

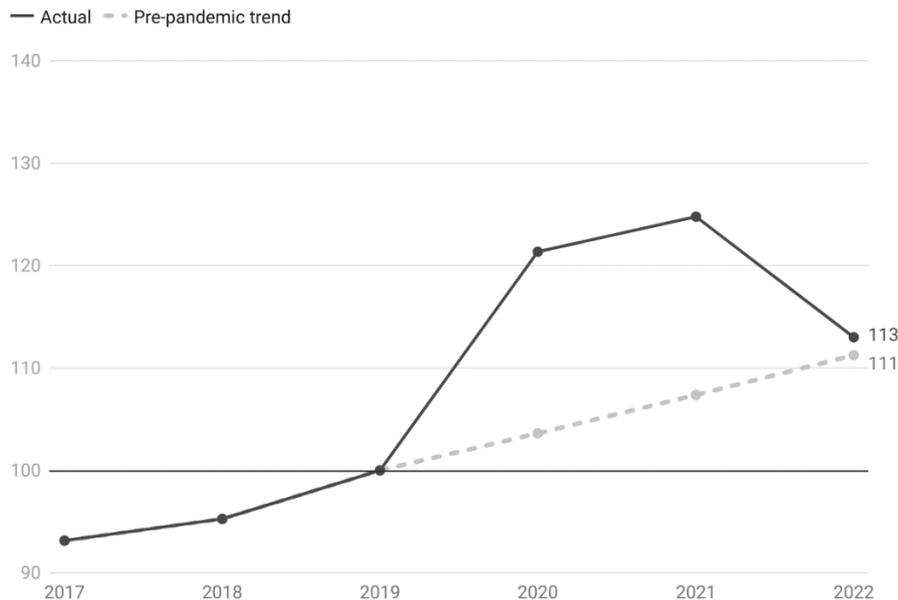


Source: Authors' calculations using Government Health Budgets and Spending Database

### Change relative to pre-pandemic trends

The average per capita CGHS index sharply rose above its pre-pandemic trend in 2020 and 2021, however, converged then towards its pre-pandemic trajectory in 2022 (Figure 6). In 2022, the difference between the projected (based on pre-pandemic trend) and actual per capita CGHS index was only 2 index points, down from its peak of 18 index points in 2020.

**Figure 6. Average CGHS Index, Actual and Pre-pandemic Trend Counterfactual, 2017-22 (2019 = 100)**

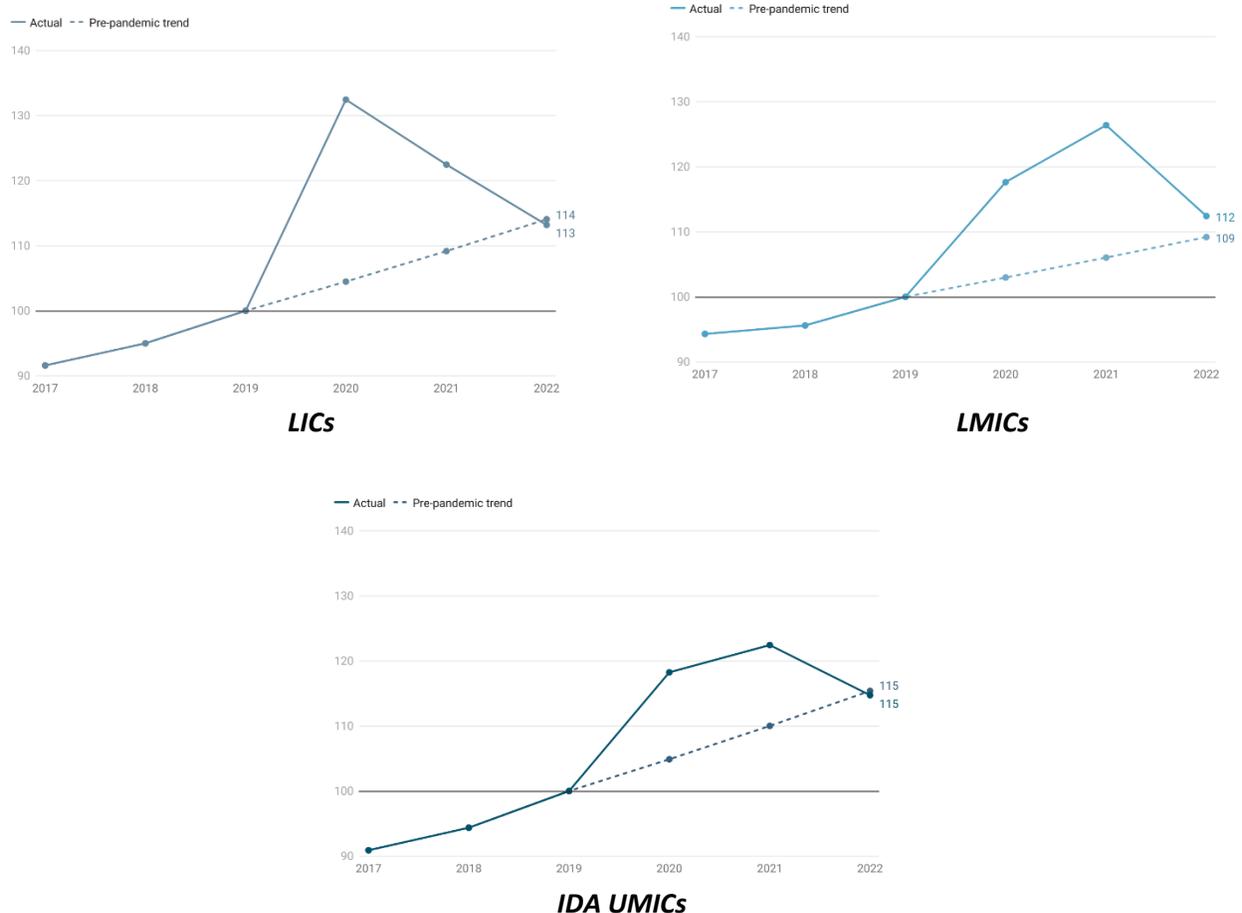


Source: Authors' calculations using Government Health Budgets and Spending Database

Note: The actual line (solid grey) indicates real per capita CGHS index (2019 = 100). The pre-pandemic trend line (dotted grey) indicates the counterfactual real per capita CGHS index if the pre-pandemic real per capita CGHS growth from 2017-19 continued between 2019-22

The pattern of positive divergence, followed by convergence between the actual and projected per capita CGHS index held across all income groups. After a stark upward shift in the initial two pandemic years, the actual per capita CGHS index returned close to its pre-pandemic trend (Figure 7). The difference between the actual and projected per capita CGHS index in 2022 was -1 index points in LICs, +2 in LMICs, and 0 in IDA-UMICs.

**Figure 7. Average CGHS Index, Actual and Pre-pandemic Trend Counterfactual, 2017-22 (2019 = 100), by Income-group**



Source: Authors' calculations using Government Health Budgets and Spending Database  
 Note: The actual lines (solid blues) indicate the real per capita CGHS index (2019 = 100) for the income-group. The pre-pandemic trend lines (dotted blue) indicate the counterfactual real per capita CGHS index for the income-group, if the pre-pandemic real per capita CGHS growth from 2017-19 continued between 2019-22.

## CGHS SHARE

The average per capita CGHS share in general government expenditure (GGE) over all 78 study countries initially rose but then dropped, falling back near the pre-COVID-19 baseline. It increased from 6.6 percent in 2019 to 7.4 percent in 2020, and remained at that level in 2021 before dropping to 6.8 percent, marginally above the 2019 baseline (Table 6).

This same broad pattern held across income groups, however, with significant differences in their trajectory.

- In LICs, the average per capita CGHS share peaked in 2020 before steadily dropping, falling below the 2019 baseline in 2022. On average, it rose from 5.4 percent in 2019 to 6.3 percent in 2020 before declining to 5.7 percent in 2021 and 5.2 percent in 2022—0.2 percentage points below the 2019 level.
- In LMICs, the average per capita CGHS share peaked only in 2021 before dropping in 2022. It increased from 6.0 percent in 2019 to 6.6 percent in 2020, and further to 7.0 percent in 2021, before falling to 6.4 percent in 2022.
- In IDA UMICs, the trajectory was similar to that of LICs, however, at a higher level. The average per capita CGHS share increased from 10.7 percent in 2019 to 11.6 percent in 2020 before declining to 11.1 percent in 2021, and further to 10.6 percent in 2022 - 0.1 percentage points below the 2019 level.

**Table 6. Average CGHS Share of GGE, 2019–22, by Income Group<sup>23</sup>**

Country Income Group	CGHS as Share of GGE (in percent)			
	2019	2020	2021	2022
LICs	5.4	6.3	5.7	5.2
LMICs	6.0	6.6	7.0	6.4
IDA UMICs	10.7	11.6	11.1	10.6
All	6.6	7.4	7.4	6.8

*Source:* Authors' calculations using Government Health Budgets and Spending Database

*Note:* Table shows simple average of CGHS share of GGE by income-group, and all 78 study countries

<sup>23</sup> The corresponding median shares were 5.5 percent in 2019, 6.7 percent in 2020 (+1.2 percentage points (pp) relative to 2019), 6.8 percent in 2020 (+1.3 pp relative to 2019), and 5.7 percent in 2022 (+0.2 pp relative to 2019). Though there is a 1 percentage point difference between averages and medians, the change in shares relative to 2019 is similar for both.

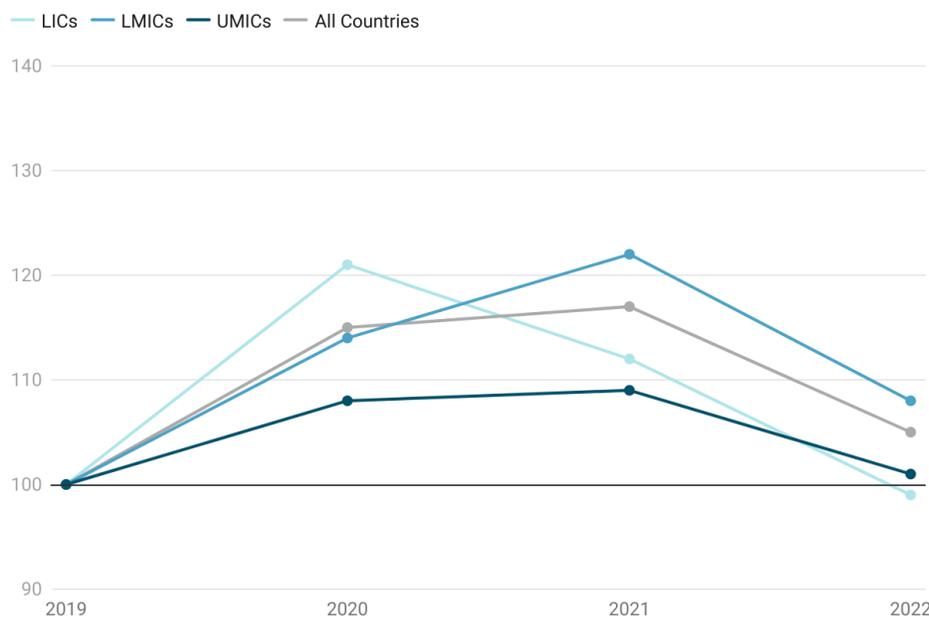
## Change relative to 2019

Similar to the CGHS share trend, the average CGHS share index<sup>24</sup> – a measure of a country’s CGHS share relative to the 2019 share – showed a summit curve, with 2022 levels slightly above the pre-COVID-19 level (Figure 8).<sup>25</sup> The average CGHS share index across the 78 countries climbed to 115 in 2020, marginally increased to 117 in 2021, and in 2022 fell to 105, close to the pre-COVID-19 level.

This pattern held across income groups, however, with some nuances in their trajectory (Figure 8).

- In LICs, the average CGHS share index peaked in 2020 and then steadily dropped, falling below the 2019 baseline in 2022. It rose to 121 in 2020 before declining to 112 in 2021 and further to 99 in 2022.
- In LMICs, the average CGHS share index only peaked in 2021 before sharply dropping in 2022, yet remaining above the 2019 baseline. It climbed to 114 in 2020, further increased to 122 in 2021, and in 2022 fell to 108.
- In IDA UMICs, the average CGHS share index plateaued in 2020 and 2021, before dropping in 2022 barely above the 2019 baseline. It grew to 108 in 2020, increased marginally to 109 in 2021, and in 2022 declined to 101.

**Figure 8. Average CGHS Share Index, 2019–22 (2019 = 100), by Income Group**



Source: Authors’ calculations using Government Health Budgets and Spending Database

Note: Figure shows simple average of CGHS share index by income-group, and all 78 study countries

<sup>24</sup> The CGHS share index is calculated by dividing the country’s CGHS share in a given year by the 2019 share. For example, if the 2020 CGHS share is 6 percent and the 2019 share is 5 percent, the CGHS share index for the country in 2020 will be 120.

<sup>25</sup> Similar to the difference between growth of mean CGHS per capita growth and mean CGHS index (highlighted in the CGHS level section), the mean CGHS share index (for any year) across all countries is not the same as the change in mean CGHS share between the specified year and 2019.

### *Disparities in countries' responses and landings*

The CGHS share trajectories substantially differed across the 78 countries. To capture the disparities in the prioritization of health in government spending, countries were again classified along the two dimensions of response and landing.

**Response.** The response dimension categorized countries based on the government's prioritization of health during the initial two years of the COVID-19 pandemic. Country responses were divided into three categories – high, moderate, and low:

1. High response: The 2020 and 2021 CGHS share indices were above 100, and in at least one year above the average for the country's income group.<sup>26</sup>
2. Moderate response: Both the 2020 and 2021 CGHS share indices were above 100 but both below the average for the country's income group.
3. Low response: The 2020 or the 2021 CGHS share index was below 100, that is, CGHS as a share of GGE fell below the pre-COVID-19 level in at least one of the two years.

Half the countries (39 of 78) showed a high response, and around 15 percent of countries (11 of 78), a moderate response (Table 7). Per definition, in these 50 countries (about 65 percent), the CGHS share was above the 2019 baseline during the first two years of the pandemic. The CGHS share index for this group of countries averaged 121 in 2020, 132 in 2021, and 112 in 2022.

In the remaining about 35 percent of the countries (28 of 78), the response was low, with the CGHS share falling beneath the 2019 level in at least one of the initial two pandemic years. In seven countries, the CGHS share dropped below 2019 levels only in 2020, in 14 countries, it dropped below 2019 levels only in 2021, and in seven countries, it dropped below 2019 levels in both 2020 and 2021.<sup>27</sup> The average CGHS share index for the 28 countries with a low response averaged 103 in 2020 and 90 in 2021.

**Landing.** The landing dimension categorized countries based on their CGHS share index in 2022. Country landings were split into two categories—high and low<sup>28</sup>:

1. High landing: The 2022 CGHS share index was above 100 (that is, the prioritization of health in 2022 was higher than in 2019).
2. Low landing: The 2022 CGHS share index was below 100 (that is, the prioritization of health in 2022 was lower than in 2019).

A little over half the countries (41 of 78) showed a high landing (Table 7). The CHGS share index for this group of countries averaged 122 in 2022.

The remaining 37 countries showed a low landing. The CGHS share index for this group of countries was on average 86 in 2022.

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<sup>26</sup> The mean CGHS share index was 121 for LICs, 114 for LMICs, and 108 for IDA UMICs in 2020; and 112 for LICs, 122 for LMICs, and 109 for IDA UMICs in 2021.

<sup>27</sup> The seven countries with CGHS share below 2019 levels only in 2020 include 1 LIC (Malawi), 5 LMICs (Bangladesh; Eswatini; Haiti; Kiribati; and Myanmar), and 1 UMIC (Belize). The 14 countries with CGHS share below 2019 levels only in 2021 include 4 LICs (Congo, Dem. Rep.; Guinea-Bissau; Guinea; and Liberia), 7 LMICs (Benin; Bhutan; Kenya; Lesotho; Papua New Guinea; Senegal; and Uzbekistan), and 3 UMICs (Maldives; Tonga; and Tuvalu). The seven countries with CGHS share below 2019 levels in both 2020 and 2021 include 1 LIC (Burkina Faso), 3 LMICs (Comoros; Ghana; and Tanzania), and 3 UMICs (Dominica; Grenada; and Marshall Islands).

<sup>28</sup> Unlike the CGHS share response, CGHS share landing had only two categories. The moderate category comprised countries between an index of 100 and the index average. Since the CGHS share index average in the landing (2022) was close to 100 (CGHS share index 2022 = 105), there were nearly no countries in the moderate category, and it was discarded.

### Above and below the baseline

In 33 of the 78 study countries, the response was moderate or high and the landing was high (Table 7). In these countries, the CGHS share of GGE remained above the pre-COVID-19 baseline in both the initial two years of the pandemic and in 2022. The CGHS share index averaged 123 in 2020, 138 in 2021, and 125 in 2022.

Conversely, in 45 countries, the CGHS share fell below the 2019 level in at least one of the three years since the start of the pandemic. In this group of 45 countries, the CGHS share index averaged 108 in 2020, 102 in 2021, and 90 in 2022. In 17 of these 45 countries, the response was moderate or high, but the landing low. In eight countries, the response was low, but the landing high. And in 20 countries, both the response and landing were low, among them, seven countries in which the CGHS share remained below the 2019 level in all three pandemic years.<sup>29</sup> In this group of 20 countries with both a low response and landing, the CGHS share index averaged 105 in 2020, 86 in 2021, and again 86 in 2022.

### Country groups

The categorization of countries along the two dimensions of response and landing highlighted the diversity of trajectories (Table 7). Countries fell into six different groups. In two-thirds of countries (47), the response and landing categories corresponded. The description of the groups is again organized around landings, representing the most recent government effort to prioritize health in their spending.

**Table 7. Number of Countries, by Health Prioritization Response and Landing**

		Landing: CGHS Share Index, 2022		All Countries
		High	Low	
Response: CGHS Share Index, 2020 and 2021	High	27	12	39
	Moderate	6	5	11
	Low	8	20	28
All countries		41	37	78

Source: Authors' calculations using compiled government health spending database

### High landing

In the 41 countries with a strong landing, the average CGHS share index was 122 in 2022 (Table 7, Table 8, Figure 9). In these countries, the prioritization of health in government spending was also substantial during the initial two years of the pandemic. The average CGHS share index for the 41 countries was 118 in 2020 and peaked at 131 in 2021.

Among the 41 countries with a high landing, almost two-thirds (27 of 41) also showed a high response. For this subgroup of 27 countries, the CGHS share index was 127 in 2020, 144 in 2021, and 128 in 2022. In contrast, in the six countries with a moderate response, the average CGHS share index hovered around 110 in all three years. In the eight countries with a low response, the average CGHS share index fell slightly to 98 in 2020 before increasing to 102 in 2021 and landing at 107 in 2022.

<sup>29</sup> The seven countries with CGHS share below 2019 levels in all three years (2020-22) include 1 LIC (Burkina Faso), 3 LMICs (Comoros; Ghana; and Tanzania), and 3 UMICs (Dominica; Grenada; and Marshall Islands).

**Table 8. Average CGHS Share Index, 2019–22, High Landing Countries, by Response Category**

		High Landing (41 Countries)			
		2019	2020	2021	2022
<b>Response: CGHS Share Index, 2020 and 2021</b>	<b>High</b>	100	127	144	128
	<b>Moderate</b>	100	108	111	110
	<b>Low</b>	100	98	102	107
	<b>All countries</b>	100	118	131	122

*Source:* Authors' calculations using Government Health Budgets and Spending Database

*Note:* Table shows simple average of CGHS share index

### *Low landing*

In the 37 countries with a low landing, the average CGHS share index was 86 in 2022 (equal to a 14 percent decline below the 2019 baseline) (Table 7, Table 9, Figure 9). In these countries, the response was considerable in the initial but muted the second pandemic year. The average CGHS share index rose to 111 in 2020 and dropped to 102 in 2021.

Among the 37 countries with a low landing, most countries (20 of 37) also showed a low response. Among these 20 countries, the average CGHS share index marginally increased to 105 in 2020 before falling to 86 in 2021, and staying at that level in 2022. Less than 15 percent of countries (five of 37) demonstrated a moderate response, with the average CGHS share index rising to 109 in 2020, remaining at that level in 2021, and plummeting to 85 in 2022. Remarkably, about one-third of countries (12 of 37) in the low landing category showed a high initial response. The average CGHS share index sharply increased to 121 in 2020, further climbed to 125 in 2022, before plummeting to 88 in 2022.

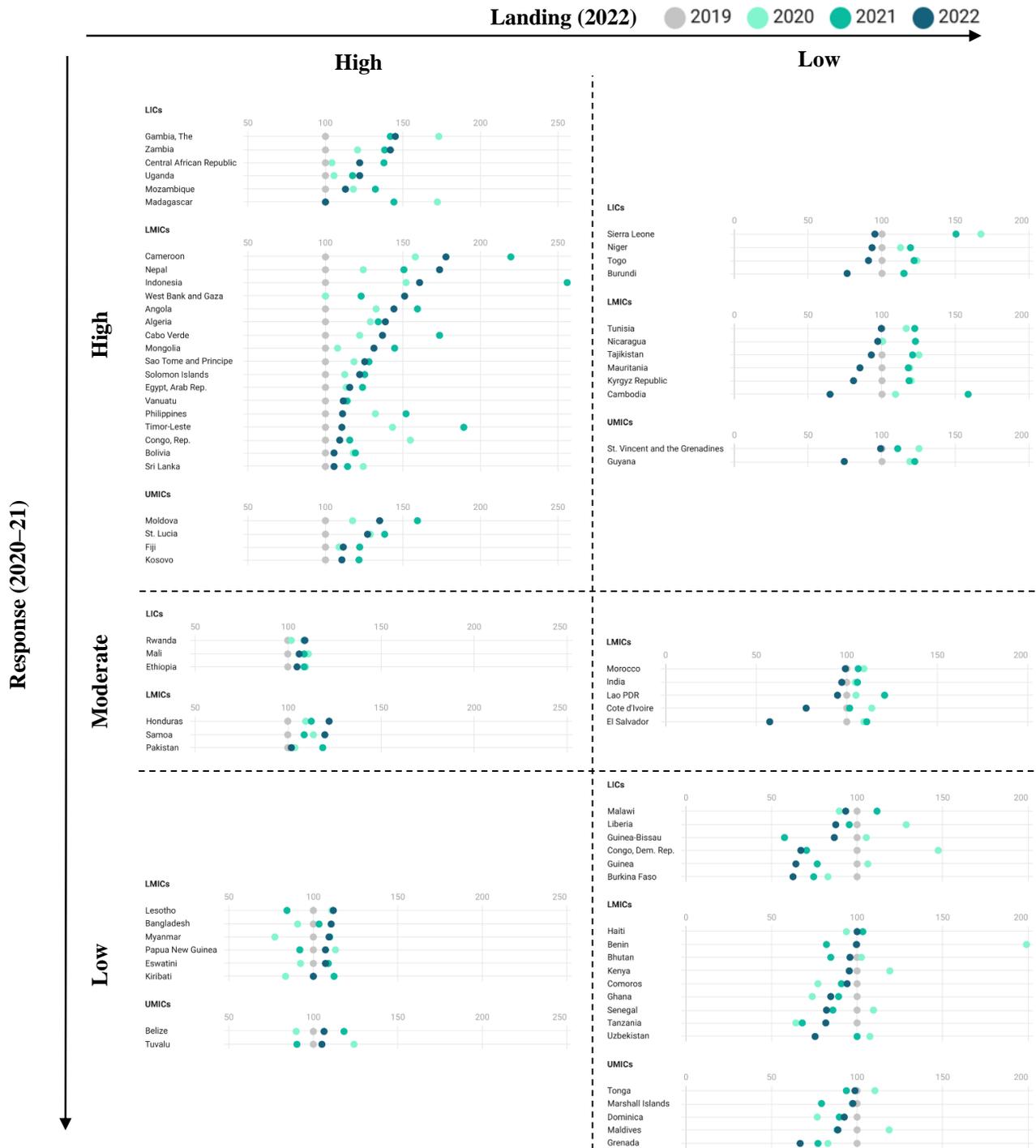
**Table 9. Average CGHS Share Index, 2019–22, Low Landing Countries, by Response Category**

		Low Landing (37 countries)			
		2019	2020	2021	2022
<b>Response: CGHS Share Index, 2020 and 2021</b>	<b>High</b>	100	121	125	88
	<b>Moderate</b>	100	109	109	85
	<b>Low</b>	100	105	86	86
	<b>All countries</b>	100	111	102	86

*Source:* Authors' calculations using Government Health Budgets and Spending Database

*Note:* Table shows simple average of CGHS share index

Figure 9. CGHS Share Index by Country, 2019–22 (2019 = 100), by Landing and Response Category

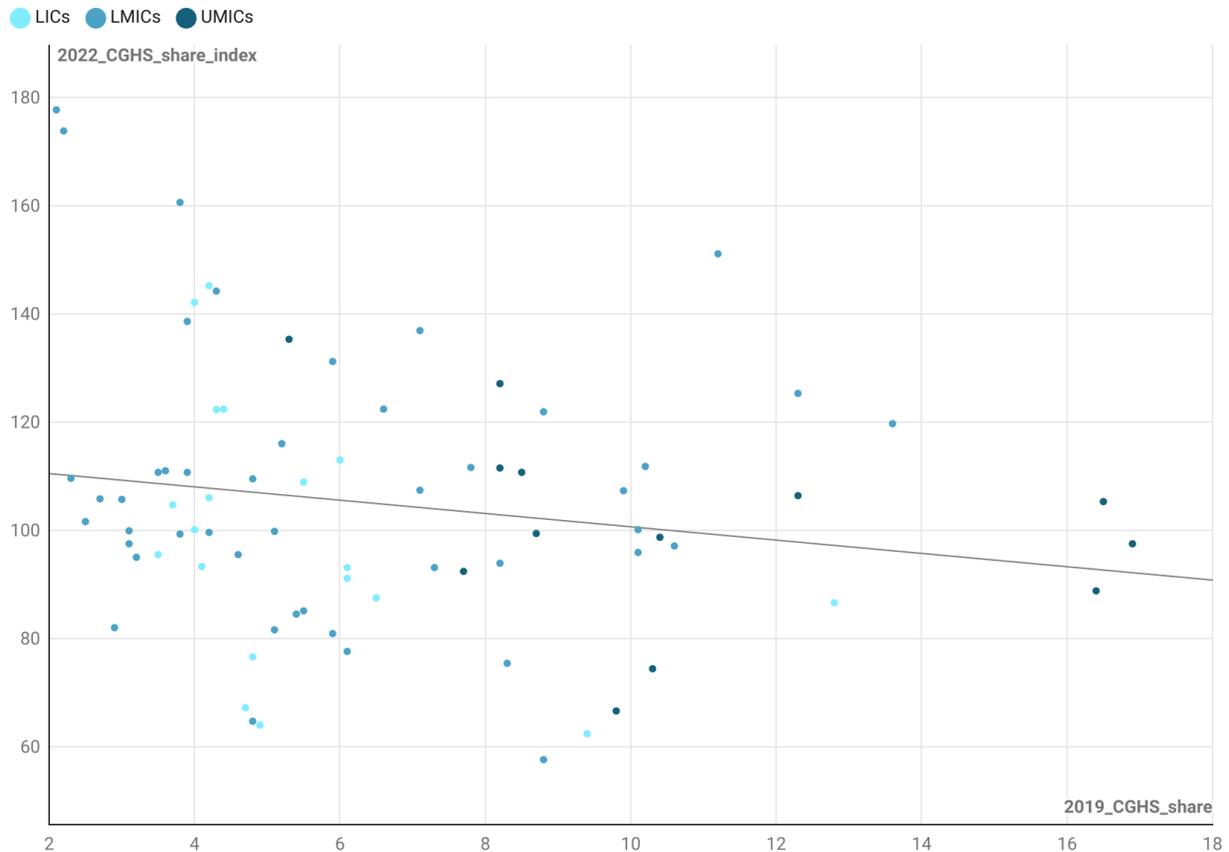


Source: Authors' calculations using compiled government health spending database

### Getting closer or drifting apart?

The large disparities in country trajectories resulted neither in a divergence nor convergence in CGHS shares during the COVID-19 years (Figure 10). The change in the CGHS shares from 2019 to 2022 (represented by the 2022 CGHS share index) did not correlate with the CGHS shares in 2019, that is, countries with lower CGHS share in 2019 did not see a significantly slower or faster growth of their CGHS share, on average during the COVID-19 years, compared to countries with higher CGHS share in 2019.

**Figure 10. 2022 CGHS Share Index and 2019 CGHS as Share of GGE**



Source: Authors' calculations using Government Health Budgets and Spending Database

Notes:

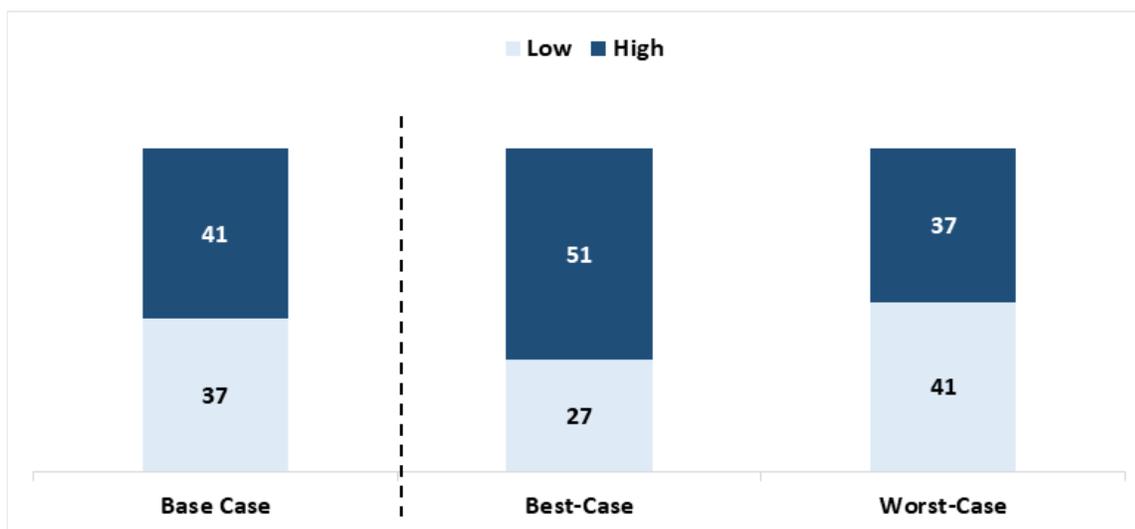
1. The x-axis shows the 2019 CGHS as share of GGE. The 2022 CGHS share index on the y-axis shows the CGHS share growth over the 3-year period from 2019-22. The direction of the trend line indicates convergence (downward sloping) or divergence (upward sloping), while the steepness of the slope indicates the degree of convergence or divergence.
2. The relationship between the 2022 CGHS share index and 2019 CGHS share was weak, with a correlation coefficient of -0.18, and not statistically significant (at the 10% level).

### Beyond central government budgetary spending on health

Incorporating estimates for government health spending components beyond central budgetary spending on health (CGHS) into the analysis, did not substantially alter the distribution of countries across respond and landing categories. Only a small share of countries moved between categories in both the best-case and worst-case scenarios. Additionally, over half the countries which moved were close to the cut-off for their category. The movement in these countries was due to small changes in the share index (when incorporating estimates for government health spending components beyond CGHS). Furthermore, the number of countries shifting in the best- versus worst case was fairly similar across categories in both landing and response.

The number of countries with a high landing increased from 41 to 51 in the best-case scenario and decreased to 37 in the worst-case scenario (Figure 11). The shift of the 10 countries in the best-case scenario resulted from small changes in government health spending share estimates at the cut-off between low and high landing.<sup>30</sup>

**Figure 11. Scenarios for Health Share of Government Spending, Landing, 2022**

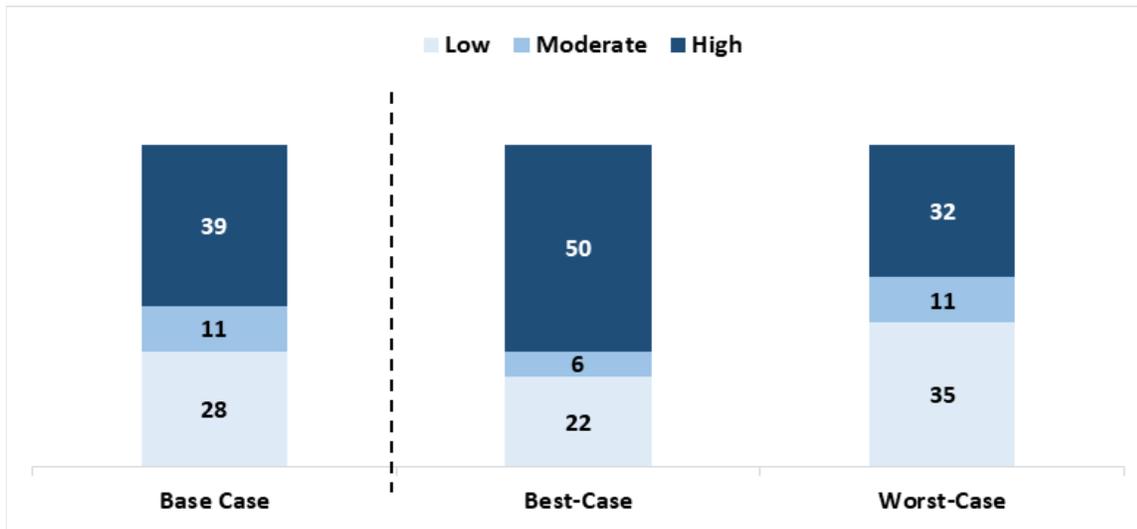


Source: Authors' calculations using Government Health Budgets and Spending Database

The number of countries with a high response moved comparably in both scenarios. They increased from 39 to 50 in the best-case scenario and dropped to 32 in the worst-case scenario (Figure 12). Similarly, the number of the countries with a low response shifted identically – they decreased from 28 to 22 in the best-case scenario, however, increased to 35 in the worst-case scenario.

<sup>30</sup> The CGHS share of GGE in all 10 countries which moved to a higher landing in the best-case scenario was less than 5 percent below the cut-off between the high and low landing categories. Further, in five of the 10 countries, the 2022 CGHS share was less than 1 percent below the cut-off.

**Figure 12. Scenarios for Health Share of Government Spending, Response, 2020–21**

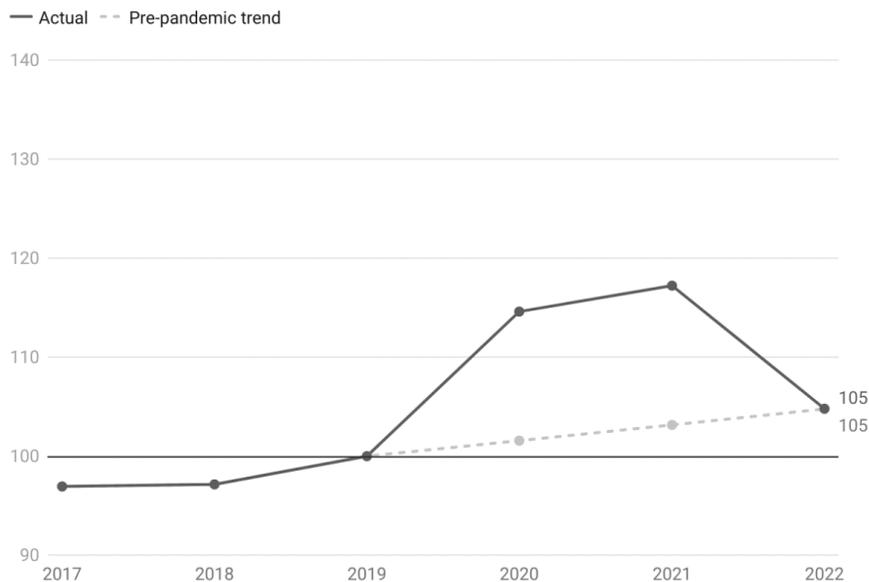


Source: Authors' calculations using Government Health Budgets and Spending Database

**Change relative to pre-pandemic trends**

The average CGHS share index sharply rose above its pre-pandemic trend in 2020 and 2021, however, converged with its pre-pandemic trajectory in 2022 (Figure 13). After substantial differences of 13 index points in 2020, and 14 index points in 2021, the projected (based on pre-pandemic trend) and actual CGHS share index met at a level of 105 in 2022.

**Figure 13. Average CGHS Share Index, Actual and Pre-pandemic Trend Counterfactual, 2017-22 (2019 = 100)**

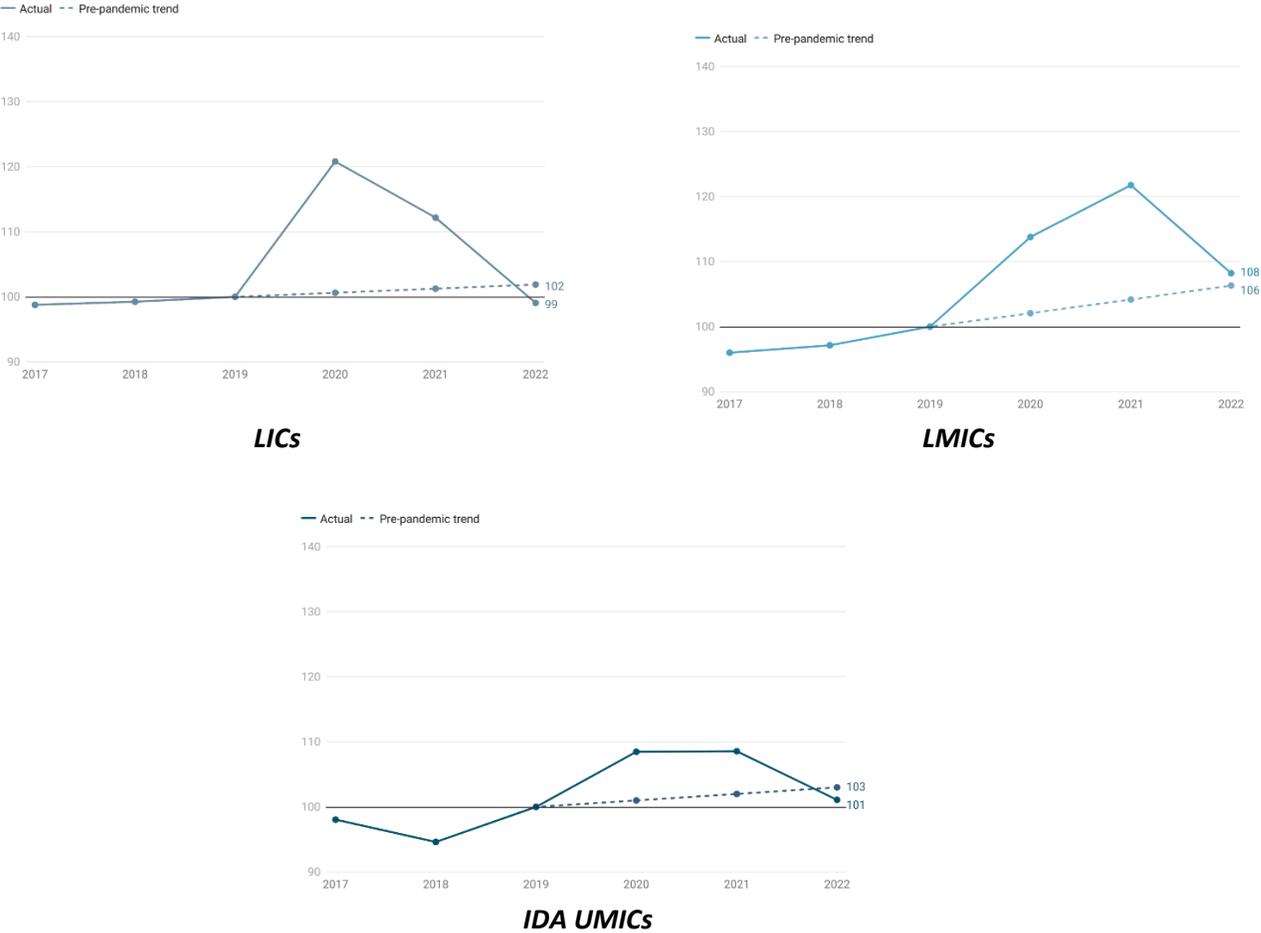


Source: Authors' calculations using Government Health Budgets and Spending Database

Note: The actual line (solid grey) indicates CGHS share index (2019 = 100). The pre-pandemic trend line (dotted grey) indicates the counterfactual CGHS share index if the pre-pandemic CGHS share (of GGE) growth from 2017-19 continued between 2019-22.

The general pattern of positive divergence followed by convergence between the actual and projected CGHS share index held across all income groups. After a substantial upward shift in the initial two pandemic years, the actual CGHS share index returned close to its pre-pandemic trend (Figure 14). In 2022, the difference between the actual and projected CGHS share index was -3 index points in LICs, +2 in LMICs, and -2 in IDA-UMICs.

**Figure 14. Average CGHS Share Index, Actual and Pre-pandemic Trend Counterfactual, 2017-22 (2019 = 100), by Income-group**



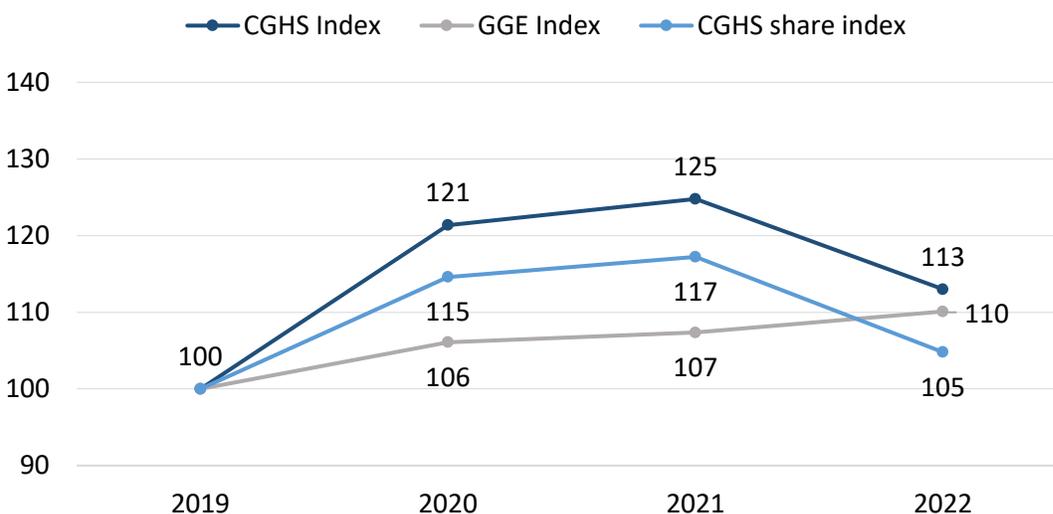
*Source:* Authors' calculations using Government Health Budgets and Spending Database  
*Note:* The actual lines (solid blues) indicate the CGHS share index (2019 = 100) for the income-group. The pre-pandemic trend lines (dotted blue) indicate the counterfactual CGHS share index for the income-group, if the pre-pandemic CGHS share (of GGE) growth from 2017-19 continued between 2019-22.

## CGHS DRIVERS

Across all 78 countries, the rise of central government health spending during the initial two years of the pandemic was primarily driven by increases in the priority given to health (Figure 15). Growth in general government spending played a lesser role. In 2020, the average per capita CGHS index rose to 121 and the average CGHS share index to 115, significantly outpacing the rise in the average GGE index to 106. In 2021, the relationship between the three variables did not change significantly. All indexes only increased marginally: the average per capita CGHS index from 121 to 125, the average CGHS share index from 115 to 117, and the average GGE index from 106 to 107.

This dynamic, however, changed dramatically in 2022. While the prioritization of health dropped sharply, the steadily growing general government spending envelope became the main force behind per capita CGHS levels above the baseline. Between 2021 and 2022, the average per capita CGHS index dropped almost halfway to the baseline (from 125 to 113), and the average CGHS share index even faster, from 117 to 105. Meanwhile, the average GGE index continued its steady climb, from 107 to 110.

**Figure 15. Average CGHS, CGHS Share, and GGE Index, 2019–22, in All 78 Countries**

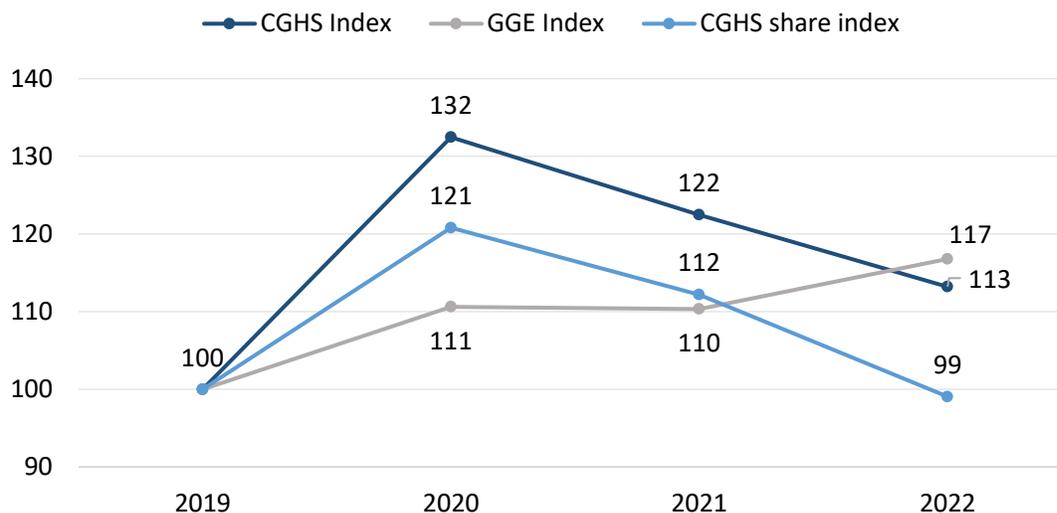


*Source:* Authors' calculations using Government Health Budgets and Spending Database

*Note:* The CGHS index can be calculated using the CGHS share and GGE index for any specific country-year. The CGHS index is  $[[CGHS\ index]]_{(c,t)} = ([[GGE\ index]]_{(c,t)} * [[CGHS\ share\ index]]_{(c,t)}) / 100$ , where 'c' is the country and 't' is the year. However, since the above figure represents the average of the three indices across countries, the same identity does not hold mathematically, though the identity should provide a good approximation of the average CGHS index.

In LICs, the change in the dynamic between CGHS share and GGE was even more pronounced (Figure 16). In 2020, the CGHS share was the main driver of growth in CGHS levels (average CGHS share index 121, average GGE index 111). In 2021, the contribution of the CGHS share was almost on par with GGE growth in pushing CGHS above the 2019 baseline (average CGHS share index 112, average GGE index 110). However, in 2022, the sustained rise of CGHS above the 2019 baseline was entirely driven by GGE (average CGHS share index 99, average GGE index 117).

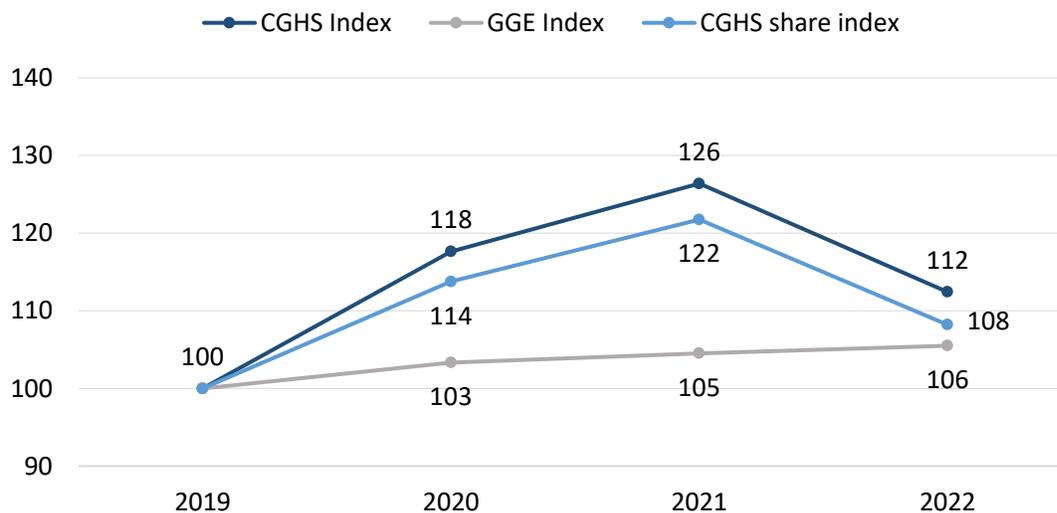
**Figure 16. Average CGHS, CGHS Share, and GGE Index in LICs, 2019–22**



Source: Authors' calculations using Government Health Budgets and Spending Database

In LMICs, the change in the dynamic was less pronounced (Figure 17). In 2020, the CGHS share was the main driver of growth in CGHS (average CGHS share index 114, average GGE index 103). In 2021, the dominance of the CGHS share was even greater (average CGHS share index 122, average GGE index 105). In 2022, however, after a drop in the CGHS share, the contribution of both determinants was similar (average CGHS share index 108, average GGE index 106).

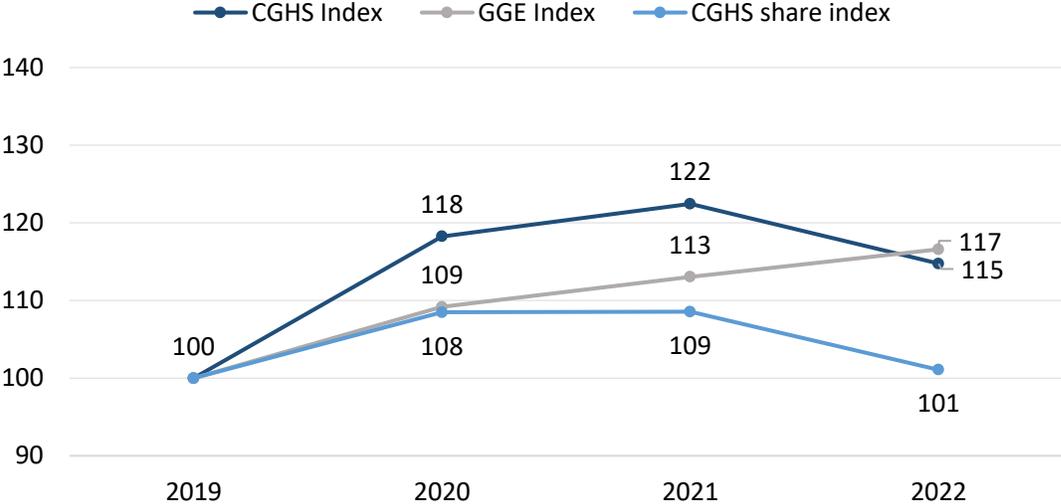
**Figure 17. Average CGHS, CGHS Share, and GGE Index in LMICs, 2019–22**



Source: Authors' calculations using Government Health Budgets and Spending Database

In contrast, in IDA UMICs, the priority given to health was never the primary driver of CGHS levels above the baseline (Figure 18). In 2020, the contribution of both determinants was on par (average CGHS share index 108, average GGE index 109). In 2021, GGE became the primary driver of spending levels above the baseline (average CHGS share index 109, average GGE index 113). In 2022, GGE was the sole driver of CGHS levels, with CGHS share falling back nearly to pre-COVID-19 levels (average CGHS share index 101, average GGE index 117).

**Figure 18. Average CGHS, CGHS Share, and GGE Index in IDA UMICs, 2019–22**



Source: Authors’ calculations using Government Health Budgets and Spending Database

**Disparities across countries in landings**

Across the 78 countries, the interplay between CGHS levels, CGHS share in GGE, and GGE varied significantly. When organized by CGHS levels (high, moderate, and low landing) and CGHS share (high and low landing), countries fell into six groups (Figure 19).

In three of these groups (groups 1, 2, and 3), country per capita CGHS levels and CGHS shares moved in the same direction. In groups 1 and 2, both per capita CGHS levels and CGHS shares increased, while they both decreased in group 3. In the three remaining groups (groups 4, 5, and 6), per capita CGHS levels and shares moved in opposite directions, with one increasing relative to 2019 and the other one decreasing. In group 4, the per capita CGHS share exceeded the 2019 baseline, but CGHS levels fell short of it. The opposite occurred in groups 5 and 6.

*High landings*

The first group consisted of 23 countries with a high landing for both per capita CGHS levels and CGHS shares. In most countries of this group (19 of 23), the rise in per capita CGHS was primarily the result of a rise in the CGHS share, with GGE in eight countries dropping below the 2019 baseline. Only in four countries, positive GGE growth was the primary driver of CGHS growth. For this group, the average per capita CGHS index was 137, the average CGHS share index 130, and the average GGE index 106.

### *Moderate and high landings*

The second group consisted of 13 countries with a moderate landing for per capita CGHS and a high landing for CGHS share. In most countries (12 of 13), the rise in per capita CGHS was primarily the result of a rise in the CGHS share. Indeed, in 10 out of the 13 countries, GGE dropped below the 2019 baseline. Only in one country, Pakistan, GGE growth outpaced CGHS share growth and was the primary driver of CGHS growth. In this group, the average per capita CGHS index was 105, the CGHS share index 112, and the GGE index 95.

### *Low landings*

The third group consisted of 16 countries with a low landing for both per capita CGHS and CGHS shares. In most countries (12 of 16), the drop of CGHS was primarily the result of the drop of the CGHS share below the 2019 baseline, while in 10 of these countries, growth in GGE was positive. Only in the remaining four countries, drops in the GGE exceeded drops in the CGHS share. In this group of 16 countries, the average per capita CGHS index was 87, the CGHS share index 82, and the GGE index 108.

### *High and low landings*

The fourth group consisted of nine countries with a high landing for per capita CGHS but a low landing of CGHS shares. In all of the countries, the rise in CGHS was driven by robust growth in GGE, which more than compensated for the drop in the CGHS share. In this group, the average CGHS index was 131, the average CGHS share index 93, and the average GGE index 143.

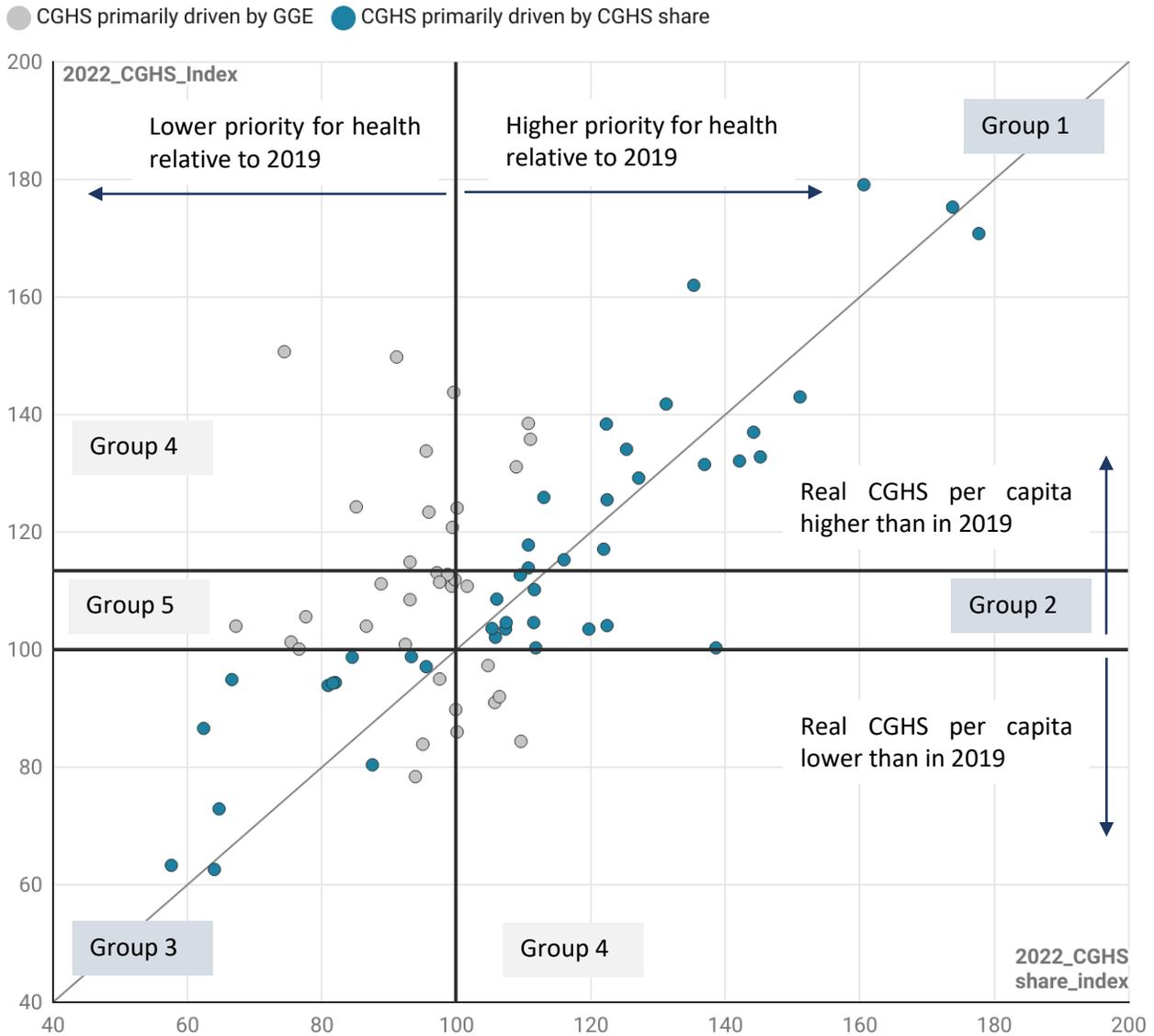
### *Moderate and low landings*

The fifth group consisted of 12 countries with a moderate landing for per capita CGHS and a low landing for the CGHS share. As with the fourth group, in all countries, the rise in the per capita CGHS was the result of robust growth in GGE. In this group, the average CGHS index was 107, the average CGHS share index 88, and the average GGE index 123.

### *Low and high landings*

The sixth and final group consisted of five countries with a low landing for per capita CGHS despite a high landing for CGHS share. In all five countries, the rise in the CGHS share partially compensated for a drop in GGE. In this group, the average per capita CGHS index was 90, the CGHS share index 105, and the GGE index 86.

**Figure 19. CGHS Index and CGHS Share Index, by Country, Landing (2022)**



Source: Authors' calculations using Government Health Budgets and Spending Database

Notes:

1. The two black vertical lines ( $y = 100$  and  $y \sim 113$ ) divide countries into three groups defined in the CGHS levels section for the landing: high, moderate, and low. The real CGHS per capita in 2022 is lower than the pre-COVID level in countries below the  $y = 100$  horizontal line.
2. The black vertical line ( $x = 100$ ) divides the countries into two groups defined in the CGHS share section for the landing: high and low. The CGHS share of GGE in 2022 is higher than the pre-COVID level in countries to the right of the  $x = 100$  vertical line.
3. The six groups referred to in the text correspond to the cross-classification based on the 2022 landing for the CGHS levels (3 groups) and CGHS shares (2 groups).
4. The gray diagonal line represents no change in GGE relative to 2019, that is, a 2022 GGE index = 100 ("GGE index" is defined as real per capita GGE in that year divided by real per capita GGE in 2019). Countries left of the diagonal line have a higher per capita GGE in 2022 compared to the 2019 level in real terms (or GGE index greater than 100), while countries right of the diagonal have a lower per capita GGE in 2022 compared to the 2019 level.

5. The primary driver classification is based on whether the change in 2022 CGHS relative to 2019 is primarily driven by the change in CGHS share or GGE. If the 2022 CGHS share has a higher absolute deviation relative to 2019 compared with GGE, CGHS change (captured in the CGHS index) is driven by the CGHS share, or else by the GGE. In some countries, the difference between the contribution of the CGHS share and GGE to the CGHS level may be small (for example, in Mozambique, where the CGHS share index is 113 and the GGE index is 111.5); however, a single primary driver is specified for simplicity.

## DISCUSSION

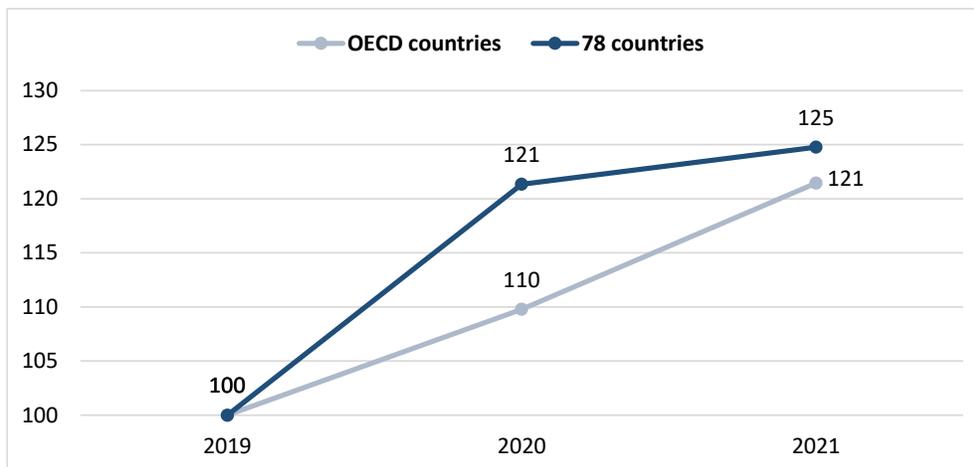
The purpose of this section is two-fold: First, it contextualizes the study findings, most importantly, comparing them with earlier work of the Organization for Economic Co-Operation and Development (OECD), and the World Health Organization (WHO). The OECD produced health spending estimates for its member countries for the first two pandemic years (OECD 2022) (OECD 2023), and WHO at the global levels for 2020. (WHO 2022b). It also interprets the study's findings in light of emerging information about development assistance for health (DAH). Second, the section discusses the study's main data and methodological limitations.

### GOVERNMENT HEALTH SPENDING RESPONSE IN CONTEXT

#### OECD

OECD produced for its member states – a group of higher income countries – estimates of government health spending levels for 2020 and 2021, and health as a share of general government spending in 2020. Compared with the 78 developing countries in this study, the 38 OECD countries had a slower government health spending response in 2020 (Figure 20~~Error! Reference source not found.~~) that, however, intensified in 2021 (OECD 2022). The growth in the OECD countries' real per capita government health spending – which includes obligatory social health insurance – was on average 10 percent in 2020 relative to the 2019 level (corresponding to an average index of 110), much lower than the average increase of 21 percent in the real per capita central government health spending across the 78 countries in this study (corresponding to an average index of 121). However, real per capita government health spending further increased in OECD countries in 2021, and was, on average, 21 percent above the 2019 baseline (corresponding to an average index of 121), converging with the trend in average real per capita central government health spending growth among the countries included in this study.<sup>31</sup>

**Figure 20. Average Government Health Spending Index, 2019-21, OECD and 78 Developing Countries (2019 = 100)**



<sup>31</sup> The per capita compulsory health spending was only available for 19 of the 38 OECD countries in 2021. It was available for all 38 OECD countries in 2020. The average growth in per capita compulsory health spending in 2020 remains at 10 percent if the sample is restricted to 19 countries with data available in 2021. In other words, it is unlikely that the 2021 growth in OECD countries is skewed by the sample.

Source: Authors' calculations using Government Health Budgets and Spending Database and OECD health expenditure indicators (from the OECD health statistics database)

Notes:

1. The real per capita government health spending index is shown for the OECD countries. Government health spending includes all compulsory financing for health.
2. The nominal LCU values from OECD health statistics database are deflated using the GDP deflator from IMF and converted to constant 2022 US\$ terms using the exchange rate in the OECD database. It follows the same methodology used for converting CGHS nominal LCU values to constant US\$ terms. The government health spending index for OECD countries is calculated by setting the 2019 value (in constant US\$) to 100 for each country.
3. The real per capita CGHS index is shown for the 78 countries in the study.

The trends in the prioritization of health differed even more between OECD countries and the 78 developing countries. The OECD data on the share of health in general government spending are limited to the first year of the pandemic. In the 38 OECD countries, the share of health in general government spending did not increase in 2020. The average health share in general government spending was stable at 15 percent (OECD 2022). The growth in general government spending – not the prioritization of health in government spending – drove the government health spending response in the OECD countries. In contrast, the prioritization of health primarily drove the growth in central government health spending in the 78 developing countries included in this study.

## WHO

The latest release of WHO's Global Health Expenditure Database (GHED) in December 2022 included government health expenditure estimates for 2020, the first year of the pandemic (WHO 2022a, WHO 2022b).<sup>32</sup> The trends in government health spending were broadly in line with the findings from this study, particularly for LMICs. According to the GHED, real per capita government health spending growth in 2020 was 19 percent in LICs, 15 percent in LMICs, and 8.4 percent in UMICs. Though the growth from 2019 to 2020 in the GHED was lower than the findings for real per capital central government spending from this study – 32 percent in LICs, 18 percent for LMICs and IDA UMICs – both showed a sharp increase in government health spending.<sup>33</sup>

Also, GHED trends in the prioritization of health in government spending matched the findings from this study. According to the GHED, government health spending as share of general government spending in 2020 increased sharply – by 0.6 percentage points in LICs and LMICs, and 0.3 percentage points in UMICs. Although the findings from this 78-country study – 0.9 percentage point increase in LICs and IDA UMICs, and a 0.7 percentage point increase in LMICs – were higher than the increases in the dataset of the GHED, they both pointed to a greater prioritization of health in 2020.<sup>33</sup>

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<sup>32</sup> Actual government health expenditure data were available for 65 countries, 29 of which were HICs and 14 UMICs. Partial actual government health expenditure data were available for an additional 11 countries, 9 of which were HICs and UMICs. There was no FS1 and FS2 data for four countries. The 2020 central government health expenditure data were either fully or partially modelled in the remaining countries, 52 of which were LICs and LMICs.

<sup>33</sup> The difference in government health spending growth by income-group between the WHO global spending report estimates and this 78-country study was driven by three factors: 1) number of countries by income-group: LICs (24 LICs in WHO report, of which 19 included in this study); LMICs (all 54 LMICs in WHO report, of which 46 included in this study); UMICs (53 UMICs in WHO report, but only 13 IDA-eligible UMICs included in the study). The 2019-20 growth in government health spending levels and shares was nearly the same for LMICs between the WHO spending report and this study, since nearly all LMICs are included in this study; 2) the use of modelled data in WHO GHED (see above footnote); and 3) difference in the government health spending measure used in the WHO spending report (GHE) and this study (CGHS).

## DEVELOPMENT ASSISTANCE FOR HEALTH

In low- and in many lower-middle income countries, Development Assistance for Health (DAH) is an important source of funding for the sector. To the extent that it was channeled through central government finance systems (i.e., on-budget), it can explain some of the changes in the per capita central government health spending data presented in this paper. While levels of DAH spent in developing countries have been stagnant since the global financial crisis, several new international mechanisms have been set up to channel external funding to support developing countries in their response to COVID-19. Most notably, Access to COVID-19 Tools Accelerator (ACT-Accelerator) was created as a coordination mechanism to raise financial resources for research and development, production, and equitable distribution of diagnostics, therapeutics, and vaccines. Simultaneously multilateral development banks, international public and private partnerships, and bilateral development partners committed additional funding for DAH.

Today, it remains unclear to what extent the international response in support of developing countries changed the DAH landscape, both in terms of total amount of DAH, and the share channeled through public finance systems.

The latest update of WHO's Global Health Expenditure Database (GHED) suggests that the total volume of DAH spending did not increase between 2019-20 (WHO 2022a) (WHO 2022b). Data indicate that, on average, total DAH – including on- and off-budget spending – decreased by 1 percent in real terms between 2019-20.<sup>34</sup> Even in LICs and LMICs, the database shows little change of DAH in 2020. The real per capita DAH spending in LICs increased by only 2 percent, and in LMICs by 1 percent in LMICs. In contrast, data compiled by the Institute of Health Metrics and Evaluation (IHME) shows a sharp increase in DAH disbursements. The total DAH disbursements increased by 40 percent between 2019-20, and climbed further in 2021, reaching 58% above the 2019 baseline.

Given the lack of clarity about the recent trends in DAH, let alone the funding channels, it remains an open question whether, and if so, to what extent the sharp increase in real per capita central government health spending and the prioritization of health in government spending in the pandemic years was driven by an increase in on-budget DAH.

## STUDY LIMITATIONS

The study aimed to understand government health spending trends in developing countries during a period when the world faced multiple shocks, starting with the double health-and-economic shock from the COVID-19 pandemic. Since little was known about the health financing trajectories of countries amid overlapping crises, the study compiled all publicly available information to provide an up-to-date, comprehensive picture of government health spending trends.

Against this ambition, the study has three main limitations. First, owing to scarcity of some data categories, it focused on central government budgetary health spending. While the robustness checks factored in other components of government health spending (e.g., special funds, obligatory social health insurance contributions, sub-national government spending on health) and showed that central government budgetary health spending reflects general government health spending trends, additional data on these components are required to comprehensively assess government health spending trends.

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<sup>34</sup> GHED has data on total external financing (on-budget & off-budget) for 154 countries, of which 23 were LICs, 51 were LMICs, 41 were UMICs, and 39 were HICs in 2020.

Second, most study countries (61 of 78) did not have central government budgetary health spending data for 2022. For these countries, the study generated estimates for 2022, using the historical relationship between the central government budgetary allocations and expenditures on health, adjusting for country-specific and year-specific nuances.<sup>35</sup> While the central government budgetary health spending predictions from these models were close to their true values,<sup>36</sup> actual spending data are required for more countries to confirm the observed trends in 2022.

Third, the study included 78 out of 95 LICs, LMICs, and IDA-eligible UMICs. Despite major efforts, the study did not manage to retrieve core data for the remaining 17 countries. Many countries did not publish budget documents, or the published documents did not have enough details, including several countries which were affected by conflict. In one country, Zimbabwe, the data on government health spending from budget documents were unreliable due to hyperinflation<sup>8</sup>.

Despite these limitations, the study helped broaden and deepen the understanding of the government health spending response in developing countries during the multiple successive global shocks of the past three years.

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<sup>35</sup> The data are modeled using a country-year panel regression between central government budgeted allocation and expenditure on health with country and year fixed effects. The results from the panel regressions were used to estimate central government health expenditure in country-years where only budgeted allocations are available. See Annex 2 for details.

<sup>36</sup> The model was tested on country-years where CGHS data were available to check the accuracy of the CGHS predictions, based on budgeted allocations. See Annex 2 for details.

## CONCLUSION

Over the past three years, the world has faced shocks in swift succession, starting with the COVID-19 pandemic in 2020. As a result of these successive upheavals, recovery from the global recession has been slow and uneven. Trends in fiscal space have also diverged: government spending has expanded in some countries, while stagnating or contracting in others. Many low- and middle-income countries, in particular, have struggled to return to pre-COVID economic growth and government spending trajectories.

### Public investments in health

This latest paper of the *Double Shock, Double Recovery* series, “Health Financing in a Time of Global Shocks,” is a first attempt to comprehensively gauge how government health spending has fared in developing countries over the past three years. Throughout this challenging period, public investments in health have been critical to manage shocks and buffer their effects on human capital, most importantly, by controlling the COVID-19 pandemic.

The study included 78 developing countries. The analysis focused on central government spending on health, considering its levels as well as its shares in general government spending. It examined change relative to pre-pandemic levels, that is, in 2019, and offers comparisons to projections based on pre-pandemic trends between 2017 and 2019.

Results show a complex pattern of central government spending on health, with trends that simultaneously hold promise, but also raise concerns. After an initial strong response to the pandemic, health spending is for many governments no longer a priority – putting at risk global health security and progress toward the health-related Sustainable Development Goals (SDGs).

Robustness checks demonstrated that the general trends reported in the study hold when considering other components of government spending on health, including obligatory social health insurance contributions, special funds, and sub-national government spending.

### A strong advance

During the first two years of the pandemic, real central government spending on health generally soared. In 2020, it grew in per capita terms on average across all countries by approximately 21 percent, and in 2021, it stood at 25 percent above 2019 levels. This surge pattern was common to all country income groups and two-thirds of all study countries (56 of 78). In the group of 56 countries with a positive response, average per capita central government health spending rose in 2021 to almost 40 percent over 2019.

The strong advances over the first two years of the pandemic were primarily driven by governments prioritizing health in their spending. Growth in general government expenditure played a lesser role. By 2021, the central health share in general government spending had grown 17 percent over 2019, far outpacing the six percent growth in general government spending.

### An early retreat

The initial strong advance in real per capita central government health spending lost momentum in the third year of the pandemic, turning into an early retreat. On average, it contracted, from its peak of 25 percent to only 13 percent above the 2019 level and close to its pre-pandemic trajectory. The 2022 spending drop was sharper in low-income countries and upper middle-income countries that receive

funding from the International Development Association (IDA)—the World Bank’s fund for the poorest countries.

The reversal was even starker in the priority that governments gave to health. On average, the central health share in general government spending tumbled, from its maximum of 17 percent to only 5 percent above the 2019 baseline, falling back to its pre-pandemic trajectory. Again, the drop was more pronounced in low-income and upper middle-income countries that receive funding from IDA. In nearly half the countries (37 of 78), the central health share of general government spending in 2022 fell below 2019 levels. In turn, it was no longer the prioritization of health, but growth in general government spending that primarily helped bolster 2022 central government health spending above 2019 levels.

### Choosing a different path

The rapid decline of real central government health spending came at a time when rapidly rising energy and food prices as well as debt service costs had started to impose new spending obligations on governments.

Yet, it may have been a costly and risky retreat. While central government spending on health receded, the omicron variant caused another wave of COVID-19 infections and death worldwide in early 2022. As countries started to relax public health measures later in the year, many health systems struggled to cope with the backlog of non-COVID- health services caused by earlier service disruptions.

Also, the stark reversal in the priority given to health in government spending does not bode well for global health security, and progress toward the health-related SDGs. In many developing countries, government health spending had been insufficient for meaningful progress toward stronger health systems prior to the pandemic, while today, for many of them, the macroeconomic outlook remains concerning with limited capacity to increase government spending.

Government spending on health, however, does not have to fall even when economies and fiscal space shrink, as seen during the global financial crisis of 2008-09. Rapid action of governments will be necessary in many developing countries to reverse the latest trends and secure the prioritization of health in government spending to put their countries and the world on a new, pandemic proof and sustainable development trajectory.

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## ANNEX 1: DATA

### OBJECTIVES AND STRUCTURE

The report analyzes trends in government health spending levels and their shares in general government spending since the onset of the COVID-19 pandemic using actual data collected from government documents, including budget documents and expenditure reports. It breaks down government health spending into four components, namely, central government health spending, special funds (general COVID-19 funds, emergency or disaster funds, and contingency funds), obligatory social health insurance (SHI), and subnational spending. The report focuses on central government health spending (CGHS), using allocations and execution data for the years 2019–22. The general government spending data were obtained from the IMF.

This annex describes the underpinning concepts and data used in the analysis.

### CONCEPTS

#### Components of government health spending

The exercise uses the following framework for collecting data on government health spending (Figure A1.1). It comprises four main components: (1) central government health spending (CGHS); (2) additional allocations for unforeseen payments, which include the share of contingency, emergency, and COVID-19 special funds that go to health; (3) obligatory social health insurance (SHI) contributions; and (4) subnational government spending from own revenues.

In line with international reporting standards (for example, System of Health Accounts 2011), the CGHS indicator focuses on current health expenditures.<sup>37</sup> The indicator includes the following budget items: wages; goods and services; overhead; transfers, including to social health insurance and earmarked health transfers to subnational entities (but excluding transfers for capital outlays); and special COVID-19 funds under the Ministry of Health (MoH) or the health function. CGHS includes domestic expenditures and on-budget development assistance for health.

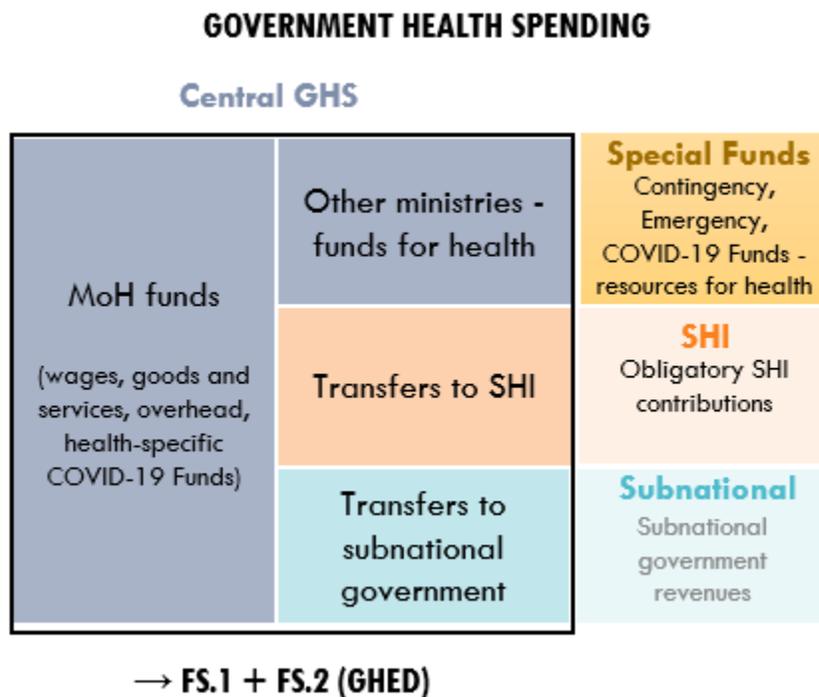
Contingency funds, and special funds such as emergency or disaster funds, or COVID-19 funds outside the MoH or the health sector are also potential resources for health. If known, the share of these funds that go to health can be added to CGHS to account for additional government spending on health. Special funds that are under the MoH, such as health-specific COVID-19 funds, are not included in this component so as to avoid double counting.

Obligatory SHI contributions capture spending (sometimes proxied by revenues; see “Data,” below) from SHI schemes, discounting the transfers from central government for subsidized enrollees or transfers made to cover deficits. Payments made by the government for civil servants, when applicable, are captured in this indicator. It excludes grants, voluntary prepayment and other marginal income from utilities, compensation from reinsurance, and dividends from financial assets.

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<sup>37</sup> SHA 2011 excludes capital outlay in the reporting of health expenditures.

Figure A1.1. Framework for Data Collection of Health Spending Indicators



Source: Authors' illustration.

Subnational government health spending comprises spending from central government transfers and from subnational government's own revenues. The former is captured under CGHS. Subnational government health spending from own revenues refers to current spending: wages, good and services, transfers excluding central transfers,<sup>38</sup> and overhead. In some countries, subnational spending may also include transfers to SHI when they subsidize SHI contributions for certain population groups.

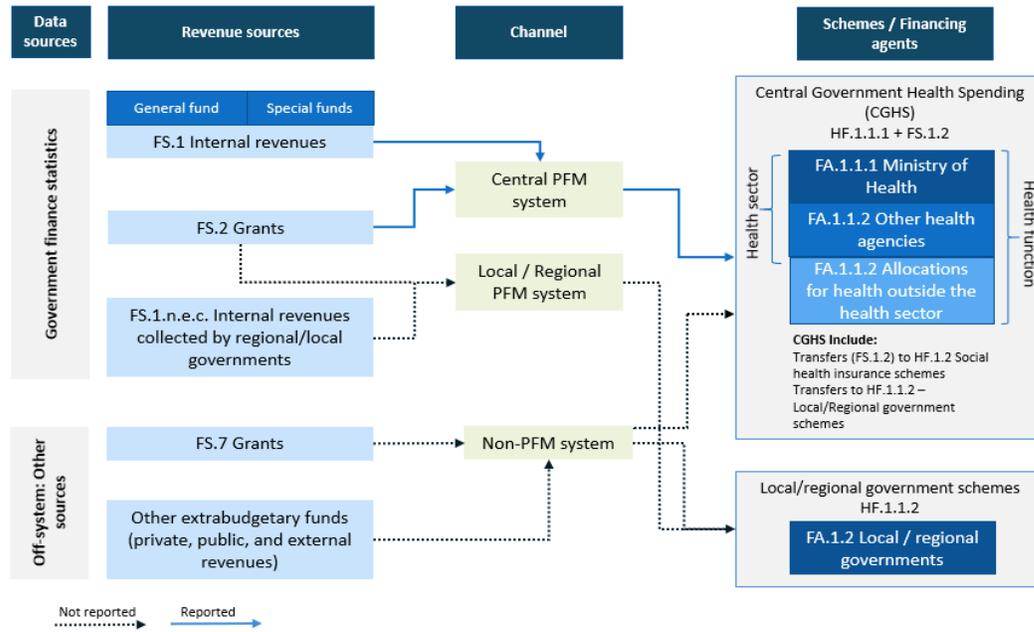
### Alignment with SHA 2011

To the extent possible, the data collected aligns with the categories of the classification of revenues in the System of Health Accounts 2011 (SHA 2011). Figure A1.2 illustrates how CGHS links to the classification of revenues, schemes, and financing agents as outlined in SHA 2011. CGHS only captures on-budget allocations and expenditures. For external financing, grants that may be channeled through the public financial management systems but do not appear in the budget are not captured. In general, CGHS does not capture subnational spending from own revenues;<sup>39</sup> however, it does capture transfers from central government to subnational entities.

<sup>38</sup> The local government budgets explicitly state transfers from the central government earmarked for health. Total transfers are excluded from subnational allocations to health to avoid double counting.

<sup>39</sup> Subnational spending from own revenues is added to CGHS for 14 countries where the share of subnational spending is substantial, and the data were readily available. These countries are Angola, Ethiopia, Federated States of Micronesia, Guyana, India, Kenya, Kosovo, Lao People's Democratic Republic, Mozambique, Pakistan, Sudan, Tajikistan, Uganda, and Uzbekistan. Additionally, subnational spending from own revenues was added for Timor-Leste, as data were readily available, despite its share in government health spending being less than 10 percent.

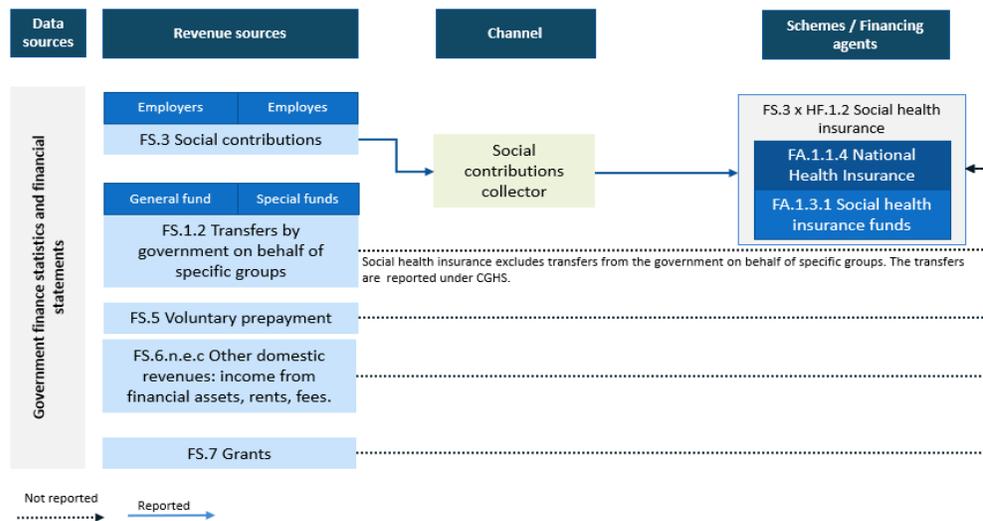
**Figure A1.2. Relationship between CGHS and SHA 2011 Classifications**



Source: Source: Authors' illustration.

Similarly, Figure A1.3 demonstrates the relationship between the obligatory SHI indicator and the corresponding SHA 2011 classifications. The indicator corresponds to FS.3 in the SHA classification of revenue sources. It excludes transfers—which are already captured under CGHS—from the government on behalf of specific groups.

**Figure A1.3. Relationship between Obligatory SHI and SHA 2011 Classifications**



Source: Source: Authors' illustration.

## DATA

### Central Government Health Spending (CGHS)

Two types of indicators were collected for CGHS: allocated budgets and executed budgets. Executed budgets reflect actual spending reported by governments and are referred to as “spending” or “expenditures” in the report.<sup>40</sup> For allocations, data were collected from the initial budget and final budget, if one was passed. Data on health expenditures were available for 85 countries in 2019, 83 in 2020, 60 in 2021, and 17 in 2022, while allocation data were available for 91 countries in 2019, 92 in 2020, 90 in 2021, and 88 in 2022. Table A1.1 summarizes data availability for CGHS for 2017–22. The analysis only includes 78 countries for which a complete data series is available (Table A1.2).

In countries where CGHS data (that is, executed budgets or actual expenditures) were not available, allocations have been used to estimate spending in 2021 and 2022.<sup>41</sup> There were 20 such countries in 2021 and 61 in 2022.

**Table A1.1. Data Availability for CGHS, by Year**

Year	CGHS		
	Initial Allocations	Revised Allocations*	Spending
2017	81	52	75
2018	82	49	72
2019	91	58	85
2020	92	74	83
2021	90	64	60
2022	88	8	17

*\*Note: Data availability for 2022 revised allocations does not reflect the number of revised budgets available for the sample. This number will increase once the database is updated for 2022-2023.*

<sup>40</sup> Executed budgets are mostly not audited.

<sup>41</sup> See Annex 2 for the method used to estimate spending in these years.

**Table A1.2. List of 78 Countries Included in Analysis with Income Classification**

Country	Income classification	Country	Income classification
Burkina Faso	LIC	Kenya	LMIC
Burundi	LIC	Kiribati	LMIC
Central African Republic	LIC	Kyrgyz Republic	LMIC
Congo, Dem. Rep.	LIC	Lao PDR	LMIC
Ethiopia	LIC	Lesotho	LMIC
Gambia, The	LIC	Mauritania	LMIC
Guinea	LIC	Mongolia	LMIC
Guinea-Bissau	LIC	Morocco	LMIC
Liberia	LIC	Myanmar	LMIC
Madagascar	LIC	Nepal	LMIC
Malawi	LIC	Nicaragua	LMIC
Mali	LIC	Pakistan	LMIC
Mozambique	LIC	Papua New Guinea	LMIC
Niger	LIC	Philippines	LMIC
Rwanda	LIC	Samoa	LMIC
Sierra Leone	LIC	Sao Tome and Principe	LMIC
Togo	LIC	Senegal	LMIC
Uganda	LIC	Solomon Islands	LMIC
Zambia	LIC	Sri Lanka	LMIC
Algeria	LMIC	Tajikistan	LMIC
Angola	LMIC	Tanzania	LMIC
Bangladesh	LMIC	Timor-Leste	LMIC
Benin	LMIC	Tunisia	LMIC
Bhutan	LMIC	Uzbekistan	LMIC
Bolivia	LMIC	Vanuatu	LMIC
Cabo Verde	LMIC	West Bank and Gaza	LMIC
Cambodia	LMIC	Belize	UMIC (IDA-eligible)
Cameroon	LMIC	Dominica	UMIC (IDA-eligible)
Comoros	LMIC	Fiji	UMIC (IDA-eligible)
Congo, Rep.	LMIC	Grenada	UMIC (IDA-eligible)
Cote d'Ivoire	LMIC	Guyana	UMIC (IDA-eligible)
Egypt, Arab Rep.	LMIC	Kosovo	UMIC (IDA-eligible)
El Salvador	LMIC	Maldives	UMIC (IDA-eligible)
Eswatini	LMIC	Marshall Islands	UMIC (IDA-eligible)
Ghana	LMIC	Moldova	UMIC (IDA-eligible)
Haiti	LMIC	St. Lucia	UMIC (IDA-eligible)
Honduras	LMIC	St. Vincent and the Grenadines	UMIC (IDA-eligible)
India	LMIC	Tonga	UMIC (IDA-eligible)
Indonesia	LMIC	Tuvalu	UMIC (IDA-eligible)

The CGHS indicator is constructed using one of the five methods described in Table A1.3. Information was collected for the whole sector except for five countries where MoH budgets were used as a proxy for CGHS.<sup>42</sup> The data were obtained in three ways: (1) using the classification of function or sector as reported in the government budgets; (2) to the extent possible, aggregating the MoH's and other institutions' health spending information for countries that do not report on classification of function or sector; and (3) using MoH spending for countries where the MoH comprises the whole health sector budget<sup>43</sup>. In cases where the MoH covers more than the health sector (for example, the Ministry of Health and Sports, the Ministry of Health and Social Protection), the other components were excluded.

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<sup>42</sup> Bangladesh (~80%), Myanmar (>80%), Togo (>80%), Tunisia (>90%), and Zambia (>90%).

<sup>43</sup> Countries with MoH comprising whole health sector: Algeria, Benin, Bolivia, Cambodia, Cameroon, Central African Republic, Chad, Republic of Congo, Eswatini, Fiji, the Gambia, Grenada, Guinea, Guinea-Bissau, Haiti, Kenya, Kiribati, Madagascar, Nepal, Solomon Islands, Somalia, St. Lucia, St. Vincent and the Grenadines, Tonga, Zimbabwe, Dominica, Morocco, West Bank and Gaza, Lesotho, Tunisia, and Zambia.

**Table A1.3. Methods Used to Construct CGHS**

<b>Budget Document Structure</b>	<b>Approach to Construct CGHS</b>	<b>Example</b>
Budget fully disaggregated.	CGHS taken as sum of recurrent budget items.	<p>El Salvador (2019)</p> <p><i>Wages: \$201,610,382</i>  <i>Goods and services: \$56,805,025</i>  <i>Other current transfers: \$348,628,965</i>  <i>Other current expenses: \$3,461,650</i>  <i>Special contributions budget (current transfers to special units): \$45,303,289</i></p> <p><b><u>Current health budget:</u></b>  <b>\$655,809,311</b></p>
Budget disaggregated with allocations outside the health ministry or sector.	Transfers for health (e.g., SHI) from institutions outside the health sector added to health sector current budget.	<p>Kyrgyz Republic (2019)</p> <p><i>Health function total expenditure budget: \$4,173,943,500</i>  <i>Capital outlays from the MoH: \$339,019,014</i>  <i>Transfers to the social health insurance fund under the Ministry of Finance: \$10,852,341,700</i></p> <p><b><u>Current health budget:</u></b>  <i>\$(4,173,943,500 – 339,019,014)</i>  <i>+ \$10,852,341,700</i>  <b>= \$14,687,266,186</b></p>
Budget not fully disaggregated.	Total health spending used.	<p>Indonesia (2021)</p> <p><i>Total central health budget: 130,668.9 billion rupiah</i>  <i>Total regional and village-level health budgets: 39,054.7 billion rupiah</i></p> <p><b><u>Total health budget (including subnational):</u></b>  <b>169,723.7 billion rupiah</b></p>
Execution report not fully disaggregated.	Total health spending used for consistency between allocations and executed budgets.	<p>Angola (2019)</p> <p><i>Capital health budget: 21,765,984,309</i>  <i>Current health budget: 727,818,928,589</i>  <b><u>Total health budget:</u> 749,584,912,898</b></p> <p><b><u>Total health spending:</u> 346,435,000,000</b></p> <p>Total health allocations and spending are used, as no breakdown of current vs. capital is available in the expenditure report.</p>
Health sector budget not available.	MoH budget used as a proxy.	<p>Zambia (2019)</p> <p><b><u>Total MoH budget:</u></b>  <b>\$7,519,930,916</b></p> <p>According to the 2016 National Health Accounts 2016, the MoH accounts for 95.3% of central government schemes spending.</p>

## Special funds

Data in 2022 were available for 50 countries for contingency funds, 22 countries for emergency or disaster funds, and seven countries for COVID-19 funds. Table A1.4 summarizes data availability for each type of fund by year. Data were only collected for on-budget funds. In 2020, there were at least 16 extrabudgetary COVID-19 funds that were not captured in the database, based on the data that WHO collected in the third quarter of that year (Rahim 2020).

**Table A1.4. Data Availability of On-Budget Contingency and Special Funds, by Year**

Year	Contingency Funds	Emergency Funds	COVID-19 Funds
2020	52	20	15
2021	53	22	11
2022	50	22	7

Contingency funds are channeled either through a reallocation through a supplementary budget or through transfers from a spending unit. Spending from special funds is done through withdrawals or through a special account.

For 14 of the 50 countries with contingency funds during the years 2019–22, information was available to calculate the share of allocations that went to health in preceding years. Two methods were employed to calculate the share allocated to health. The first method uses information available in the supplementary budget, where the adjustments to the appropriations from the contingency are detailed. The total allocations to the health sector and for health purposes are divided by the initial budget to arrive at the share allocated to health. The second method uses information obtained from the government’s expenditure or audit report. The total allocations to the health sector and for health purposes are obtained from the expenditure report and divided by initial allocations to obtain the share of contingency funds allocated to health.

Out of the 18 countries with COVID-19 funds for any of the years, information on the share of allocations dedicated to health was occasionally available for nine countries. Similarly, for the 22 countries with emergency and disaster funds, data on the share of allocations directed toward health was partly available for eight countries. The two methods employed for calculating the share allocated to health for contingency funds similarly apply to the special funds. Annex 3 details how these data are used to conduct robustness checks on how special funds potentially impacted central government health spending trends.

## Social health insurance contributions

Out of the 88 countries in the database, 52 have SHI schemes based on information from the WHO 2019 Global Health Expenditure Database (GHED). Data were available for 20 countries out of the 27 with a significant share (over 10 percent) of obligatory SHI contributions in domestic government health spending based on the GHED.<sup>44,45</sup> Table A1.5 lists the countries with shares over 10 percent and data availability for at least one of the years. For executed SHI budgets, some countries make no distinction in the spending between contributory funds and transfers from government. For such cases, to avoid double counting, government transfers (captured in CGHS) for subsidized enrollees are subtracted from the total executed amount. For SHIs that only have financial statements, the SHI income from

<sup>44</sup> The share is calculated using the formula  $FS.3/(FS.1+FS.3)$  from 2019 GHED data.

<sup>45</sup> Three of the 20 countries—Djibouti, Micronesia, and Vietnam—are not included in the 78 countries in the study’s sample.

contributory schemes is used as a proxy for contributory allocations. Table A1.6 summarizes the methods used to construct the obligatory SHI indicators.

**Table A1.5. SHI Data Availability for Countries with SHI >10 Percent of Domestic Government Health Spending**

Country	Share of Obligatory SHI in D-GHE	Data Availability	In Sample of 78
Vietnam	78%	Yes	No
Micronesia	72%	Yes	No
Moldova	58%	Yes	Yes
Tunisia	52%	Yes	Yes
El Salvador	46%	Yes	Yes
Morocco	46%	Yes	Yes
Marshall Islands	45%	Yes	Yes
Nicaragua	43%	Yes	Yes
Bolivia	40%	Yes	Yes
Algeria	40%		Yes
Mongolia	31%	Yes	Yes
Honduras	30%	Yes	Yes
Rwanda	30%	Yes	Yes
Indonesia	28%	Yes	Yes
Mali	26%	Yes	Yes
Cabo Verde	25%	Yes	Yes
Togo	23%		Yes
Mauritania	23%	Yes	Yes
Djibouti	23%	Yes	No
Tanzania	17%		Yes
Egypt, Arab Rep.	16%		Yes
Philippines	16%	Yes	Yes
Kyrgyz Republic	16%	Yes	Yes
Senegal	15%	Yes	Yes
Haiti	14%		Yes
Nigeria	13%		No
Iran	10%		No

Source: Authors' calculations using Global Health Expenditure Database

**Table A1.6. Methods Used to Construct Obligatory SHI Indicators**

SHI Indicator	Source Document Structure	Approach
<b>Contributory SHI allocations</b>	SHI budget reports allocations for contributory scheme.	Reported amount taken as is; no adjustments made.
	SHI budget with capital component included.	Reported amount adjusted: infrastructure and equipment removed from SHI budget allocations for contributory scheme.
<b>Contributory SHI income as proxy for allocations</b>	SHI financial statements report income from contributory schemes.	Reported amount taken as is; no adjustments made.
	SHI financial statements have no disaggregation.	Transfers from government subtracted from total SHI income.
	SHI budget of income and expenditure.	Total SHI income equals expected expenditure when income is greater than expenditure (to exclude potential reserves).
<b>Contributory SHI spending</b>	SHI financial statement/NHA reports/SHI annual reports report contributory SHI spending.	Reported amount taken as is; no adjustments made.
	SHI financial statement reports on spending including capital component, disaggregated.	Reported amount adjusted: infrastructure and equipment removed from SHI budget spending for contributory scheme.
	SHI financial statement reports on spending including pensions and other social insurance benefits, disaggregated.	Reported amount adjusted: pensions and other social insurance benefits removed from SHI budget spending for contributory scheme.
	SHI financial statements do not disaggregate transfers and contributory component.	Reported income from contribution multiplied by overall SHI execution rate.

Annex 3 details how these data are used to conduct robustness checks on how obligatory SHI contributions potentially impacted central government health spending trends.

### Subnational health spending from own revenues

Information on the share of subnational spending for health in overall government health spending was available for 75 countries.<sup>46</sup> These shares capture spending from central government transfers through conditional grants and block grants (not channeled through the health sector) and spending from own revenues.<sup>47</sup> Of the 75 countries, 49 had a share of subnational spending for health, 19 of which had a share greater than 30 percent.<sup>48</sup> For 13 of the 19 countries, subnational government budgets from own

<sup>46</sup> Information was pulled from various sources, including WHO's National Health Accounts (NHA) reports (various years); published data from the World Observatory on Subnational Government Finance and Investment; Public Expenditure Reviews; and country reports from WHO (data have not been validated by the NHA team).

<sup>47</sup> Block grants are often considered own revenue of subnational governments.

<sup>48</sup> These countries are Angola, Bolivia, Cambodia, Ethiopia, India, Kenya, Kosovo, Lao People's Democratic Republic, Malawi, Federated States of Micronesia, Mozambique, Nigeria, Pakistan, Sudan, Tajikistan, United Republic of Tanzania, Ukraine, Uzbekistan, and Vietnam.

revenues are included in CGHS. Table A1.7 summarizes the list of 49 countries with some level of subnational spending, their shares, and whether these are included in CGHS. There were two cases that merited inclusion. The first case was when CGHS comprised less than 10 percent of domestic general government health expenditures. The second case was when countries had a unified central and subnational budget but did not have detailed disaggregation. The health component is obtained using the classification of function or programs in the subnational budget and added to CGHS. For the remaining six countries where subnational spending (from transfers through block grants or spending from own revenue) is larger than 30 percent but no data are available to supplement CGHS, interpretation of the data is cautioned accordingly in the analysis.

**Table A1.7. Data Availability for Subnational Spending**

Country	Share of Subnational Spending for Health in Overall Government Spending*	Source	Comments	Subnational Included in CGHS
Pakistan	97%	Budget review		Yes
Vietnam	85%	NHA Report 2018	Share estimated to be 48% when excluding conditional transfers.	No
Angola	84.6%	Budget review		Yes
Ukraine	83.5%	OECD Observatory		No
Uzbekistan	82.2%	OECD Observatory		Yes
Micronesia, Fed. States of	80.6%	Budget review		Yes
Tajikistan	75%	NHA 2017		Yes
Ethiopia	67%	NHA 2020		Yes
Kenya	64.2%	Budget review and country team input	Share estimated to be 19% when excluding conditional transfers.	Yes
Lao People's Democratic Republic	57.4%	NHA 2016		Yes
Nigeria	52%	NHA 2018		No
India	51.9%	NHA 2018	Subnational share includes only state and urban government revenues.	Yes
Bolivia	46.5%	NHA 2020		No
Sudan	45%	NHA 2018	All subnational spending are conditional transfers.	Yes
Kosovo	44%	Budget review		Yes
Mozambique	40.9%	NHA 2015		Yes
United Republic of Tanzania	40.4%	NHA 2010 and NHA 2014/2015		No
Cambodia	39.5%	NHA 2016		No
Malawi	38%	NHA 2018		Yes
Philippines	29%	NHA 2020		No
Guyana	25%	Budget review		Yes
Sri Lanka	22.2%	NHA 2018		No
Bhutan	22%	NHA 2020		No

Uganda	21.3%	OECD Observatory		Yes
Rwanda	19.4%	OECD Observatory		Yes
Zimbabwe	19.4%	WB PER 2022; OECD Observatory		No
Indonesia	15.7%	Budget review; OECD Observatory		No
Mongolia	12.3%			Yes
Morocco	6.5%	NHA 2018		No
Papua New Guinea	5.7%	NHA 2012		No
Zambia	5.7%	NHA 2016		No
Honduras	5.2%	<i>Estudio de gasto y financiamiento 2014</i> (uses 2011 data)		No
Nicaragua	5%	Calculated using the mandatory share for health from capital block grants.		No
Senegal	4.2%	NHA 2016	Share estimated to be 2.2% when excluding conditional transfers.	No
Timor-Leste	3.3%	Budget review		Yes
Nepal	2.6%	NHA 2017		No
Democratic Republic of Congo	1.7%	NHA 2020		No
Côte d'Ivoire	1.8%	NHA 2014		No
Bangladesh	1.7%	NHA 1997–2015		No
Benin	1.6%	Budget Data 2019		No
Kyrgyz Republic	1.5%	OECD Observatory (2016)		No
Moldova	1.2%	OECD Observatory (2018)		No
Mali	0.96%	NHA 2015		No
El Salvador	0.95%	<i>Memoria de labores 2021–2022</i>		No
Niger	0.8%	NHA 2020		No
Iran	0.3%	NHA 2000–15		No
Ghana	0.17%	NHA 2015		No
Myanmar	0.08%	NHA 2018		No
Burkina Faso	0.04%	NHA 2016		No

\* Note: The share of subnational spending for health in overall government spending includes conditional transfers from central or national government bodies. Conditional transfers are already captured under CGHS.

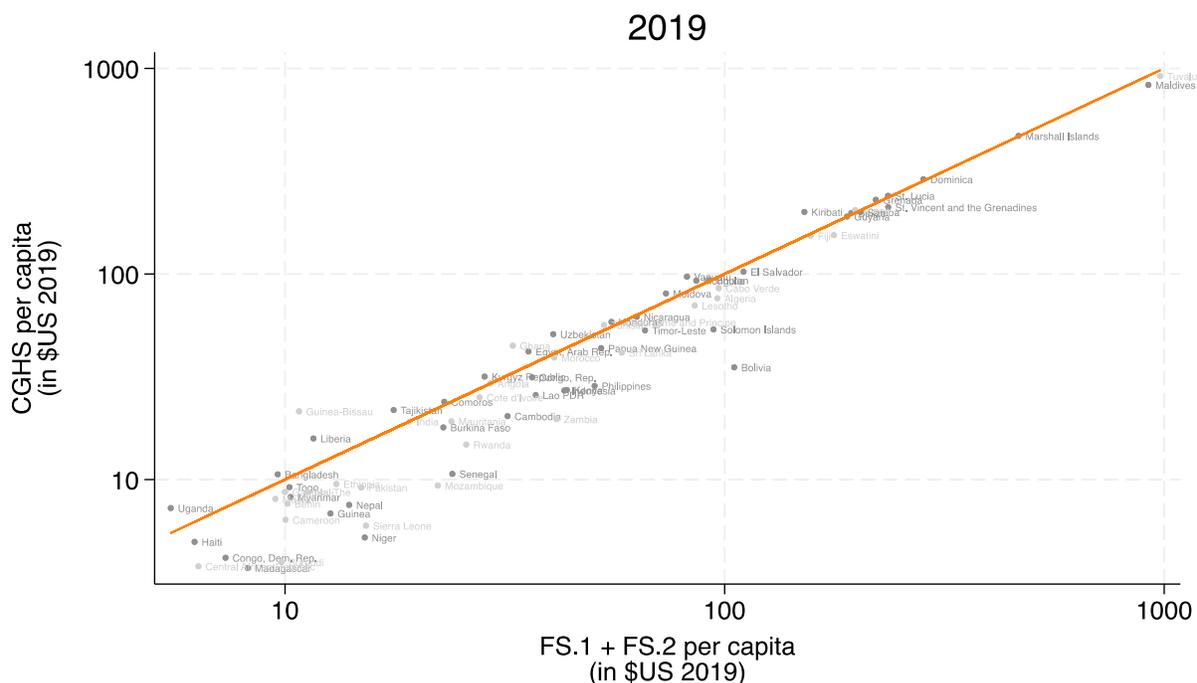
## General government expenditures

Data on general government expenditures (GGE) are obtained from the IMF World Economic Outlook. The indicator captures total expenses—both current and capital expenditures—and the net acquisition of nonfinancial assets. General government consists of central, subnational, and social security funds. GGE includes a portion of debt-servicing, particularly, interest payments for internal and external borrowings. Data used in the analysis were reported in real terms and taken from the IMF World Economic Outlook Database (IMF October 2022).

## Data validation

A strong correspondence exists between CGHS values and GHED's FS.1 and FS.2 (see Figure A1.4). This demonstrates that CGHS captures actual health spending of governments. Most values lie close to the orange 45-degree line of exact correspondence. The light gray dots in the graph indicate data that have been modelled in the GHED and are only estimates. CGHS mostly matches the dark gray dots that indicate actual GHED data. If CGHS significantly underestimates actual GHED data, then mainly because of unaccounted-for subnational spending (e.g., Bolivia, Cambodia, The Philippines). Two other drivers for discrepancies between CGHS and GHED's FS.1 and FS.2 are when CGHS uses total health spending because disaggregated budget data is not consistently available and when GHED data is modelled.

**Figure A1.4. CGHS versus GHE without Obligatory SHI Contributions**



Source: Authors' calculations using Global Health Expenditure Database and Government Health Budgets and Spending Database

Consistency checks were performed to validate the government and health spending data collected. Countries with inconsistencies in the relationships outlined below were given a second review of documents and outreach to country teams to verify and/or explore the plausibility of the data. Corrections were made where appropriate, and data points that did not warrant a correction were noted. Checks were made for:

1. Consistency with other databases, by checking for outliers for central government health spending per capita versus the government health expenditure indicator in the WHO GHED.
2. Identifying outliers for shares of central government health or MoH spending in general government expenditures.
3. Consistency across years by checking for large year-to-year variations in central government health spending.

## ANNEX 2: METHODS FOR ESTIMATING CGHS

### DATA OVERVIEW

The study extracts information on central government health spending from budgets and budget execution reports.<sup>49,50</sup> The extracted information includes (1) actual expenditures; (2) initial budget allocations; and (3) revised budget allocations (where available). The actual expenditures are not available for all countries in 2021 and 2022 (see more details below). However, the availability of initial and revised budget allocations allows for the estimation of actual expenditures (where they are unavailable). Similar approaches are also used in OECD countries to estimate the previous or current year's government health spending (and health spending more broadly) where data are unavailable.<sup>51</sup>

The central government's health expenditure is used as a proxy for current government expenditure on health.<sup>49</sup> The proxy measure includes all transfers from the central government but excludes government health spending from noncentral government revenue sources. Robustness analyses were conducted to assess the likely impact on spending trends of social health insurance expenditures from SHI contributions, subnational government expenditures from own revenues, and the health share of special funds. See Annex 1 for more details on the underlying data used for the analysis and Annex 3 for details on robustness analyses for both subnational and obligatory SHI.

Only 84 of the 95 targeted countries publicly report reliable, comparable information on the central government's health spending.<sup>52</sup> However, the expenditure data are unavailable for several countries, particularly in 2021 and 2022. The study uses central government budget allocations (both initial and revised) for health to estimate missing expenditure data for 2021 and 2022.<sup>53</sup>

### Relationship between budget allocations and expenditures

The central government budget allocations (both initial and revised) often significantly deviate from actual expenditures, as governments underspend or overspend allocations. From 2017 to 2022, the actual central government health expenditures deviate,<sup>54</sup> on average, from initial health allocations by 19 percent and from revised health allocations by 16 percent.

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<sup>49</sup> This circumvents the constraints faced by the GHED, due to the time lag in producing audited government spending reports and health accounts. The GHED contains government health spending data, which is proxied by the central government health spending in this report. See Annex 1 on Data for more details.

<sup>50</sup> Current health spending is used for most countries, which is in line with the SHA, the international accounting framework for systematically tracking health spending.

<sup>51</sup> OECD Health Working Paper 152, "Improving the timeliness of health expenditure tracking in OECD and low- and middle-income countries" (2023), discusses the approaches in further detail.

<sup>52</sup> Out of the 95 LICs, LMICs, and IDA-eligible UMICs, 11 countries do not report reliable and comparable central government spending data: Eritrea, Democratic People's Republic of Korea, and Lebanon do not publish spending reports or budget documents; Zimbabwe's data are not comparable across time because of hyperinflated price levels; and Afghanistan, Somalia, South Sudan, Sudan, Syrian Arab Republic, Ukraine, and Republic of Yemen are conflict-afflicted crisis countries where either central government data are unavailable or reliable data on price levels are missing. In addition to the 11 countries, five had incomplete data throughout the period of interest and were excluded from the study sample. These countries are Chad, Djibouti, Islamic Republic of Iran, Federated States of Micronesia, Nigeria, and Vietnam.

<sup>53</sup> See Annex 1 for details on the number of countries with available data.

<sup>54</sup> Deviations are defined as the absolute difference between allocations and actual spending relative to the actual spending. Allocations may be higher or lower than actual spending. The relative measure is better aligned with the aim of the study—to have the highest possible precision in the estimation of all countries' spending levels. It is better than the often-used root mean square error (RMSE) criterion. The RMSE is sensitive to large deviations between allocations and actual spending, and thereby biased toward countries with higher per capita health spending.

Further, the deviation between allocations and expenditures varies across countries and by year. For example, the average deviation (across countries) between central government health expenditures and initial allocations was 15 percent in 2018 but 24 percent in 2021. The deviation between central government health expenditures and revised allocations was 9 percent in 2018 and 19 percent in 2021. Overall, 2018 had the lowest average deviation, while 2021 had the highest average deviation.<sup>55</sup> Therefore, allocations (initial or revised) cannot be directly used as a substitute for expenditures.<sup>56</sup> However, the relationship can be exploited.

## APPROACH

Given the missing 2021 and 2022 central government health expenditure data, and the deviations between budget allocations and expenditures, the study uses regression models to predict the missing data. The regression models capture the relationship between central government health expenditures and allocations to allow for the prediction of missing central government health expenditure data. The study draws on linear regression models because the scarcity of available data points<sup>57</sup> impedes the fitting of nonlinear, country-specific regression models. The remainder of this annex explains the statistical approach used.

The study explores two linear modeling approaches with multiple variations to predict expenditures. The variations derive from the inclusion of time constants (t), country constants (c), and interaction terms to allow for country- or year-specific slopes in the first approach and country-specific slopes in the second approach. The models are used to predict missing central government health expenditures using central government health allocations. The two modeling approaches are:

1. Using a log-log specification<sup>58</sup> of expenditures and allocations to predict expenditures:

$$\log expenditure_{ct} = a + b \cdot \log allocation_{ct} + \varepsilon_{ct}$$

$$expenditure_{ct} = \exp(\widehat{\log expenditure}_{ct})$$

2. Estimating execution rates (that is, expenditure-to-allocation ratios) with a linear specification<sup>59</sup>, and multiplying the predicted execution rate with the allocation to predict expenditures:

$$execution\ rate_{ct} = a + b \cdot t + c + \varepsilon_{ct}$$

<sup>55</sup> The average deviation (across countries) between central general government expenditures and initial allocations was lowest in 2018 at 12 percent (10 percent for revised allocations). The deviation between central general government expenditures and initial allocations was highest in 2014 at 14 percent (and in 2021 for revised allocations at 14 percent).

<sup>56</sup> In one OECD country (Canada), growth in allocated (or voted) health budget is used to estimate health expenditures by using the same growth rate on the last available year's health spending. This assumes a constant budget execution rate. However, given (1) the lower predictability of budget execution in LICs, LMICs, and IDA UMICs relative to OECD countries; (2) the COVID-19 pandemic, which altered the relationship between government health allocations and expenditures; and (3) heterogeneity in the relationship between growth of government health allocations and spending across the countries in the study's sample, this approach is not used. As detailed in the section on Approach, regression models adjusting for year- and country-specific trends are used.

<sup>57</sup> There are a maximum of six allocation-spending pairs for the 84 countries included in the exercise, that is, a maximum of 504 possible pairs; however, only 367 pairs exist in the data.

<sup>58</sup> Per capita expenditures and allocations have long-tailed distributions. Taking the log transforms these into distributions that are approximately normal and better aligned with the classical linear regression model. More importantly, the log-log transformation results in better prediction performance.

<sup>59</sup> Execution rates possess approximately normal distributions without a long tail. A log transformation produces an asymmetric distribution that predicts worse than the original one.

$$\widehat{expenditure}_{ct} = \widehat{execution\ rate}_{ct} \cdot allocation_{ct}$$

Independent of the approach, the study uses five-fold<sup>60</sup> cross-validation to evaluate the quality of predictions of 2021 expenditures<sup>61</sup> and identify the best-predicting regression models. Five-fold cross-validation splits the observations where actual 2021 expenditure-allocation pairs are known<sup>62</sup> into five folds, or subsets. Four subsets and their 2021 expenditures are used to predict 2021 expenditures for the fifth subset, of which 2021 expenditures are dropped from the sample. This avoids overfitting of the regression model when evaluating the regression model's performance and allows for a representative assessment of the model's prediction performance. Prediction performance for each fold is measured as the mean deviation of predicted expenditures from actual expenditures relative to actual expenditures. The overall prediction performance of a regression model is measured as the average prediction performance of the five folds. A lower value indicates better prediction.<sup>63</sup>

## RESULTS

A total of 14 linear regression models were evaluated: nine for the first approach (log-log specification) and five for the second (predicting execution rate). Table A2.1 shows the 2021 central government health expenditure prediction performance of regression models following the log-log approach, and Table A2.2 shows the 2021 prediction performance following the execution rate approach.

Generally, simpler models, that is, models without interaction terms, predict better. Log-log models perform slightly better than execution rate models. Likewise, as expected, revised allocations predict better than initial allocations. The variation in prediction performance among the simpler models is small. The standard fixed-effects panel regression model with year effects and country effects predicts well, is intuitive to interpret, and is well known. In all models, the median deviation is lower than the average deviation, indicating the existence of outliers. The lower median deviation also confirms higher precision for the majority of country estimates.

The model selected to predict missing 2021 and 2022 expenditures—regression model 6, highlighted in green in Tables A2.1 and A2.3—consists of a log-log specification with year and country constants (regression results of selected models appear in Tables A2.3 to A2.4). It is one of the best-performing models (across all measures), can be easily interpreted, and allows for the separation of country and year effects. The latter is important to allow for replicating this approach in future years. The fixed-year effects should account for some of the year-specific changes, which were particularly relevant during the initial two years of the COVID-19 pandemic.

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<sup>60</sup> A higher number of folds led to nearly identical results.

<sup>61</sup> The years 2021 and 2022 are the main years of interest because missing expenditure data are the highest. The number of observations in 2022 is too small for a meaningful cross-validation of evaluation for this year.

<sup>62</sup> There are 57 countries with known 2021 central government health expenditures and 66 countries with known 2021 central general government expenditures.

<sup>63</sup> To re-emphasize (from footnote 59), absolute mean or median deviation between allocations and actual spending better captures prediction performance than the often-used RMSE. The RMSE is sensitive to large deviations between allocations and actual spending and therefore biased toward countries with higher per capita health spending. In the context of this study, where health spending per capita levels range between \$3 and \$1,326, using the RMSE to evaluate the prediction performance of the different regression models would favor selection of a regression model that minimizes prediction deviations in countries with high health spending levels while discounting deviations in countries with low health spending levels. To avoid this bias, absolute mean or median deviation is used as a measure of prediction performance.

**Table A2.1. Central Government Health Expenditure Prediction Performance of Log-Log- Regression Models, 2021**

Regression number	Model specification					Prediction performance			
	Log allocation	Country constants	Year constants	Country interaction	Year interaction	Using initial allocations		Using revised allocations	
						Mean	Median	Mean	Median
1	x					23.0	14.4	13.6	8.3
2	x	x				18.3	13.9	13.5	9.0
3	x	x		x		29.6	12.6	18.6	7.1
4	x	x	x	x		34.3	13.4	19.7	11.6
5	x		x			23.6	14.8	14.0	7.2
6	x	x	x			18.4	13.3	14.0	10.3
7	x		x		x	24.0	12.8	14.6	7.0
8	x	x	x		x	18.5	13.0	14.2	11.1

Source: Authors' calculations

**Table A2.2. Central Government Health Expenditure Prediction Performance of Execution Rate Regression Models, 2021**

Regression number	Year	Model specification			Prediction performance			
		Country constants	Year constants	Country interaction	Using initial allocations		Using revised allocations	
					Mean	Median	Mean	Median
9		x			19.9		14.2	
10			x		24.6	14.7	14.1	10.1
11		x	x		21.2	10.7	14.0	11.5
12	x	x			20.6	14.9	13.9	10.2
13	x	x		x	19.5	14.7	16.6	8.4

Source: Authors' calculations

## APPLICATION

Based on these findings, the standard fixed-effects panel regression model with year effects and country effects is used to predict a country's missing 2021 and 2022 central government health expenditures from available central government health allocations. Revised allocations (with higher precision) are used instead of initial allocations whenever available. The following conditions are imposed to ensure that estimated country effects are meaningful:

1. At least one expenditure-allocation pair is available between 2017 to 2019.
2. At least one expenditure-allocation pair is available between 2020 and 2022.

If these conditions are fulfilled and central government health allocations are available, the missing central government health expenditures can be estimated. Central government health allocations allow for the prediction of 20 missing central government health expenditures in 2021 (16 are based on revised allocations) and 61 missing central government health expenditures in 2022 (none is based on

revised allocations). This estimation increases the number of countries with central government health expenditures (actual or estimated) from 58 to 78 in 2021 and from 17 to 78 in 2022. Tables A2.3 and A2.4 contain the two regressions that underlie the inference of missing values. Table A2.5 contains the real USD values for =countries used in the analysis and specifies when actual data or estimated data are used. It also has the computed share of CGHS in GGE.

In summary, a fixed-effects panel regression model with year and country effects predicts significantly better than naïvely replacing initial or revised allocations for expenditure measures. The expected average error for central government health spending predictions in 2021 is 18 percent when using initial allocations (the median error is 13 percent) and 14 percent when using revised allocations (the median error is 10 percent). However, the majority of predictions show smaller deviations (than the average), because a small number of outliers inflates the average error. Figure 1 illustrates the fit of predicted data against actual data. Furthermore, prediction errors for 2022 are likely smaller than 2021 because the COVID-19 shock, and its unforeseen spending pressures have receded. Therefore, the predictions are likely sufficiently precise to assess the range of individual countries' spending behavior and the average behavior of groups of countries.

### Regression results of selected models

**Table A2.3. Fixed-Effects Regression of Log of Central Government Health Expenditures on the Log of Central Government Initial Allocations for Health**

Fixed-effects (within) regression	Number of observations	367					
Group variable: country	Number of groups	80					
R-squared	Observation per group:						
Within = 0.44	Min	1					
Between = 0.98	Avg	4.6					
Overall = 0.95	Max	6					
	F statistic (6,281)	37.4					
	P-Value	0.0					
<b>Log of central government health expenditure</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>t-statistic</b>	<b>P-Value</b>	<b>95% Confidence Interval</b>		
Log of central government initial allocation for health	0.46	0.06	7.26	0.00	0.33	0.58	
Year							
	2018	0.02	0.03	0.57	0.57	-0.04	0.08
	2019	0.07	0.03	2.26	0.03	0.01	0.12
	2020	0.19	0.03	6.28	0.00	0.13	0.26
	2021	0.22	0.03	6.25	0.00	0.15	0.28
	2022	0.13	0.05	2.48	0.01	0.03	0.23
Constant	1.87	0.23	8.19	0.00	1.42	2.32	

Source: Authors' calculations

**Table A2.4. Fixed-Effects Regression of the Log of Central Government Health Expenditures on the Log of Central Government Revised Allocations for Health**

Fixed-effects (within) regression	Number of observations			262			
Group variable: country	Number of groups			70			
R-squared	Observation per group:						
Within = 0.6487	Min			1			
Between = 0.9857	Avg			3.7			
Overall = 0.9778	Max			6			
	F statistic (6,281)			57.2			
corr(u <sub>i</sub> , X <sub>b</sub> ) = 0.9377	P-Value			0			
<b>Log of central government health expenditure</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>t-statistic</b>	<b>P-Value</b>	<b>95% Confidence Interval</b>		
Log of central government revised allocation for health		0.68	0.05	12.57	0.00	0.57	0.78
Year							
	2018	0.03	0.03	0.92	0.36	-0.03	0.08
	2019	0.03	0.03	1.04	0.30	-0.03	0.08
	2020	0.09	0.03	2.94	0.00	0.03	0.15
	2021	0.08	0.03	2.31	0.02	0.01	0.15
	2022	0.02	0.06	0.30	0.76	-0.10	0.14
Constant		1.08	0.20	5.44	0.00	0.69	1.47

Source: Authors' calculations

## Countries with estimated spending data

Table A2.5. CGHS Levels (in Real US\$) and Shares Included in Analysis

Country	Central Government Health Spending (per capita, constant USD)						CGHS as % of GGE					
	2019, actual	2020, actual	2021, actual	2021, predicted	2022, actual	2022, predicted	2019	2020	2021, actual	2021, predicted*	2022, actual	2022, predicted*
Algeria	85.9	105.9		97.7		86.2	3.9	5.0		5.2		5.4
Angola	43	59.4	58.6		58.9		4.3	5.8	6.9		6.27	
Bangladesh	11.7	10.7	12.6		13.8		3.5	3.2	3.7		3.91	
Belize	217.5	197.5		225		200.1	12.3	11.1		14.6		13.1
Benin	7.8	20.5	9.1			11.3	4.2	8.4	3.4			4.2
Bhutan	102.1	129	121.6		125.9		10.1	10.4	8.6		9.73	
Bolivia	36.9	41.3		39.6		37.7	2.7	3.2		3.2		2.9
Burkina Faso	19.4	16.7	17.8			16.8	9.4	7.8	7.0			5.9
Burundi	4.9	5.5		5.8		4.9	4.8	5.5		5.5		3.7
Cabo Verde	86.7	105.8	140.9		114		7.1	8.7	12.4		9.77	
Cambodia	20.4	24.8	38.3		14.9		4.8	5.2	7.5		3.08	
Cameroon	6.5	9	12.9			11.1	2.1	3.3	4.6			3.7
Central African Republic	4	6.1	6.3			5	4.4	4.6	6.0			5.4
Comoros	23.7	16.6	20.5			18.6	8.2	6.3	7.4			7.7
Congo, Dem. Rep.	4.5	5.3	3.7			4.6	4.7	6.9	3.3			3.1
Congo, Rep.	31.1	46.7		34.6		35.1	4.8	7.4		5.5		5.2
Cote d'Ivoire	25.3	33.8	32			26.8	6.1	7.0	6.2			4.8
Dominica	311.7	312.9	311			314.6	7.7	5.9	6.9			7.1
Egypt, Arab Rep.	55	60.7	67.1			63.5	5.2	5.9	6.4			6.0
El Salvador	115.8	141.2	152.4		73.3		8.8	9.6	9.8		5.07	
Eswatini	143.6	129.2		144.8		148.7	9.9	9.2		10.8		10.6
Ethiopia	10.3	11.1	10.9			10	3.7	4.1	4.0			3.9
Fiji	149.9	153.4	168.7			156.8	8.2	8.9	10.0			9.1
Gambia, The	9.4	16.8	11.9			12.5	4.2	7.3	6.0			6.1
Ghana	43.7	44.4		48.2		43.1	5.4	4.0		4.8		4.6
Grenada	235.9	208	238.2		223.9		9.8	8.1	7.5		6.51	
Guinea	9.1	11.3	7.4		5.7		4.9	5.2	3.7		3.13	
Guinea-Bissau	22	30.6	17.2			22.9	12.8	13.5	7.4			11.1
Guyana	191	353.6	371			287.9	10.3	12.2	12.6			7.6
Haiti	7.4	6.4		7.5		6.6	3.1	2.9		3.2		3.1
Honduras	68.9	73.4	84.6		80.7		8.8	9.6	9.9		10.72	
India	20.9	23.6		24.3		23.3	3.1	3.2		3.3		3.0
Indonesia	29.8	49.8	84.6			53.5	3.8	5.7	9.6			6.0
Kenya	27.9	32.8	26.6		27.1		4.6	5.5	4.4		4.38	
Kiribati	238.1	184.1		230.3		204.8	10.1	8.4		11.3		10.1
Kosovo	133.1	154.7	166.3			151.6	8.5	9.5	10.4			9.5

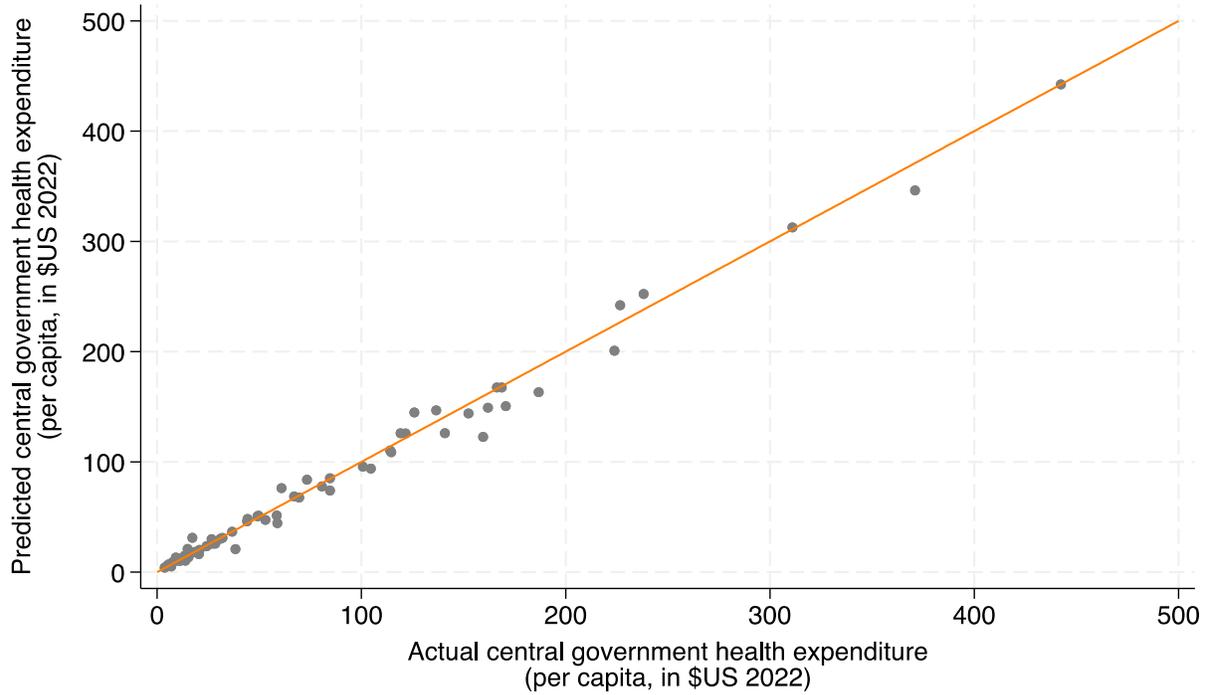
Kyrgyz Republic	39.1	44.1	44.1		36.7		5.9	7.1	7.0		4.75	
Lao PDR	20.2	20.6		21		17	3.2	3.4		3.9		3.1
Lesotho	73.2	79.5	60.9			73.4	10.2	11.4	8.7			11.4
Liberia	15.9	21	13.5		12.7		6.5	8.4	6.2		5.70	
Madagascar	3.9	6.5	4.8			4.9	4.0	6.9	5.8			4.0
Malawi	8.6	8.9		11.7		9.9	6.1	5.4		6.8		5.6
Maldives	867.8	1001.8	823.9			965.4	16.4	19.4	14.5			14.6
Mali	9.1	10.8	10.8			9.9	4.2	4.7	4.6			4.5
Marshall Islands	541.2	536.2	442.4			513.9	16.9	16.4	13.4			16.4
Mauritania	23.1	27.8		29.1		28.7	5.5	6.6		6.5		4.7
Moldova	100	125.8	186.8		161.9		5.3	6.3	8.5		7.20	
Mongolia	108.1	131.7	170.7			153.3	5.9	6.4	8.6			7.8
Morocco	41.4	52.1	49.1			45.9	3.8	4.2	4.0			3.8
Mozambique	10.4	12.9	13.8			13	6.0	7.1	8.0			6.8
Myanmar	7.9	6.7		8.6		6.6	2.3	1.8		2.5		2.5
Nepal	8.2	9.9	12.4			14.4	2.2	2.7	3.3			3.8
Nicaragua	68.6	71.6	100.7			77.7	10.6	10.7	13.1			10.3
Niger	5.3	6.2	6.9			5.2	4.1	4.6	4.9			3.8
Pakistan	9.7	10.4	11.2			10.7	2.5	2.5	2.9			2.5
Papua New Guinea	55.3	67.2	49.6			57.8	7.1	8.1	6.6			7.7
Philippines	29.8	42	53			40.4	3.6	4.7	5.4			4.0
Rwanda	15.9	18.1	19.8		20.8		5.5	5.6	6.0		5.97	
Samoa	215.5	226.9	226.7			223.1	13.6	15.5	14.8			16.3
Sao Tome and Principe	70.4	87.8	104.7			94.4	12.3	14.5	15.7			15.4
Senegal	11.1	13.2	10.3			10.5	2.9	3.2	2.5			2.4
Sierra Leone	5.5	10.7	10.8			7.4	3.5	5.8	5.2			3.3
Solomon Islands	57.5	60.4		61.6		59.8	6.6	7.4		8.3		8.1
Sri Lanka	38.5	48.9	44.3			35	3.0	3.7	3.4			3.1
St. Lucia	244.9	329.7		342.8		316.4	8.2	10.6		11.3		10.4
St. Vincent and the Grenadines	214.8	291.3		295.5		259.6	8.7	10.9		9.6		8.7
Tajikistan	22.3	28.9	28.4		24.2		7.3	9.1	8.8		6.79	
Tanzania	10.1	6.7	7.6			9.5	5.1	3.3	3.5			4.1
Timor-Leste	53.2	69.1	114.6			73.6	3.9	5.6	7.4			4.3
Togo	9.2	16.3	15.4			13.8	6.1	7.6	7.5			5.6
Tonga	207.7	232.6		243.8		234.2	10.4	11.4		9.7		10.2
Tunisia	64.3	79.1		83.1		71.9	5.1	5.9		6.2		5.1
Tuvalu	1034.4	1362.1		1008.8		1071.5	16.5	20.5		14.9		17.4
Uganda	8.5	10	11.5		11.8		4.3	4.6	5.1		5.27	
Uzbekistan	58.7	66.9	69.5			59.5	8.3	8.9	8.3			6.3
Vanuatu	107.2	122.8	119.2			118.2	7.8	8.9	8.9			8.7
West Bank and Gaza	111.6	114.1	136.6		159.6		11.2	11.2	13.8		16.94	
Zambia	22.9	29.8	31			30.2	4.0	4.8	5.5			5.6

Source: Authors' calculations.

Notes:

1. CGHS levels are converted to real USD per capita using the formula 
$$\frac{\left(\frac{\text{Local currency unit}}{\text{GDP deflator}} \times \text{Foreign exchange rate}\right)}{\text{Population}}$$
. GDP deflator, 2022 foreign exchange rates, and country population are taken from the IMF World Economic Outlook.
2. The share is calculated using predicted CGHS levels and GGE (from IMF). The share itself is not predicted.

**Figure A2.1. Comparison of Actual Data with Predicted Data**



Source: Authors' calculations using Government Health Budgets and Spending Database.

## ANNEX 3: ROBUSTNESS CHECKS

This annex describes the methodology and presents the detailed results for the robustness checks. The purpose of the robustness checks was to test whether trends in central government health spending (CGHS) levels and shares accurately reflected patterns in overall government health spending.

As detailed in Annex 1, CGHS excluded subnational health spending from own revenues (“subnational”), health spending from social health insurance (SHI) contributions, and health spending from special on-budget funds—contingency funds, disaster and emergency funds, and COVID-19 funds (“special funds”).<sup>64</sup>

The exclusion of these health spending resources underestimates general government health expenditure (GHE) levels. GHE is the sum of spending on health from central and subnational government domestic revenue (FS.1), on-budget development assistance for health (DAH) (FS.2), and SHI contributions (FS.3). The relative size of these components, and the ratio between central and subnational domestic revenues allocated to health (under FS.1), determines the extent to which CGHS underestimates GHE.

However, since the study focuses on trends in government health spending levels and shares, the impact of using CGHS as a proxy for GHE is unclear. For example, if the trend in other components of government health spending (not covered in CGHS) were to replicate *central* government health spending trends, then CGHS specifically would serve to elucidate patterns in government health spending as a whole (central plus other components).

### APPROACH

The following equation states the condition under which CGHS trends would approximate GHE trends:

$$\frac{GHE_t}{GHE_{2019}} \approx \frac{CGHS_t + Subnational_t + SHI_t + Special Funds_t}{CGHS_{2019} + Subnational_{2019} + SHI_{2019} + Special Funds_{2019}}$$

Where,  $t =$  be 2020, 2021, or 2022.

If each component excluded from CGHS – that is, subnational health spending from own revenues, SHI contributions, and special funds – approximately followed the same trend as for CGHS, then CGHS would approximate the broader government health spending trend. CGHS would also approximate the government health spending trend if the excluded components neutralize each other.

The influence of each excluded component was investigated separately for the 78 countries. Examining each component individually allowed for the determination of whether these components influence the overall GHE trend in the same or contrasting directions. For instance, incorporating SHI contributions suggested a comprehensive health spending index that was lower than the CGHS index, whereas integrating special funds suggested this higher, inclusive index. These assessments enabled the construction of best- and worst-case scenarios.

The two extreme scenarios provide bounds for government health spending trends by country. They evaluate the possibility of countries’ overall health spending trend belonging to another category – high, moderate, or low – than the CGHS index suggests. The scenarios are constructed country by country and

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<sup>64</sup> Special funds, such as COVID-19 health funds channeled through the Ministry of Health are already included in CGHS.

year by year for trends in CGHS shares and CGHS levels.<sup>65</sup> The adopted methodology is one among various possible approaches.<sup>66</sup>

The remainder of the annex has the following structure. The methodology and results for the robustness checks are discussed in detail for each of the omitted government health spending components. Following this discussion, the annex presents the methodology and results for the best- and worst-case scenarios.

#### **A. Subnational government health spending from own revenues**

In several of the 78 countries, subnational governments use their own revenues (including unconditional transfers from central governments, that is, block grants) to spend on health. CGHS generally did not include this spending; it only included conditional transfers for health spending from the central government. Information on subnational government health spending from own revenues was limited.

However, recent<sup>67</sup> national health accounts (NHAs) often provided information on overall subnational government health spending from transfers and own revenues. If recent NHAs were unavailable, data from budget reviews and an OECD database<sup>68</sup> partly filled the gap. Utilizing all available sources, 66 of the 78 countries in the study had data on subnational government health spending. Of these, 43 countries reported some subnational government health spending, while there was none in the other 23 countries.

In the 43 countries reporting some subnational government health spending through their NHAs, the average share in total (central and subnational) government health spending was 21.8 percent. However, the share was high in several countries. For example, it was 82 percent in Uzbekistan, 85 percent in Angola, and over 95 percent in Pakistan. Subnational government health spending measured over 10 percent in 22 countries, ranged from 5 percent to 10 percent in five countries, and was less than 5 percent in 16 countries. In countries with a low share of subnational government health spending, CGHS trends are likely to reflect government health spending trends, especially considering that part of subnational government health spending (conditional transfers) is already reflected in CGHS.

The study collected additional data on subnational government health spending from own revenues in the 22 countries where it exceeded 10 percent. The data were available for 15 of the 22 countries<sup>69</sup> (and 16 countries<sup>70</sup> in total) and were added to the CGHS figures.

In the 12 countries where NHAs did not indicate subnational government health spending, a review of the constitutional framework was conducted to understand the levels of government and their authority

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<sup>65</sup> The definition of each category is provided in the main report's CGHS section. The definitions are provided separately for the CGHS levels and CGHS shares, and for both the landing (2022) and response (2020–21).

<sup>66</sup> The modeled scenarios preserved the boundaries (for country categories) derived from the CGHS index. Alternative methodologies could be envisioned, such as assessing the likelihood of a specific range around the CGHS index and then determining whether the range crosses a boundary, inferring missing values using regression techniques, or employing Bayesian modeling. This remains an ongoing investigation, and future iterations of this report will consider these alternative methodologies.

<sup>67</sup> About two-thirds of NHAs were compiled between 2015 and 2019. The remaining accounts date from earlier or later years.

<sup>68</sup> World Observatory on Subnational Government Finance and Investment, <https://www.oecd.org/regional/observatory-on-subnational-government-finance-and-investment.htm>.

<sup>69</sup> Data on subnational government health spending from own revenues were not available for seven of the 22 countries included in the study sample: Bhutan, Bolivia, Cambodia, Indonesia, Philippines, Sri Lanka, and Tanzania.

<sup>70</sup> Timor-Leste only had a subnational government health spending share of 3.3 percent, but its budget documents and spending reports already include subnational health spending.

to raise revenue. It suggested a negligible role of subnational governments in revenue collection in nine of 12 countries, while the role remained ambiguous in three countries.<sup>71</sup>

In summary, among the 78 countries are four types of countries, based on available data:

1. Sixteen countries where subnational government health spending from their own revenues is already included in CGHS (referred to as “added to CGHS” in Table 1).
2. Thirty-two countries where subnational government health spending is either: nonexistent – in 23 countries, based on NHAs (referred to as “no subnational” in Table 1); or negligible – in nine countries from constitutional analysis (referred to as “likely negligible” in Table 1).
3. Three countries where no information is available (referred to as “NA” in Table 1) even though large subnational spending from own resources is unexpected.

In these 51 countries, CGHS already reflects the government health spending trends if subnational government health spending from own revenues were included.

4. In the remaining 27 countries, inclusion of subnational health government spending from own revenues could change the government health spending trend indicated by CGHS.

### Methodology

To assess whether including subnational health spending in the 78 countries can shift the CGHS trend, the study undertook the following steps for each year (2022 is used as the example):

- A. Estimated the expected subnational government health spending in 2019 by multiplying the 2019 CGHS by the 2019 subnational government health spending to CGHS ratio  $\frac{HF.1.1.2}{HF.1.1.1}$  —or if unavailable, the most recent available ratio.
- B. Determined the relative change in subnational government health spending required to alter the 2022 CGHS category by using a health spending index that indicated the change in the relative magnitude of combined CGHS and subnational health spending:

$$\begin{aligned}
 \text{category boundary} &= \frac{CGHS_{2022} + \text{Required Subnational}_{2022}}{CGHS_{2019} + \text{Estimated Subnational}_{2019}} \\
 \Rightarrow \text{Required Subnational}_{2022} &= \text{category boundary} \cdot (CGHS_{2019} + \text{Estimated Subnational}_{2019}) - CGHS_{2022}
 \end{aligned}$$

- C. Evaluated the feasibility of the required change in subnational government health spending per capita by comparing the spending with historical trends.

The above approach (for CGHS levels) was also followed for CGHS shares.<sup>72</sup>

By using a generous feasibility criterion and double-counting conditional transfers for health, the approach intentionally overestimates the plausibility of the impact of subnational government health

<sup>71</sup> The remaining three of 12 countries are: Central African Republic, Guinea-Bissau, and Marshall Islands.

<sup>72</sup> Since the GGE per capita is known for all countries, CGHS is the only source of uncertainty when answering the question whether the CGHS share index represents the trend in health share of government spending. The same approach used for CGHS levels is applicable with a minor modification to step 2. The required subnational government health spending to change the CGHS share index category is different from the required value to change the CGHS (levels) index. Changes in GGE per capita influence the required subnational government health spending. Higher GGE per capita in 2022 than in 2019 increases the required spending, while a lower GGE per capita decreases it. Note that the category boundaries for the CGHS index and CGHS share index differ.

spending.<sup>73</sup> Nevertheless, the approach corroborates findings that emerge from the analysis of CGHS trends.

During the COVID-19 crisis, subnational government expenditures and revenues were negatively impacted in high-income countries (for example, OECD 2021 “The territorial impact of COVID-19: Managing the crisis and recovery across levels of government”). Own subnational revenues generally fell at the beginning of the crisis and recovered only slowly. However, central government transfers – primarily financed by deficit spending – to lower levels of government helped mitigate the fall in own subnational revenues and stabilize subnational government spending. But, given their lower borrowing capacity, developing countries likely experienced less pronounced stabilization. As a result, most developing countries are expected to have decreased or only slightly increased subnational government spending during the pandemic.

Annual growth rates of per capita subnational health spending in six countries with available data yield an average per capita growth between -2.4 percent and 4.5 percent. This aligns with the projections from the OECD study. Using a growth rate of 4.5 percent indicates a possible fluctuation of 14.1 percent over the 2019-22 period. The plausibility criterion was further loosened to a 25 percent change relative to 2019. Changes in per capita subnational health spending exceeding 25 percent are deemed implausible. Further, decreases in per capita subnational health spending of more than 100 percent are impossible.

## Results

### CGHS Levels

Table A3.1 presents information for each country on the 2020-22 CGHS categories and indexes. Additionally, it displays the required relative change in subnational health spending (relative to 2019) to alter the CGHS landing (2022) category. For instance, the Philippines's subnational health spending would have to decrease by 44.8 percent to shift the CGHS landing category from high to moderate, and by 87.7 percent to move from a high to low landing. In Indonesia, altering the CGHS category is impossible – even the complete elimination of subnational government health spending would not change the category.

Only three countries – Bolivia, Nicaragua, and Tanzania – can plausibly change their landing categories. Nicaragua could shift from a high to low landing with a 0.9 percent decrease in per capita subnational government health spending. Conversely, Tanzania could shift from a low to moderate landing with an 8.4 percent increase. Bolivia could shift from a moderate landing to a low one (with a decrease of 2.4 percent) or a high landing (increase of 24.3 percent). Further, all three countries, which could shift categories, are near their category boundary.<sup>74</sup>

The data for 2020 and 2021 display a comparable pattern. In 2021, only Bolivia could have plausibly moved from a moderate to a low response category if its subnational health spending fell by 8.5 percent. In 2020, Bhutan, Cambodia, Senegal, and Sri Lanka would have plausibly changed from a high to a moderate response when including subnational health spending, whereas Bolivia could either have improved or deteriorated. Further, the movement between CGHS response categories will be lower than indicated by the individual years because it is driven by their joint impact.

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<sup>73</sup> Since the subnational government health spending share incorporated conditional transfers, which are already part of CGHS.

<sup>74</sup> Nicaragua's 2022 CGHS index is 113.1, with the category boundary at 112.4; Tanzania's 2022 CGHS index is 94.3 and Bolivia's is CGHS index 102.1, both with the category boundary at 100.

Table A3.1 also summarizes the results of the robustness analysis of health spending trends for the years 2020, 2021, and 2022. The results indicate that the inclusion of subnational government health spending is unlikely to change the observed CGHS trends in aggregate, and on a country-by-country basis.

### CGHS Shares

Results from the robustness checks for CGHS share indexes are presented in Table A3.2 for all years from 2020 to 2022. The results resemble those of CGHS indexes. CGHS share indexes tend to fall into lower categories when previously unaccounted for health spending is included. In 2022, three countries can plausibly shift categories – two can move from a high to low landing, while one can move from a low to high landing.

Similarly, three countries can plausibly move in 2021 – two from a high to moderate response and one from moderate to high. In 2020, five countries plausibly shift their response categories – two from a high to a moderate response and three from a moderate to low response. Further, the movement between response categories is lower than indicated by the individual years because it is driven by their joint impact.

In summary, CGHS levels and CGHS share trends are barely impacted by subnational spending trends. Incorporating unaccounted for subnational government health spending from own revenues does not compromise CGHS’s representativeness of overall government health spending and prioritization of health trends. Few countries move between categories (for both the landing and response), and the movement of countries is symmetric (with the net movement generally canceling out)<sup>75</sup> and driven by countries close to the category boundaries. This suggests that the impact on the average government health spending trends will be low. Bolivia is the only country that can plausibly transition to all categories, because its subnational spending share is large and unaccounted for.

#### Key for tables 1 – 9

Tables 1–10 indicate the plausibility of countries moving between country categories – high, moderate, and low (landing or response). The potential movement, shown for each year, is based on changes to individual components of government health spending, which are not included in CGHS. The possibility for a country to move to another group is indicated as follows:

Table Key	Interpretation
	Plausible for country to move from the existing category (based on CGHS) to indicated category.
	Implausible for country to move from the existing to indicated category.
Impossible	Country cannot move from the existing to indicated category under any assumption.
No subnational / SHI / special fund	Country cannot move from the existing to indicated category, because the additional government health spending component does not exist for the country.
Added to CGHS or likely negligible	Country cannot move from the existing to indicated category, because the additional government health spending component is already incorporated into CGHS or is negligible (only relevant for subnational).

<sup>75</sup> The number of countries that can potentially move to a higher landing or response is broadly the same as those that can be moved to a lower landing or response, though not in all cases. For example, CGHS share response tends to be skewed toward a movement to lower categories.

Table A3.1. Potential Impact of Including Subnational Spending on CGHS Index Categories, 2020-22

Country	2020 group	2021 group	2022 group	2020 CGHS index	2021 CGHS index	2022 CGHS index	2020 subnational percent change needed to move to low	2020 subnational percent change needed to move to moderate	2020 subnational percent change needed to move to high	2021 subnational percent change needed to move to low	2021 subnational percent change needed to move to moderate	2021 subnational percent change needed to move to high	2022 subnational percent change needed to move to low	2022 subnational percent change needed to move to moderate	2022 subnational percent change needed to move to high
Indonesia	1	1	1	167.0	283.6	179.1	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Nepal	1	1	1	120.8	150.7	175.3	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Cameroon	1	1	1	137.7	197.4	170.8	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Moldova	1	1	1	125.9	186.8	162.0	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Guyana	1	1	1	185.1	194.2	150.7	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Togo	1	1	1	177.4	167.0	149.8	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Benin	1	2	1	261.9	116.8	143.8	Impossible	Impossible	.	Impossible	.	613.8	Impossible	Impossible	.
West Bank and Gaza	2	2	1	102.3	122.4	143.0	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	Likely negligible	.
Mongolia	1	1	1	121.8	157.9	141.8	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Timor-Leste	1	1	1	129.9	215.5	138.5	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Uganda	2	1	1	117.9	135.8	138.4	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Angola	1	1	1	138.2	136.2	137.0	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Philippines	1	1	1	141.2	178.0	135.8	Impossible	-40.5	.	Impossible	Impossible	.	-87.7	-44.8	.
Sao Tome and Principe	1	1	1	124.8	148.7	134.1	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Sierra Leone	1	1	1	194.1	196.0	133.8	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Gambia, The	1	1	1	179.3	126.7	132.8	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Zambia	2	1	1	130.3	135.5	132.1	Impossible	.	68.0	Impossible	Impossible	.	Impossible	Impossible	.
Cabo Verde	1	1	1	122.0	162.5	131.5	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Rwanda	2	1	1	114.1	124.5	131.1	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
St. Lucia	1	1	1	134.6	140.0	129.2	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Mozambique	2	1	1	125.0	133.3	125.9	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Central African Republic	1	1	1	153.7	157.7	125.5	NA	NA	.	NA	NA	.	NA	NA	.
Mauritania	1	2	1	120.6	125.9	124.3	No subnational	No subnational	.	No subnational	.	No subnational	No subnational	No subnational	.
Madagascar	1	2	1	165.2	121.6	124.1	No subnational	No subnational	.	No subnational	.	No subnational	No subnational	No subnational	.
Bhutan	1	2	1	126.4	119.1	123.4	-93.5	-13.9	.	-67.8	.	52.1	-82.8	-26.3	.
St. Vincent and the Grenadines	1	1	1	135.6	137.5	120.8	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Bangladesh	3	2	1	91.3	107.1	117.8	.	503.6	1534.9	Impossible	.	1144.4	Impossible	Impossible	.
Honduras	2	2	1	106.5	122.8	117.1	Impossible	.	218.2	Impossible	.	91.1	Impossible	-72.8	.
Egypt, Arab Rep.	2	2	1	110.3	121.8	115.3	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Malawi	2	1	1	103.5	136.1	114.9	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Nicaragua	2	1	1	104.3	146.8	113.1	-82.3	.	268.3	Impossible	Impossible	.	Impossible	-0.9	.
Congo, Rep.	1	2	1	150.0	111.0	112.7	No subnational	No subnational	.	No subnational	.	No subnational	No subnational	No subnational	.
Kosovo	2	1	2	116.2	125.0	113.9	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	.	Added to CGHS
Tonga	2	2	2	112.0	117.4	112.8	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.	No subnational
Tunisia	1	1	2	123.0	129.1	111.9	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
India	2	2	2	113.3	116.6	111.5	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Maldives	2	3	2	115.4	94.9	111.2	No subnational	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.
Pakistan	2	2	2	107.1	115.8	110.8	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Morocco	1	2	2	125.8	118.5	110.8	Impossible	Impossible	.	Impossible	.	140.4	Impossible	.	36.2
Vanuatu	2	2	2	114.5	111.1	110.2	No subnational	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.
Mali	2	2	2	118.8	118.7	108.6	Impossible	.	1440.7	Impossible	.	410.9	Impossible	.	485.9
Tajikistan	1	1	2	129.6	127.5	108.5	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Cote d'Ivoire	1	2	2	133.2	126.1	105.6	Impossible	Impossible	.	Impossible	.	40.4	Impossible	.	384.3
Papua New Guinea	1	3	2	121.5	89.8	104.6	Impossible	-48.9	.	.	168.8	631.8	-76.4	.	141.6
Fiji	2	2	2	102.3	112.5	104.6	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.	No subnational
Solomon Islands	2	2	2	105.1	107.2	104.1	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible
Congo, Dem. Rep.	2	3	2	118.7	82.0	104.0	Impossible	.	760.1	.	951.2	2159.6	Impossible	.	499.3
Guinea-Bissau	1	3	2	139.1	78.2	104.0	NA	NA	.	NA	NA	.	NA	NA	.
Tuvalu	1	3	2	131.7	97.5	103.6	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Samoa	2	2	2	105.3	105.2	103.5	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.	No subnational
Eswatini	3	2	2	89.9	100.8	103.5	.	423.3	1179.0	-34.3	.	1103.2	Impossible	.	387.5
Bolivia	2	2	2	111.8	107.4	102.1	-13.6	.	24.1	-8.5	.	48.3	-2.4	.	24.3
Uzbekistan	2	2	2	114.0	118.4	101.3	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS
Dominica	2	3	2	100.4	99.8	100.9	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible
Algeria	1	2	2	123.3	113.8	100.3	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Lesotho	2	3	2	108.6	83.2	100.3	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible
Burundi	2	2	2	114.1	118.8	100.1	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.	No subnational
Niger	2	1	3	116.7	131.3	98.8	Impossible	.	1992.7	Impossible	Impossible	.	.	148.2	1798.5
Ghana	2	2	3	101.6	110.3	98.7	Impossible	.	9361.3	Impossible	.	9478.6	.	774.0	8086.6
Ethiopia	2	2	3	107.1	105.4	97.3	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	.	Added to CGHS	Added to CGHS
Kenya	1	3	3	117.8	95.5	97.1	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Marshall Islands	3	3	3	99.1	81.8	95.0	.	NA	NA	.	NA	NA	.	NA	NA
Grenada	3	2	3	88.2	101.0	94.9	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Senegal	1	3	3	118.8	92.8	94.4	Impossible	-10.8	.	.	163.5	791.9	.	126.7	422.7
Tanzania	3	3	3	65.7	75.3	94.3	.	50.6	94.0	.	36.5	101.8	.	8.4	39.2
Kyrgyz Republic	2	2	3	112.7	112.5	93.9	Impossible	.	335.7	Impossible	.	935.5	.	403.0	1231.7
Belize	3	2	3	90.8	103.5	92.0	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Sri Lanka	1	2	3	127.2	115.1	91.0	-95.4	-16.4	.	-52.8	.	66.1	.	31.5	87.5
Haiti	3	2	3	86.9	101.9	89.8	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Burkina Faso	3	3	3	85.9	91.7	86.6	.	35290.1	116463.7	.	20856.3	77050.4	.	33533.1	66539.8
Kiribati	3	3	3	77.3	96.8	86.0	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Myanmar	3	2	3	84.9	109.5	84.4	.	18873.9	40788.4	Impossible	.	21097.8	.	19433.0	34972.2
Lao PDR	2	2	3	102.1	103.9	83.9	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	.	Added to CGHS	Added to CGHS
Liberia	2	3	3	132.5	85.2	80.4	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Comoros	3	3	3	69.8	86.2	78.4	.	No subnational	No subnational	No subnational	No subnational	.	No subnational	No subnational	.
Cambodia	1	1	3	121.3	187.5	72.9	-32.6	11.8	.	Impossible	-67.2	.	.	41.5	72.9
El Salvador	1	1	3	122.0	131.6	63.3	Impossible	Impossible	.	Impossible	Impossible	.	.	3821.8	5130.3
Guinea	2	3	3	123.7	81.5	62.6	No subnational	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.

Source: Authors' calculations.

**Table A3.2. Potential Impact of Including Subnational Spending on CGHS Share Index Categories, 2020-22**

Country	2020 group	2021 group	2022 group	2020 CGHS share index	2021 CGHS share index	2022 CGHS share index	2020 subnational percent change needed to move to low	2020 subnational percent change needed to move to moderate	2020 subnational percent change needed to move to high	2021 subnational percent change needed to move to low	2021 subnational percent change needed to move to moderate	2021 subnational percent change needed to move to high	2022 subnational percent change needed to move to low	2022 subnational percent change needed to move to moderate	2022 subnational percent change needed to move to high
Cameroon	1	1	1	158.2	219.6	177.7	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Nepal	1	1	1	124.7	150.7	173.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Indonesia	1	1	1	152.0	255.9	160.6	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
West Bank and Gaza	2	1	1	100.0	123.1	151.1	Likely negligible	.	Likely negligible	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Gambia, The	1	1	1	173.2	141.9	145.2	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Angola	1	1	1	132.7	159.4	144.2	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Zambia	2	1	1	120.8	138.3	142.1	Impossible	.	30.7	Impossible	Impossible	.	Impossible	Impossible	.
Algeria	1	1	1	129.2	134.3	138.6	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Cabo Verde	1	1	1	122.3	173.7	136.9	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Moldova	1	1	1	117.5	159.4	135.3	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Mongolia	2	1	1	107.9	144.5	131.2	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
St. Lucia	1	1	1	129.2	138.1	127.1	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Sao Tome and Principe	1	1	1	118.3	128.2	125.3	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Central African Republic	2	1	1	104.3	137.8	122.4	NA	.	NA	NA	NA	.	NA	NA	.
Solomon Islands	2	1	1	112.5	125.3	122.4	Likely negligible	.	Likely negligible	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Uganda	2	1	1	105.7	117.4	122.3	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Honduras	2	2	1	109.4	112.4	121.9	Impossible	.	88.3	Impossible	.	220.0	Impossible	Impossible	.
Samoa	2	2	1	113.5	108.5	119.7	No subnational	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.
Egypt, Arab Rep.	2	1	1	113.4	123.9	116.0	No subnational	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.
Mozambique	2	1	1	118.2	132.1	113.0	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Lesotho	2	3	1	111.0	84.6	111.8	Likely negligible	.	Likely negligible	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Vanuatu	1	2	1	114.4	113.9	111.6	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Fiji	1	1	1	108.9	122.2	111.5	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Philippines	1	1	1	132.3	152.0	111.0	-77.8	-27.2	.	Impossible	-44.1	.	-10.5	24.2	.
Timor-Leste	1	1	1	143.2	189.1	110.7	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Kosovo	1	1	1	110.6	121.9	110.7	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Bangladesh	3	2	1	90.8	103.4	110.7	.	537.2	1349.8	Impossible	.	1126.5	Impossible	Impossible	.
Myanmar	3	2	1	77.5	110.0	109.6	.	30772.1	49575.1	Impossible	.	14644.1	Impossible	Impossible	.
Congo, Rep.	1	2	1	154.9	115.7	109.5	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Rwanda	2	2	1	101.8	108.7	108.9	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Belize	3	1	1	90.0	118.2	106.4	.	Likely negligible	Likely negligible	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Mali	2	2	1	111.0	108.8	106.0	Impossible	.	1106.7	Impossible	.	403.0	Impossible	Impossible	.
Tuvalu	1	3	1	124.2	90.3	105.3	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Ethiopia	2	2	1	109.5	108.7	104.7	Added to CGHS	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Madagascar	1	1	1	172.2	144.3	100.1	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Papua New Guinea	2	3	2	113.1	92.0	107.4	Impossible	.	33.5	.	127.3	499.9	Impossible	.	18.8
Eswatini	3	2	2	92.5	108.9	107.3	.	303.2	878.7	Impossible	.	511.7	Impossible	.	40.4
Bolivia	1	2	2	118.0	119.6	105.8	-24.9	3.1	.	-30.5	.	11.5	-9.9	.	7.1
Sri Lanka	1	2	2	124.3	114.5	105.7	-84.9	-21.6	.	-50.7	.	47.8	-31.2	.	0.7
Pakistan	2	2	2	103.5	118.7	101.6	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS
Kiribati	3	2	2	83.7	112.5	100.1	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.	No subnational
Haiti	3	2	3	93.5	103.2	99.9	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.	No subnational
Tunisia	1	1	3	116.7	122.7	99.8	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Benin	1	3	3	198.8	81.9	99.6	Impossible	Impossible	.	.	1632.4	3572.5	.	78.9	820.1
St. Vincent and the Grenadines	1	1	3	125.3	110.8	99.4	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.
Morocco	2	2	3	109.7	106.3	99.3	Impossible	.	96.6	-90.2	.	282.6	.	22.7	163.7
Tonga	1	3	3	110.5	93.7	98.7	No subnational	No subnational	.	.	No subnational	No subnational	.	No subnational	No subnational
Marshall Islands	3	3	3	96.9	79.2	97.5	.	NA	NA	.	NA	NA	.	NA	NA
India	2	2	3	105.0	105.9	97.5	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	.	Added to CGHS	Added to CGHS
Nicaragua	2	1	3	100.7	123.0	97.1	-10.1	.	274.5	Impossible	.	15.9	.	81.8	273.4
Bhutan	2	3	3	102.3	84.7	95.9	13.3	.	90.4	.	.	116.7	255.7	.	47.5
Kenya	1	3	3	118.9	95.2	95.5	Added to CGHS	Added to CGHS	.	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS
Sierra Leone	1	1	3	167.2	150.7	95.5	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Lao PDR	2	2	3	105.1	121.0	95.0	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	.	Added to CGHS	Added to CGHS
Comoros	3	3	3	77.2	90.7	93.9	.	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational
Niger	2	1	3	112.8	119.8	93.3	Impossible	.	1054.5	Impossible	Impossible	.	.	890.2	765.7
Malawi	3	2	3	89.7	111.4	93.1	.	Added to CGHS	Added to CGHS	Added to CGHS	.	Added to CGHS	.	Added to CGHS	Added to CGHS
Tajikistan	1	2	3	125.2	121.1	93.1	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	.	Added to CGHS	Added to CGHS
Dominica	3	3	3	76.6	89.7	92.4	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible
Togo	1	1	3	124.0	121.9	91.1	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Maldives	1	3	3	118.5	88.2	88.8	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Liberia	1	3	3	128.7	95.5	87.5	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Guinea-Bissau	2	3	3	105.2	57.6	86.6	NA	.	NA	.	NA	NA	.	NA	NA
Mauritania	1	2	3	119.2	118.0	85.1	No subnational	No subnational	.	No subnational	No subnational	.	No subnational	No subnational	.
Ghana	3	3	3	73.6	89.1	84.5	.	21419.6	32571.7	.	7962.0	23805.9	.	10654.4	16299.0
Senegal	2	3	3	109.7	85.7	82.0	Impossible	.	123.1	.	361.9	923.0	.	489.6	715.1
Tanzania	3	3	3	64.1	67.9	81.6	.	56.8	91.7	.	63.3	123.0	.	47.0	70.5
Kyrgyz Republic	1	2	3	120.2	118.7	80.9	Impossible	Impossible	.	Impossible	.	208.3	.	1470.3	2105.7
Cote d'Ivoire	1	2	3	113.7	101.6	77.6	Impossible	33.1	.	-82.1	.	1418.8	.	1700.9	2322.2
Burundi	2	1	3	114.5	115.4	76.6	No subnational	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.
Uzbekistan	2	3	3	107.6	99.9	75.4	Added to CGHS	.	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS
Guyana	1	1	3	119.1	122.6	74.4	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.	Added to CGHS	Added to CGHS	.
Congo, Dem. Rep.	1	3	3	147.4	70.2	67.2	Impossible	Impossible	.	.	1850.3	2614.5	.	2726.9	2648.7
Grenada	3	3	3	82.9	77.0	66.6	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible	.	Likely negligible	Likely negligible
Cambodia	2	1	3	109.6	158.5	64.7	-5.7	.	32.8	-87.8	.	.	.	73.6	97.0
Guinea	2	3	3	106.3	76.5	64.0	No subnational	.	No subnational	No subnational	No subnational	.	No subnational	No subnational	.
Burkina Faso	3	3	3	82.9	74.4	62.4	.	44254.0	98145.6	.	78892.3	116405.9	.	130246.9	126986.1
El Salvador	2	2	3	109.4	111.1	57.6	Impossible	.	527.2	Impossible	.	1364.7	.	4868.6	5819.5

Source: Authors' calculations.

## B. Social health insurance contributions

According to WHO GHED data, among the 78 countries with available or predictable CGHS from 2019 to 2022, 45 countries had some health spending from social health insurance contributions (SHI), while 33 countries did not. In these 33 countries, SHI will have no impact on the level or the trend of CGHS.

In the 45 countries with SHI, the average share of SHI spending in general government health spending in 2019 was 14.8 percent, but it reached 45.3 percent in El Salvador, 47.2 percent in Tunisia, and 57.1 percent in Moldova. In 20 out of the 45 countries, health spending from SHI in 2019 constituted less than 5 percent.<sup>76</sup>

### Methodology

To assess whether including SHI contributions in these countries can shift the CGHS trend, the study undertook the following steps for each year (2022 is used as the example):

1. Estimated the expected health spending from SHI contributions for a specific level of 2019 CGHS by using the 2019 WHO ratio  $\frac{FS.3}{FS.1 + FS.2}$ , which is the ratio between SHI contributions (FS.3) and the sum of government domestic revenue (FS.1) and on-budget development assistance for health (FS.2), and multiply it by the 2019 CGHS.
2. Determined the relative change in health spending from SHI contributions needed to alter the 2022 CGHS category by using a health spending index that indicates the change in the relative magnitude of combined CGHS and SHI spending:

i.

$$category\ boundary = \frac{CGHS_{2022} + Required\ SHI_{2022}}{CGHS_{2019} + Estimated\ SHI_{2019}}$$

ii.  $\Rightarrow Required\ SHI_{2022}$

$$1. = category\ boundary \cdot (CGHS_{2019} + Estimated\ SHI_{2019}) - CGHS_{2022}$$

3. Evaluated the feasibility of the required change by using historically plausible growth rates of per capita health spending from SHI contributions and country-specific information on actual health spending from SHI contributions. Information on actual health spending always prevailed over historically plausible health spending.

The above approach (for CGHS levels) was also taken for CGHS shares.

Typically, SHI contributions experience a rapid decline during economic recessions, due to falling wages and increasing unemployment and informal employment. Conversely, SHI revenues tend to increase swiftly during economic recoveries (Kurowski, Evans, et al. 2021a). Amid economic downturns and recoveries, SHI schemes possess mechanisms to stabilize their balance sheets, thereby preventing cost shifts to providers and consumers.

Among the 10 countries with available SHI data for 2020 and 2021, average health spending from SHI contributions decreased by 4 percent in 2020 and increased by 7 percent in 2021. Based on the WHO GHED, SHI contributions typically witnessed an average annual growth of 3 percent to 5 percent over the two decades preceding the COVID-19 pandemic.<sup>77</sup> Even in the years following the Great Recession, SHI spending grew at an average of 4 percent. According to the WHO GHED, in 2020, it increased by 4

<sup>76</sup> See Annex 1 for detailed SHI data.

<sup>77</sup> These averages disregard countries with low SHI spending or those that introduced SHI during the same period.

percent in UMICs, fell by 4 percent in LMICs, and increased by 10 percent in LICs from a low base. A 4 percent growth rate is consistent with the average general government expenditure (GGE) per capita growth during those years and the average GGE per capita growth between 2019 and 2022. Similar to subnational health spending, these growth rates suggest a generous and plausible maximum growth rate of around +/-25 percent.

## Results

### CGHS Levels

Table A3.3 provides an overview of the health spending situation in each of the 78 countries. Apart from 2020–22 CGHS categories and indexes, it displays the required relative change in health spending from SHI contributions (relative to 2019) to change the CGHS landing (2022) category. For example, Moldova's health spending from SHI contributions would need to decrease by 20.7 percent to change the 2022 CGHS category from high to moderate and by 46.5 percent to change it from high to low. However, 2022 data on spending from SHI contributions indicate a 1.1 percent increase, and 2022 data on SHI contributions show a 4.8 percent increase. In contrast, Nicaragua's health spending from SHI contributions would need to grow by less than 11.4 percent to change the 2022 CGHS category from high to moderate, and decrease by 19.5 percent to change it from high to low. Because Nicaragua's CGHS grew by 13.1 percent, a slightly lower SHI growth of 11.4 percent would push the combined index below the moderate boundary and a SHI decrease of more than 19.5 percent would push the combined index below the low boundary. In Indonesia, even a complete disappearance of health spending from SHI contributions would not have sufficient impact to change the CGHS category.

Applying the threshold and considering available country-specific data on changes in health spending from SHI contributions indicates that reclassification could apply to eight countries:

- **Nicaragua** could shift from the high category to the moderate or low category if spending from SHI contributions increases by less than 11.4 percent or decreases by 19.5 percent, respectively. However, due to a 4.7 percent decrease in planned 2022 SHI contributions, a transition to the moderate category is likely.
- **Egypt** and **Honduras** may change from the high to moderate category if health spending from SHI contributions experiences a 1.9 percent decline or an increase of less than 0.9 percent, respectively. Actual spending from SHI contributions is unknown in Egypt, while it decreased by 4.6 percent in Honduras.
- **Tunisia** and **Morocco**, with large SHI shares, could shift from moderate to low if SHI contributions decrease by 13.3 percent and 13.2 percent, respectively, or from moderate to high if they increase by more than 13.1 percent and 14.4 percent, respectively. However, IMF projections of 5 percent to 10 percent increases in general government revenue (GGR) and GGE per capita, respectively, render these transitions unlikely.
- **Bolivia**, **Algeria**, and **Burundi** could transition from moderate to low if health spending from SHI contributions drops by 3.1 percent, 0.5 percent, and 4.4 percent, respectively, compared with 2019 levels. With IMF projections showing stagnating or contracting GDP, GGR, and GGE per capita for Bolivia and Algeria, they are likely to move to the low category, while Burundi is expected to remain in the moderate category.

- **Marshall Islands** may shift from low to moderate if SHI contributions increase by more than 17.8 percent. However, with only a 9.4 percent increase in expected SHI contributions and IMF projections of stagnating GDP, GGR, and GGE per capita, this change seems improbable.

The patterns for the years 2020 and 2021 are comparable (Table A3.3). In 2020, without significant increases in health spending from SHI contributions (averaging a 9 percent increase), 10 countries could possibly be reclassified from the high to the moderate category. Meanwhile, two countries potentially shifted from moderate to low. Furthermore, Marshall Islands, which was close to the boundary, could have shifted from low to moderate if health spending from SHI contributions had grown by 3 percent. In 2021, three countries possibly moved from the high to moderate category, and another three plausibly transitioned from moderate to low.

#### *CGHS Shares*

Results from the robustness analysis for CGHS share indexes are presented in Table A3.4. When incorporating previously unaccounted for health spending from SHI contributions, CGHS share indexes generally shift toward lower categories. In 2022, eight countries can plausibly transition between high and low share categories—three plausibly change from high to low, and five from low to high. In 2021, six countries can plausibly transition between share categories—three from high to moderate or low, one from moderate to high, one from moderate to low, and one from low to moderate. In 2020, eight countries possibly changed share categories—three from high to moderate, one from moderate to high, three from moderate to low, and one from low to moderate.

In summary, the inclusion of health spending from SHI contributions in CGHS tends to dampen the CGHS trends. This holds true for both levels and shares. Nevertheless, the number of cases remains limited, affecting approximately 10 percent of countries, implying that CGHS trends are likely to represent the majority of countries accurately.

**Table A3.3. Potential Impact of Including Spending from Social Health Insurance Contributions on CGHS Index Categories, 2020-22**

Country	2020 group	2021 group	2022 group	2020 CGHS index	2021 CGHS index	2022 CGHS index	2020 SHI percent change needed to move to low	2020 SHI percent change needed to move to moderate	2020 SHI percent change needed to move to high	2021 SHI percent change needed to move to low	2021 SHI percent change needed to move to moderate	2021 SHI percent change needed to move to high	2022 SHI percent change needed to move to low	2022 SHI percent change needed to move to moderate	2022 SHI percent change needed to move to high
Indonesia	1	1	1	167.0	283.6	179.1	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Nepal	1	1	1	120.8	150.7	175.3	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Cameroon	1	1	1	137.7	197.4	170.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Moldova	1	1	1	125.9	186.8	162.0	-19.4	12.5	.	-65.1	-25.8	.	-46.5	-20.7	.
Guyana	1	1	1	185.1	194.2	150.7	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Togo	1	1	1	177.4	167.0	149.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Benin	1	2	1	261.9	116.8	143.8	Impossible	Impossible	.	Impossible	Impossible	.	237.4	Impossible	Impossible
West Bank and Gaza	2	2	1	102.3	122.4	143.0	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI	.
Mongolia	1	1	1	121.8	157.9	141.8	-56.7	6.3	.	Impossible	Impossible	.	-55.3	Impossible	-63.7
Timor-Leste	1	1	1	129.9	215.5	138.5	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Uganda	2	1	1	117.9	135.8	138.4	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Angola	1	1	1	138.2	136.2	137.0	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Philippines	1	1	1	141.2	178.0	135.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Sao Tome and Principe	1	1	1	124.8	148.7	134.1	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Sierra Leone	1	1	1	194.1	196.0	133.8	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Gambia, The	1	1	1	179.3	126.7	132.8	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Zambia	2	1	1	130.3	135.5	132.1	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Cabo Verde	1	1	1	122.0	162.5	131.5	-73.4	2.7	.	Impossible	-94.0	.	Impossible	-51.2	.
Rwanda	2	1	1	114.1	124.5	131.1	-58.1	.	108.9	Impossible	13.9	.	Impossible	-60.6	.
St. Lucia	1	1	1	134.6	140.0	129.2	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Mozambique	2	1	1	125.0	133.3	125.9	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Central African Republic	1	1	1	153.7	157.7	125.5	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Mauritania	1	2	1	120.6	125.9	124.3	-89.1	4.1	.	Impossible	.	28.4	Impossible	-38.9	.
Madagascar	1	2	1	165.2	121.6	124.1	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Bhutan	1	2	1	126.4	119.1	123.4	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
St. Vincent and the Grenadines	1	1	1	135.6	137.5	120.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Bangladesh	3	2	1	91.3	107.1	117.8	.	No SHI	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Honduras	2	2	1	106.5	122.8	117.1	-16.1	.	44.8	-56.5	.	35.2	-42.3	0.9	.
Egypt, Arab Rep.	2	2	1	110.3	121.8	115.3	-50.7	.	53.2	Impossible	.	48.8	-75.6	-1.9	.
Malawi	2	1	1	103.5	136.1	114.9	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Nicaragua	2	1	1	104.3	146.8	113.1	-6.4	.	37.2	-69.6	-3.9	.	-19.5	11.4	.
Congo, Rep.	1	2	1	150.0	111.0	112.7	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Kosovo	2	1	2	116.2	125.0	113.9	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Tonga	2	2	2	112.0	117.4	112.8	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Tunisia	1	1	2	123.0	129.1	111.9	-25.8	11.4	.	-32.6	23.3	.	-13.3	.	13.1
India	2	2	2	113.3	116.6	111.5	Impossible	.	87.2	Impossible	.	186.5	Impossible	.	28.3
Maldives	2	3	2	115.4	94.9	111.2	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Pakistan	2	2	2	107.1	115.8	110.8	Impossible	.	381.7	Impossible	.	395.2	Impossible	.	69.2
Morocco	1	2	2	125.8	118.5	110.8	-31.6	7.4	.	-22.6	.	36.1	-13.2	.	14.4
Vanuatu	2	2	2	114.5	111.1	110.2	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Mali	2	2	2	118.8	118.7	108.6	-73.7	.	85.9	-73.3	.	37.2	-33.8	.	31.2
Tajikistan	1	1	2	129.6	127.5	108.5	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Cote d'Ivoire	1	2	2	133.2	126.1	105.6	Impossible	Impossible	.	Impossible	Impossible	.	55.6	Impossible	787.7
Papua New Guinea	1	3	2	121.5	89.8	104.6	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Fiji	2	2	2	102.3	112.5	104.6	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Solomon Islands	2	2	2	105.1	107.2	104.1	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Congo, Dem. Rep.	2	3	2	118.7	82.0	104.0	Impossible	.	845.6	.	1063.0	2410.9	Impossible	.	556.5
Guinea-Bissau	1	3	2	139.1	78.2	104.0	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Tuvalu	1	3	2	131.7	97.5	103.6	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Samoa	2	2	2	105.3	105.2	103.5	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Eswatini	3	2	2	89.9	100.8	103.5	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Bolivia	2	2	2	111.8	107.4	102.1	-17.5	.	25.9	-10.9	.	54.5	-3.1	.	27.7
Uzbekistan	2	2	2	114.0	118.4	101.3	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.	No SHI
Dominica	2	3	2	100.4	99.8	100.9	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Algeria	1	2	2	123.3	113.8	100.3	-35.1	8.8	.	-20.7	.	45.3	-0.5	.	30.6
Lesotho	2	3	2	108.6	83.2	100.3	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Burundi	2	2	2	114.1	118.8	100.1	Impossible	.	585.4	Impossible	.	133.3	-4.4	.	406.2
Niger	2	1	3	116.7	131.3	98.8	Impossible	.	908.1	Impossible	Impossible	.	.	66.2	810.7
Ghana	2	2	3	101.6	110.3	98.7	-21.6	.	229.6	Impossible	.	240.9	.	17.6	195.7
Ethiopia	2	2	3	107.1	105.4	97.3	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Kenya	1	3	3	117.8	95.5	97.1	Impossible	.	9.0	.	152.7	1067.5	.	97.3	528.2
Marshall Islands	3	3	3	99.1	81.8	95.0	.	3.2	86.1	.	64.6	166.4	.	17.8	84.7
Grenada	3	2	3	88.2	101.0	94.9	.	3358.6	8576.2	Impossible	.	6139.7	1450.3	5663.6	.
Senegal	1	3	3	118.8	92.8	94.4	Impossible	.	9.1	.	48.5	253.4	.	37.6	134.1
Tanzania	3	3	3	65.7	75.3	94.3	.	240.1	380.4	.	173.3	384.5	.	39.9	139.4
Kyrgyz Republic	2	2	3	112.7	112.5	93.9	-70.9	.	44.6	-70.1	.	103.8	.	34.3	116.2
Belize	3	2	3	90.8	103.5	92.0	.	1191.1	3583.1	Impossible	.	2490.3	.	1040.5	2972.1
Sri Lanka	1	2	3	127.2	115.1	91.0	Impossible	Impossible	.	Impossible	Impossible	.	487.8	.	366.4
Haiti	3	2	3	86.9	101.9	89.8	.	87.1	221.4	-12.9	.	189.3	.	68.1	163.3
Burkina Faso	3	3	3	85.9	91.7	86.6	.	17548.2	57928.3	.	10370.9	38324.9	.	16674.4	33093.8
Kiribati	3	3	3	77.3	96.8	86.0	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Myanmar	3	2	3	84.9	109.5	84.4	.	313.8	695.5	Impossible	.	376.8	.	323.1	593.8
Lao PDR	2	2	3	102.1	103.9	83.9	Impossible	.	821.9	Impossible	.	1199.7	.	839.2	1500.0
Liberia	2	3	3	132.5	85.2	80.4	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Comoros	3	3	3	69.8	86.2	78.4	.	1472.7	2344.4	.	673.4	1985.4	.	1054.6	1672.6
Cambodia	1	1	3	121.3	187.5	72.9	Impossible	-31.6	.	Impossible	Impossible	.	.	353.2	527.8
El Salvador	1	1	3	122.0	131.6	63.3	-26.5	.	12.2	-38.2	20.1	.	.	44.3	71.8
Guinea	2	3	3	123.7	81.5	62.6	Impossible	.	262.4	.	482.7	1092.5	.	976.4	1334.6

Source: Authors' calculations

**Table A3.4. Potential Impact of Including Spending from Social Health Insurance Contributions on CGHS Share Index Categories, 2020-222**

Country	2020 group	2021 group	2022 group	2020 CGHS share index	2021 CGHS share index	2022 CGHS share index	2020 SHI percent change needed to move to low	2020 SHI percent change needed to move to moderate	2020 SHI percent change needed to move to high	2021 SHI percent change needed to move to low	2021 SHI percent change needed to move to moderate	2021 SHI percent change needed to move to high	2022 SHI percent change needed to move to low	2022 SHI percent change needed to move to moderate	2022 SHI percent change needed to move to high
Cameroon	1	1	1	158.2	219.6	177.7	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Nepal	1	1	1	124.7	150.7	173.8	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Indonesia	1	1	1	152.0	255.9	160.6	Impossible	Impossible	-82.0	Impossible	Impossible	.	Impossible	Impossible	.
West Bank and Gaza	2	1	1	100.0	123.1	151.1	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Gambia, The	1	1	1	173.2	141.9	145.2	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Angola	1	1	1	132.7	159.4	144.2	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Zambia	2	1	1	120.8	138.3	142.1	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Algeria	1	1	1	129.2	134.3	138.6	-46.5	-13.7	.	Impossible	Impossible	-59.0	-12.9	-69.7	-54.8
Cabo Verde	1	1	1	122.3	173.7	136.9	-74.6	-15.1	.	Impossible	Impossible	.	Impossible	Impossible	-88.0
Moldova	1	1	1	117.5	159.4	135.3	-7.0	8.9	.	Impossible	Impossible	-35.0	-17.4	-11.9	-9.7
Mongolia	2	1	1	107.9	144.5	131.2	-10.4	.	45.3	Impossible	Impossible	-31.6	-79.3	-47.4	.
St. Lucia	1	1	1	129.2	138.1	127.1	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Sao Tome and Principe	1	1	1	118.3	128.2	125.3	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Central African Republic	2	1	1	104.3	137.8	122.4	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Solomon Islands	2	1	1	112.5	125.3	122.4	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Uganda	2	1	1	105.7	117.4	122.3	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Honduras	2	2	1	109.4	112.4	121.9	-25.2	.	21.3	-24.1	.	58.5	-55.8	-28.4	.
Samoa	2	2	1	113.5	108.5	119.7	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI	.
Egypt, Arab Rep.	2	1	1	113.4	123.9	116.0	-67.2	.	11.9	Impossible	Impossible	9.5	-79.0	-30.6	.
Mozambique	2	1	1	118.2	132.1	113.0	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Lesotho	2	3	1	111.0	84.6	111.8	No SHI	.	No SHI	No SHI	No SHI	.	No SHI	No SHI	.
Vanuatu	1	2	1	114.4	113.9	111.6	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Fiji	1	1	1	108.9	122.2	111.5	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Philippines	1	1	1	132.3	152.0	111.0	Impossible	Impossible	-85.6	Impossible	Impossible	.	Impossible	Impossible	14.3
Timor-Leste	1	1	1	143.2	189.1	110.7	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Kosovo	1	1	1	110.6	121.9	110.7	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Bangladesh	3	2	1	90.8	103.4	110.7	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Myanmar	3	2	1	77.5	110.0	109.6	.	521.1	848.5	Impossible	Impossible	.	264.4	Impossible	-38.3
Congo, Rep.	1	2	1	154.9	115.7	109.5	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Rwanda	2	2	1	101.8	108.7	108.9	3.5	.	123.1	-26.4	.	45.2	-24.1	-30.0	.
Belize	3	1	1	90.0	118.2	106.4	.	1311.8	2432.6	Impossible	Impossible	.	Impossible	Impossible	.
Mali	2	2	1	111.0	108.8	106.0	-39.3	.	70.2	-28.5	.	36.9	-21.5	-26.2	.
Tuvalu	1	3	1	124.2	90.3	105.3	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Ethiopia	2	2	1	109.5	108.7	104.7	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Madagascar	1	1	1	172.2	144.3	100.1	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	.
Papua New Guinea	2	3	2	113.1	92.0	107.4	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Eswatini	3	2	2	92.5	108.9	107.3	.	No SHI	No SHI	No SHI	No SHI	.	No SHI	No SHI	No SHI
Bolivia	1	2	2	118.0	119.6	105.8	-30.5	1.8	.	-36.3	.	12.2	-11.8	7.9	.
Sri Lanka	1	2	2	124.3	114.5	105.7	Impossible	Impossible	.	Impossible	Impossible	.	318.3	Impossible	80.8
Pakistan	2	2	2	103.5	118.7	101.6	Impossible	Impossible	.	386.0	Impossible	.	123.7	-52.1	269.9
Kiribati	3	2	2	83.7	112.5	100.1	.	No SHI	No SHI	No SHI	No SHI	.	No SHI	No SHI	No SHI
Haiti	3	2	3	93.5	103.2	99.9	.	33.5	131.4	-22.0	.	142.7	-9.2	47.4	.
Tunisia	1	1	3	116.7	122.7	99.8	-14.3	16.4	.	-21.5	27.0	.	613.8	1330.7	12.4
Benin	1	3	3	198.8	81.9	99.6	Impossible	Impossible	.	Impossible	Impossible	.	56.8	330.6	31.9
St. Vincent and the Grenadines	1	1	3	125.3	110.8	99.4	Impossible	Impossible	.	Impossible	Impossible	.	182.3	489.5	56.8
Morocco	2	2	3	109.7	106.3	99.3	1.0	.	36.0	2.8	.	56.6	12.5	32.9	.
Tonga	1	3	3	110.5	93.7	98.7	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Marshall Islands	3	3	3	96.9	79.2	97.5	.	13.2	52.6	.	79.2	119.3	6.1	10.9	.
India	2	2	3	105.0	105.9	97.5	-79.6	.	177.2	-96.8	.	318.1	61.5	224.3	.
Nicaragua	2	1	3	100.7	123.0	97.1	2.5	.	37.9	-21.6	.	42.9	21.7	45.5	.
Bhutan	2	3	3	102.3	84.7	95.9	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Kenya	1	3	3	118.9	95.2	95.5	Impossible	Impossible	.	Impossible	Impossible	.	161.1	917.1	155.8
Sierra Leone	1	1	3	167.2	150.7	95.5	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Lao PDR	2	2	3	105.1	121.0	95.0	Impossible	Impossible	.	449.5	Impossible	.	39.1	216.9	602.5
Comoros	3	3	3	77.2	90.7	93.9	.	996.1	1613.5	.	425.5	1453.1	232.9	573.8	.
Niger	2	1	3	112.8	119.8	93.3	Impossible	Impossible	.	484.8	Impossible	Impossible	.	400.9	344.8
Malawi	3	2	3	89.7	111.4	93.1	.	No SHI	No SHI	No SHI	No SHI	.	No SHI	No SHI	No SHI
Tajikistan	1	2	3	125.2	121.1	93.1	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Dominica	3	3	3	76.6	89.7	92.4	.	No SHI	No SHI	No SHI	No SHI	.	No SHI	No SHI	No SHI
Togo	1	1	3	124.0	121.9	91.1	Impossible	Impossible	46.2	Impossible	Impossible	-23.5	.	150.1	139.6
Maldives	1	3	3	118.5	88.2	88.8	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Liberia	1	3	3	128.7	95.5	87.5	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Guinea-Bissau	2	3	3	105.2	57.6	86.6	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Mauritania	1	2	3	119.2	118.0	85.1	-82.8	-8.8	.	-76.2	.	47.4	140.1	203.9	.
Ghana	3	3	3	73.6	89.1	84.5	.	523.4	795.0	.	204.0	589.9	258.3	395.8	.
Senegal	2	3	3	109.7	85.7	82.0	-62.7	.	52.8	.	113.2	296.1	155.9	229.4	.
Tanzania	3	3	3	64.1	67.9	81.6	.	260.3	373.0	.	259.9	452.8	164.6	240.6	.
Kyrgyz Republic	1	2	3	120.2	118.7	80.9	Impossible	-27.3	.	Impossible	Impossible	.	31.9	139.8	202.6
Cote d'Ivoire	1	2	3	113.7	101.6	77.6	Impossible	32.9	.	Impossible	Impossible	.	2902.6	3507.0	4790.4
Burundi	2	1	3	114.5	115.4	76.6	Impossible	.	211.1	Impossible	Impossible	-83.1	.	949.6	911.4
Uzbekistan	2	3	3	107.6	99.9	75.4	No SHI	No SHI	.	No SHI	No SHI	.	No SHI	No SHI	No SHI
Guyana	1	1	3	119.1	122.6	74.4	Impossible	Impossible	.	Impossible	Impossible	.	1479.1	1539.9	.
Congo, Dem. Rep.	1	3	3	147.4	70.2	67.2	Impossible	Impossible	.	Impossible	Impossible	.	2065.9	2918.3	2953.9
Grenada	3	3	3	82.9	77.0	66.6	.	5186.5	7764.0	.	8628.7	11837.5	13625.0	14068.2	.
Cambodia	2	1	3	109.6	158.5	64.7	Impossible	.	84.9	Impossible	Impossible	.	531.3	661.3	.
Guinea	2	3	3	106.3	76.5	64.0	Impossible	.	481.7	.	660.2	1012.2	918.2	893.2	.
Burkina Faso	3	3	3	82.9	74.4	62.4	.	22007.3	48815.9	.	39241.2	57902.5	64785.2	63163.1	.
El Salvador	2	2	3	109.4	111.1	57.6	-1.3	.	32.6	.	2.7	59.6	66.3	86.2	.

Source: Authors' calculations

## C. Special Funds

Countries have established COVID-19 funds, disaster and emergency funds, and contingency funds to address unforeseen payments. These funds appear as separate spending entities in budget documents and expenditure reports. Health allocations and spending from these funds generally are not explicitly recorded as health sector spending.

Out of the 78 countries with available or predictable CGHS data from 2019 to 2022, 60 countries had some kind of special funds. Of these, 18 countries had COVID-19 funds, 22 had disaster and emergency funds, and 51 had contingency funds for at least one of the years. Among the countries with special funds, 35 had only one type, 21 had two types, and 4 had all three kinds. Conversely, 18 countries did not have any special funds. For these countries, health spending from special funds would have no impact on the level or trend of CGHS.

The size of special funds relative to CGHS differs according to the type of special fund. COVID-19 funds were mainly introduced in 2020, mostly retained in 2021, and dwindled in 2022. During the peak of COVID-19, the average size of these funds relative to CGHS was about 100 percent.<sup>78</sup> The COVID-19 funds considered here are situated outside the Ministry of Health. COVID-19 funds under the Ministry of Health are part of CGHS.

Disaster and emergency funds existed throughout the entire period and were generally relatively small compared with CGHS. The relative size of initial allocations for these funds averaged 2.5 percent in 2019 and increased only slightly during subsequent years (except for Dominica, Pakistan, and Tuvalu, where there was a larger increase).

Contingency funds were present throughout the entire period, exhibiting varied relative sizes. Five countries had allocations surpassing their CGHS allocations, yet two-thirds of countries possessed allocations that constituted less than 20 percent of their CGHS allocations. These funds originally served as small reserves to address liquidity issues but have become less relevant and seldom used in countries with single treasury account cash management practices. Because contingency funds are used for many purposes, the share going to health is typically lower than in the other two types of special funds.

### *Methodology*

Despite actual health spending from special funds being rarely known due to the discretionary nature of these funds, the study undertook the following steps to evaluate the potential impact of special funds on CGHS index trends:

1. Assumed that health spending from special funds in 2019 equals zero. This assumption is correct for COVID-19 funds that did not exist in 2019. However, it likely overstates the spending change for the two other types of special funds and implies that CGHS categories can only be revised upward.
2. Determined the share of health spending from special funds needed to alter the 2022 CGHS category by using a health spending index that indicated the change in the relative magnitude of combined CGHS and special funds spending:

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<sup>78</sup> The way the spending share is computed depends on data availability. Spending on health from special funds is relative to CGHS, revised allocations for health from special funds are relative to CGHS revised allocations, and initial allocations for health from special funds are relative to CGHS initial allocations.

$$\begin{aligned}
 \text{category boundary} &= \frac{CGHS_{2022} + \text{Required Special Funds for Health}_{2022}}{CGHS_{2019}} \\
 \Rightarrow \text{Required Special Funds for Health}_{2022} & \\
 &= \text{category boundary} \cdot CGHS_{2019} - CGHS_{2022} \\
 \Rightarrow \text{Required Special Funds Share for Health}_{2022} & \\
 &= \frac{\text{Required Special Funds for Health}_{2022}}{\text{Available Special Funds}_{2022}}
 \end{aligned}$$

3. Assessed the feasibility of the required change by generalizing from the small number of known rates of special funds that are channeled to health.

The above approach (for CGHS levels) was also taken for CGHS shares.

## Results

### COVID-19 Funds

Sixteen countries established COVID-19 funds outside the health ministry in 2020, with 12 introducing them or continuing their use in 2021, and eight maintaining them in 2022. The specific portion of these funds allocated to health spending often remains unspecified. For the nine countries where this information was available, the average share was 36.3 percent. In 2021, Cameroon atypically directed the entire fund to health; in 2020, El Salvador spent 51.6 percent of it on health, and all other countries used less than 40 percent of these funds for health. The funds represent additional health spending sources and are likely to enhance the trend relative to 2019.

### CGHS Levels

Table A3.5 provides annual data for each country on CGHS categories and CGHS indexes. Additionally, it presents the percentage of available COVID-19 funds required to change a country's CGHS category. For instance, in 2022, 16 percent of Marshall Islands' available COVID-19 funds would be necessary for reclassification to the moderate category. By assuming that countries typically do not allocate more than 40 percent of their COVID-19 funds to health, a criterion can be established to identify plausible transitions between categories.

In 2022, Marshall Islands is the only country that could change category (from low to moderate). The most significant impact occurred in 2021, at the height of the COVID-19 pandemic, when six countries could plausibly be reclassified into higher trend categories (four from moderate to high and two from low to moderate). In 2020, Uzbekistan would be reclassified from moderate to high.

### CGHS Shares

Table A3.6 presents the results from the robustness analysis for CGHS share indexes. In 2022, only Marshall Islands and Bhutan could plausibly be reclassified into higher categories (moderate or high instead of low). During the height of the pandemic, COVID-19 funds could have lifted five countries to higher categories—two from low to moderate and three from moderate to high. In 2020, four countries could have moved from low to moderate

**Table A3.5: Potential Impact of Including Spending from COVID-19 Funds on CGHS Index Categories (Shown Only for Countries with COVID-19 Funds), 2020-22**

Country	2020 group	2021 group	2022 group	2020 CGHS index	2021 CGHS index	2022 CGHS index	2020 COVID-19 fund share change needed to move to low	2020 COVID-19 fund share change needed to move to moderate	2020 COVID-19 fund share change needed to move to high	2021 COVID-19 fund share change needed to move to low	2021 COVID-19 fund share change needed to move to moderate	2021 COVID-19 fund share change needed to move to high	2022 COVID-19 fund share change needed to move to low	2022 COVID-19 fund share change needed to move to moderate	2022 COVID-19 fund share change needed to move to high
Indonesia	1	1	1	167.0	283.6	179.1	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Cameroon	1	1	1	137.7	197.4	170.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Timor-Leste	1	1	1	129.9	215.5	138.5	Impossible	Impossible	.	Impossible	Impossible	.	No COVID-19 funds	No COVID-19 funds	.
Mauritania	1	2	1	120.6	125.9	124.3	Impossible	Impossible	.	Impossible	.	.	3.7	Impossible	Impossible
Bhutan	1	2	1	126.4	119.1	123.4	No COVID-19 funds	No COVID-19 funds	.	Impossible	.	.	296.8	Impossible	Impossible
Congo, Rep.	1	2	1	150.0	111.0	112.7	Impossible	Impossible	.	Impossible	.	.	126.5	Impossible	Impossible
Tonga	2	2	2	112.0	117.4	112.8	Impossible	.	44.2	Impossible	.	.	7.3	No COVID-19 funds	No COVID-19 funds
Maldives	2	3	2	115.4	94.9	111.2	Impossible	.	91.1	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
Morocco	1	2	2	125.8	118.5	110.8	Impossible	Impossible	.	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
Mali	2	2	2	118.8	118.7	108.6	Impossible	.	225.1	Impossible	.	.	66.8	No COVID-19 funds	No COVID-19 funds
Papua New Guinea	1	3	2	121.5	89.8	104.6	Impossible	Impossible	.	.	25.6	91.7	Impossible	.	Impossible
Fiji	2	2	2	102.3	112.5	104.6	Impossible	.	46.9	Impossible	.	.	28.4	No COVID-19 funds	No COVID-19 funds
Solomon Islands	2	2	2	105.1	107.2	104.1	Impossible	.	434.1	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
Uzbekistan	2	2	2	114.0	118.4	101.3	Impossible	.	4.7	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
Marshall Islands	3	3	3	99.1	81.8	95.0	No COVID-19 funds	No COVID-19 funds	.	.	16.8	37.4	.	16.0	62.9
Senegal	1	3	3	118.8	92.8	94.4	Impossible	Impossible	.	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
Tanzania	3	3	3	65.7	75.3	94.3	No COVID-19 funds	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	13705.5	43590.4
El Salvador	1	1	3	122.0	131.6	63.3	Impossible	Impossible	.	No COVID-19 funds	No COVID-19 funds	.	.	No COVID-19 funds	No COVID-19 funds

Source: Authors' calculations

**Table A3.6: Potential Impact of Including Spending from COVID-19 Funds on CGHS Share Index Categories (Shown Only for Countries with COVID-19 Funds), 2020-22**

Country	2020 group	2021 group	2022 group	2020 CGHS index	2021 CGHS index	2022 CGHS index	2020 COVID-19 fund share change needed to move to low	2020 COVID-19 fund share change needed to move to moderate	2020 COVID-19 fund share change needed to move to high	2021 COVID-19 fund share change needed to move to low	2021 COVID-19 fund share change needed to move to moderate	2021 COVID-19 fund share change needed to move to high	2022 COVID-19 fund share change needed to move to low	2022 COVID-19 fund share change needed to move to moderate	2022 COVID-19 fund share change needed to move to high
Cameroon	1	1	1	158.2	219.6	177.7	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Indonesia	1	1	1	152.0	255.9	160.6	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Solomon Islands	2	1	1	112.5	125.3	122.4	Impossible	.	41.7	No COVID-19 funds	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
Fiji	1	1	1	108.9	122.2	111.5	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Timor-Leste	1	1	1	143.2	189.1	110.7	Impossible	Impossible	.	Impossible	Impossible	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
Congo, Rep.	1	2	1	154.9	115.7	109.5	Impossible	Impossible	.	Impossible	.	.	47.7	Impossible	Impossible
Mali	2	2	1	111.0	108.8	106.0	Impossible	.	172.3	Impossible	.	.	65.5	No COVID-19 funds	No COVID-19 funds
Papua New Guinea	2	3	2	113.1	92.0	107.4	Impossible	.	Impossible	.	19.6	72.9	Impossible	.	Impossible
Morocco	2	2	3	109.7	106.3	99.3	Impossible	.	2.1	No COVID-19 funds	.	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds
Tonga	1	3	3	110.5	93.7	98.7	Impossible	Impossible	.	.	11.4	27.0	.	No COVID-19 funds	No COVID-19 funds
Marshall Islands	3	3	3	96.9	79.2	97.5	No COVID-19 funds	No COVID-19 funds	.	.	19.8	27.9	.	7.8	11.2
Bhutan	2	3	3	102.3	84.7	95.9	No COVID-19 funds	No COVID-19 funds	.	No COVID-19 funds	.	878.2	2129.5	16.9	50.4
Maldives	1	3	3	118.5	88.2	88.8	Impossible	Impossible	.	.	No COVID-19 funds	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds
Mauritania	1	2	3	119.2	118.0	85.1	Impossible	Impossible	.	Impossible	.	31.8	.	40.1	62.3
Senegal	2	3	3	109.7	85.7	82.0	Impossible	.	0.6	No COVID-19 funds	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
Tanzania	3	3	3	64.1	67.9	81.6	No COVID-19 funds	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds	51161.9	73989.9
Uzbekistan	2	3	3	107.6	99.9	75.4	Impossible	.	8.6	No COVID-19 funds	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds	No COVID-19 funds
El Salvador	2	2	3	109.4	111.1	57.6	Impossible	.	16.1	No COVID-19 funds	.	No COVID-19 funds	.	No COVID-19 funds	No COVID-19 funds

Source: Authors' calculations

## Disaster and Emergency Funds

Twenty-two countries had pre-existing disaster and emergency funds, which they continued to use through 2022. Many of these funds primarily target natural disaster responses, often allocating a smaller proportion to health than COVID-19 funds. In the few countries where the health allocation is known, it tends to be lower than that of the COVID-19 funds. The average share directed to health is 14.5 percent, with the maximum share reaching 38.7 percent. Again, assuming that countries typically allocate less than 40 percent of their disaster and emergency funds to health leads to the criterion that identifies plausible transitions between categories.

## CGHS Levels

Table A3.7 presents annual data for each country that maintains emergency and disaster funds, the CGHS categories, CGHS indexes, as well as the percentage of available emergency and disaster funds

needed to change the CGHS category, assuming that none of these funds was allocated to health in 2019. For example, Tuvalu in 2022 would have required 19.9 percent of the available emergency and disaster funds to move to the high category. According to the 40 percent criterion, this is plausible.

**Table A3.7. Potential Impact of Including Spending from Emergency and Disaster Funds on CGHS Index Categories (Shown Only for Countries with Emergency and Disaster Funds), 2020-22**

Country	2020 group	2021 group	2022 group	2020 CGHS index	2021 CGHS index	2022 CGHS index	2020 emergency fund share change needed to move to low	2020 emergency fund share change needed to move to moderate	2020 emergency fund share change needed to move to high	2021 emergency fund share change needed to move to low	2021 emergency fund share change needed to move to moderate	2021 emergency fund share change needed to move to high	2022 emergency fund share change needed to move to low	2022 emergency fund share change needed to move to moderate	2022 emergency fund share change needed to move to high
Moldova	1	1	1	125.9	186.8	162.0	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Benin	1	2	1	261.9	116.8	143.8	Impossible	Impossible	.	Impossible	Impossible	84.4	Impossible	Impossible	.
Timor-Leste	1	1	1	129.9	215.5	138.5	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Philippines	1	1	1	141.2	178.0	135.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Zambia	2	1	1	130.3	135.5	132.1	Impossible	.	493.1	Impossible	Impossible	.	Impossible	Impossible	.
Bhutan	1	2	1	126.4	119.1	123.4	Impossible	Impossible	.	Impossible	Impossible	21.2	Impossible	Impossible	.
St. Vincent and the Grenadines	1	1	1	135.6	137.5	120.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Honduras	2	2	1	106.5	122.8	117.1	Impossible	.	145.5	Impossible	Impossible	65.9	Impossible	Impossible	.
Nicaragua	2	1	1	104.3	146.8	113.1	Impossible	.	460.3	Impossible	Impossible	.	Impossible	Impossible	.
India	2	2	2	113.3	116.6	111.5	Impossible	.	160.5	Impossible	Impossible	347.9	Impossible	.	36.2
Maldives	2	3	2	115.4	94.9	111.2	Impossible	.	15.8	Impossible	464.9	2528.6	Impossible	.	1487.7
Pakistan	2	2	2	107.1	115.8	110.8	Impossible	.	90.2	Impossible	Impossible	469.2	Impossible	.	6.3
Morocco	1	2	2	125.8	118.5	110.8	Impossible	Impossible	.	Impossible	Impossible	374.1	Impossible	.	71.9
Vanuatu	2	2	2	114.5	111.1	110.2	Impossible	.	19.8	Impossible	Impossible	162.5	Impossible	.	28.8
Papua New Guinea	1	3	2	121.5	89.8	104.6	Impossible	Impossible	.	Impossible	767.2	2751.1	Impossible	.	2277.4
Fiji	2	2	2	102.3	112.5	104.6	Impossible	.	4690.9	Impossible	Impossible	2835.9	Impossible	.	3041.9
Tuvalu	1	3	2	131.7	97.5	103.6	Impossible	Impossible	.	Impossible	4.0	40.7	Impossible	.	19.9
Bolivia	2	2	2	111.8	107.4	102.1	Impossible	.	Impossible	Impossible	Impossible	292.2	Impossible	.	233.7
Dominica	2	3	2	100.4	99.8	100.9	Impossible	.	Impossible	Impossible	3.0	291.9	Impossible	.	78.2
Tanzania	3	3	3	65.7	75.3	94.3	.	1447020.5	2186808.5	.	1642571.6	3393984.5	.	Impossible	Impossible
Liberia	2	3	3	132.5	85.2	80.4	Impossible	.	1.0	Impossible	Impossible	1335.1	3367.5	1876.0	3140.9
El Salvador	1	1	3	122.0	131.6	63.3	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	6558.7	8783.0

Source: Authors' calculations

**Table A3.8. Potential Impact of Including Spending from Emergency and Disaster Funds on CGHS Share Index Categories (Shown Only for Countries with Emergency and Disaster Funds), 2020-22**

Country	2020 group	2021 group	2022 group	2020 CGHS index	2021 CGHS index	2022 CGHS index	2020 emergency fund share change needed to move to low	2020 emergency fund share change needed to move to moderate	2020 emergency fund share change needed to move to high	2021 emergency fund share change needed to move to low	2021 emergency fund share change needed to move to moderate	2021 emergency fund share change needed to move to high	2022 emergency fund share change needed to move to low	2022 emergency fund share change needed to move to moderate	2022 emergency fund share change needed to move to high
Zambia	2	1	1	120.8	138.3	142.1	Impossible	Impossible	.	5.1	Impossible	Impossible	Impossible	Impossible	.
Moldova	1	1	1	117.5	159.4	135.3	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Honduras	2	2	1	109.4	112.4	121.9	Impossible	.	56.2	Impossible	.	190.1	Impossible	Impossible	.
Vanuatu	1	2	1	114.4	113.9	111.6	Impossible	Impossible	.	Impossible	Impossible	81.8	Impossible	Impossible	.
Fiji	1	1	1	108.9	122.2	111.5	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Philippines	1	1	1	132.3	152.0	111.0	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Timor-Leste	1	1	1	143.2	189.1	110.7	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Tuvalu	1	3	1	124.2	90.3	105.3	Impossible	Impossible	.	Impossible	17.1	32.2	Impossible	Impossible	.
Papua New Guinea	2	3	2	113.1	92.0	107.4	Impossible	.	29.9	Impossible	589.2	2185.9	Impossible	.	235.8
Bolivia	1	2	2	118.0	119.6	105.8	Impossible	Impossible	.	Impossible	.	29.7	Impossible	.	52.7
Pakistan	2	2	2	103.5	118.7	101.6	Impossible	.	91.2	Impossible	.	133.4	Impossible	.	28.0
Benin	1	3	3	198.8	81.9	99.6	Impossible	Impossible	.	Impossible	228.3	502.5	.	4.6	102.4
St. Vincent and the Grenadines	1	1	3	125.3	110.8	99.4	Impossible	Impossible	.	Impossible	Impossible	.	.	592.3	1719.4
Morocco	2	2	3	109.7	106.3	99.3	Impossible	.	156.2	Impossible	.	810.4	.	33.8	433.2
India	2	2	3	105.0	105.9	97.5	Impossible	.	356.0	Impossible	.	617.1	.	107.6	458.1
Nicaragua	2	1	3	100.7	123.0	97.1	Impossible	.	471.0	Impossible	Impossible	.	.	591.4	2240.4
Bhutan	2	3	3	102.3	84.7	95.9	Impossible	.	318.8	.	62.8	152.3	.	803.0	2400.4
Dominica	3	3	3	76.6	89.7	92.4	.	Impossible	Impossible	Impossible	147.4	269.9	.	46.9	53.6
Maldives	1	3	3	118.5	88.2	88.8	Impossible	Impossible	.	.	1163.5	2010.3	.	5980.6	6559.9
Liberia	1	3	3	128.7	95.5	87.5	Impossible	Impossible	.	.	364.0	1346.9	.	1098.7	1015.9
Tanzania	3	3	3	64.1	67.9	81.6	.	1553514.9	2147722.3	.	2360573.0	3960555.0	Impossible	Impossible	Impossible
El Salvador	2	2	3	109.4	111.1	57.6	Impossible	.	4.6	Impossible	.	2163.4	.	8338.2	9954.5

Source: Authors' calculations

The number of countries that could plausibly be reclassified remains small. In 2022, four countries, in 2021, three countries, and in 2020, three countries could potentially move up to a higher category. However, this is likely an overestimation, as it presumes that these countries allocated no resources from their disaster and emergency funds to health in 2019 yet redirected their natural disaster-focused funds for health purposes in subsequent years.

#### *CGHS Shares*

The robustness analysis for CGHS share indexes appears in Table A3.8. As with CGHS levels, only a small number of countries plausibly changed in CGHS category when these additional funds were accounted for. Three countries in 2022, two countries in 2021, and three countries in 2020 could move to higher categories.

#### *Contingency Funds*

Throughout 2019–22, 48 countries maintained contingency funds. It is generally unclear how much of these was directed to health. Among the seven countries for which the share is known, the average was 28.3 percent but heterogeneity between and within countries was large. For example, Moldova and Uganda allocated 0 percent to health in 2019 but increased the allocation to 20 percent to 40 percent during the COVID-19 crisis. On the other hand, Timor-Leste directed 50 percent of contingency funds to health in 2019, followed by 0 percent in 2020 and then again 50 percent in 2021. Given that contingency funds served multiple purposes and usually would have allocated a lower share of funds to health than COVID-19 or emergency and disaster funds, it is reasonable to assume that contingency shares for health below 30 percent are feasible, but not above 30 percent.

#### *CGHS Levels*

Table A3.9 shows information for each country that has contingency funds. It presents data on the CGHS categories and CGHS indexes as well as the percentage of available contingency funds needed to change the CGHS category, assuming that none of these funds was allocated to health in 2019. For example, in Kosovo in 2022, it would have required 3.5 percent of the available contingency funds to move to the high category. In 2022, 10 countries could have been plausibly reclassified into a higher category; in 2021, seven countries; and in 2020, four countries.

#### *CGHS Shares*

Incorporating omitted contingency funds does not substantially impact the health share reclassification trends either (Table A3.10). In 2022, eight countries could have plausibly transitioned to higher categories. The numbers in preceding years are similar: six countries in 2021 and seven countries in 2020.

In conclusion, the analysis reveals that the impact of COVID-19 funds on CGHS categories was limited due to their implementation in only a few countries outside the health sector. Similarly, while disaster and emergency funds were more widespread, their relatively smaller size resulted in a modest effect on CGHS. Although common in many countries, contingency funds also had a limited impact on CGHS trends. The small number of plausible reclassifications is worth noting, given the substantial presence of special funds in many countries and the assumption that disaster and emergency funds or contingency funds were not used for health purposes in 2019.

**Table A3.9. Potential Impact of Including Spending from Contingency Funds on CGHS Index Categories (Shown Only for Countries with Contingency Funds), 2020-22**

Country	2020 group	2021 group	2022 group	2020 CGHS index	2021 CGHS index	2022 CGHS index	2020 contingency share change need to move to low	2020 contingency share change need to move to moderate	2020 contingency share change need to move to high	2021 contingency share change need to move to low	2021 contingency share change need to move to moderate	2021 contingency share change need to move to high	2022 contingency share change need to move to low	2022 contingency share change need to move to moderate	2022 contingency share change need to move to high
Nepal	1	1	1	120.8	150.7	175.3	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Moldova	1	1	1	125.9	186.8	162.0	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Guyana	1	1	1	185.1	194.2	150.7	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Togo	1	1	1	177.4	167.0	149.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Benin	1	2	1	261.9	116.8	143.8	Impossible	Impossible	.	Impossible	.	1.9	Impossible	Impossible	.
Mongolia	1	1	1	121.8	157.9	141.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Timor-Leste	1	1	1	129.9	215.5	138.5	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Uganda	2	1	1	117.9	135.8	138.4	Impossible	.	265.4	Impossible	Impossible	.	Impossible	Impossible	.
Angola	1	1	1	138.2	136.2	137.0	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Philippines	1	1	1	141.2	178.0	135.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Sierra Leone	1	1	1	194.1	196.0	133.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Gambia, The	1	1	1	179.3	126.7	132.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Zambia	2	1	1	130.3	135.5	132.1	Impossible	.	110.7	Impossible	Impossible	.	Impossible	Impossible	.
Cabo Verde	1	1	1	122.0	162.5	131.5	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
St. Lucia	1	1	1	134.6	140.0	129.2	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Mauritania	1	2	1	120.6	125.9	124.3	Impossible	Impossible	.	Impossible	.	0.9	Impossible	Impossible	.
Bhutan	1	2	1	126.4	119.1	123.4	Impossible	Impossible	.	Impossible	.	14.0	Impossible	Impossible	.
St. Vincent and the Grenadines	1	1	1	135.6	137.5	120.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Honduras	2	2	1	106.5	122.8	117.1	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	Impossible	.
Egypt, Arab Rep.	2	2	1	110.3	121.8	115.3	Impossible	.	7.8	Impossible	.	4.6	Impossible	Impossible	.
Malawi	2	1	1	103.5	136.1	114.9	Impossible	.	1068.1	Impossible	Impossible	.	Impossible	Impossible	.
Nicaragua	2	1	1	104.3	146.8	113.1	Impossible	.	7406.8	Impossible	Impossible	.	Impossible	Impossible	.
Kosovo	2	1	2	116.2	125.0	113.9	Impossible	.	27.1	Impossible	Impossible	.	Impossible	.	3.5
Tonga	2	2	2	112.0	117.4	112.8	Impossible	.	Impossible	Impossible	.	44.2	Impossible	.	9.3
Tunisia	1	1	2	123.0	129.1	111.9	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	.	0.9
India	2	2	2	113.3	116.6	111.5	Impossible	.	1694.9	Impossible	.	72.4	Impossible	.	Impossible
Maldives	2	3	2	115.4	94.9	111.2	Impossible	.	Impossible	.	Impossible	Impossible	Impossible	.	14.1
Pakistan	2	2	2	107.1	115.8	110.8	Impossible	.	Impossible	Impossible	.	7582.1	Impossible	.	25.4
Morocco	1	2	2	125.8	118.5	110.8	Impossible	Impossible	.	Impossible	.	27.0	Impossible	.	11.4
Mali	2	2	2	118.8	118.7	108.6	Impossible	.	2.6	Impossible	.	0.9	Impossible	.	1.3
Tajikistan	1	1	2	129.6	127.5	108.5	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	.	86.0
Solomon Islands	2	2	2	105.1	107.2	104.1	Impossible	.	324.1	Impossible	.	296.3	Impossible	.	140.3
Tuvalu	1	3	2	131.7	97.5	103.6	Impossible	Impossible	.	.	32.7	330.1	Impossible	.	368.0
Samoa	2	2	2	105.3	105.2	103.5	Impossible	.	73.1	Impossible	.	108.3	Impossible	.	47.8
Uzbekistan	2	2	2	114.0	118.4	101.3	Impossible	.	82.5	Impossible	.	120.6	Impossible	.	198.6
Algeria	1	2	2	123.3	113.8	100.3	Impossible	Impossible	.	Impossible	.	6.3	Impossible	.	5.3
Lesotho	2	3	2	108.6	83.2	100.3	Impossible	.	197.7	.	66.8	171.6	Impossible	.	105.5
Burundi	2	2	2	114.1	118.8	100.1	Impossible	.	4671.1	Impossible	.	160.3	Impossible	.	1194.6
Ghana	2	2	3	101.6	110.3	98.7	Impossible	.	104.1	Impossible	.	217.5	.	33.0	343.7
Kenya	1	3	3	117.8	95.5	97.1	Impossible	Impossible	.	Impossible	Impossible	.	96.8	512.9	.
Marshall Islands	3	3	3	99.1	81.8	95.0	.	123.2	2594.1	.	2803.1	6251.4	.	762.4	2996.2
Grenada	3	2	3	88.2	101.0	94.9	.	Impossible	Impossible	Impossible	.	Impossible	.	25.2	98.0
Kyrgyz Republic	2	2	3	112.7	112.5	93.9	Impossible	.	210.7	Impossible	.	21388.9	.	59.3	179.4
Sri Lanka	1	2	3	127.2	115.1	91.0	Impossible	Impossible	.	Impossible	.	69.3	.	81.3	193.6
Myanmar	3	2	3	84.9	109.5	84.4	.	No contingency	No contingency	Impossible	.	83.9	.	No contingency	No contingency
Lao PDR	2	2	3	102.1	103.9	83.9	Impossible	.	173.9	Impossible	.	Impossible	.	Impossible	Impossible
Liberia	2	3	3	132.5	85.2	80.4	Impossible	.	0.3	.	479.0	1208.3	.	184.4	308.7
Comoros	3	3	3	69.8	86.2	78.4	.	No contingency	No contingency	.	301.7	877.7	.	621.3	978.1
Cambodia	1	1	3	121.3	187.5	72.9	Impossible	Impossible	.	Impossible	Impossible	.	.	23.0	33.5

Source: Authors' calculations

**Table A3.10. Potential Impact of Including Spending from Contingency Funds on CGHS Share Index Categories (Shown Only for Countries with Contingency Funds), 2020-22**

Country	2020 group	2021 group	2022 group	2020 CGHS index	2021 CGHS index	2022 CGHS index	2020 contingency share change need to move to low	2020 contingency share change need to move to moderate	2020 contingency share change need to move to high	2021 contingency share change need to move to low	2021 contingency share change need to move to moderate	2021 contingency share change need to move to high	2022 contingency share change need to move to low	2022 contingency share change need to move to moderate	2022 contingency share change need to move to high
Nepal	1	1	1	124.7	150.7	173.8	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Gambia, The	1	1	1	173.2	141.9	145.2	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Angola	1	1	1	132.7	159.4	144.2	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Zambia	2	1	1	120.8	138.3	142.1	Impossible	.	1.2	Impossible	Impossible	.	Impossible	Impossible	.
Algeria	1	1	1	129.2	134.3	138.6	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Cabo Verde	1	1	1	122.3	173.7	136.9	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Moldova	1	1	1	117.5	159.4	135.3	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Mongolia	2	1	1	107.9	144.5	131.2	Impossible	.	86.6	Impossible	Impossible	.	Impossible	Impossible	.
St. Lucia	1	1	1	129.2	138.1	127.1	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Solomon Islands	2	1	1	112.5	125.3	122.4	Impossible	.	31.1	Impossible	Impossible	.	Impossible	Impossible	.
Uganda	2	1	1	105.7	117.4	122.3	Impossible	.	305.6	Impossible	Impossible	.	Impossible	Impossible	.
Honduras	2	2	1	109.4	112.4	121.9	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	Impossible	.
Samoa	2	2	1	113.5	108.5	119.7	Impossible	.	1.2	Impossible	.	65.4	Impossible	Impossible	.
Egypt, Arab Rep.	2	1	1	113.4	123.9	116.0	Impossible	.	0.3	Impossible	Impossible	.	Impossible	Impossible	.
Lesotho	2	3	1	111.0	84.6	111.8	Impossible	.	60.2	.	60.0	144.9	Impossible	Impossible	.
Philippines	1	1	1	132.3	152.0	111.0	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Timor-Leste	1	1	1	143.2	189.1	110.7	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Kosovo	1	1	1	110.6	121.9	110.7	Impossible	Impossible	.	Impossible	Impossible	.	Impossible	Impossible	.
Myanmar	3	2	1	77.5	110.0	109.6	.	No contingency	No contingency	Impossible	.	58.2	No contingency	No contingency	.
Mali	2	2	1	111.0	108.8	106.0	Impossible	.	2.0	Impossible	.	0.9	Impossible	Impossible	.
Tuvalu	1	3	1	124.2	90.3	105.3	Impossible	Impossible	.	.	139.1	261.6	Impossible	Impossible	.
Sri Lanka	1	2	2	124.3	114.5	105.7	Impossible	Impossible	.	Impossible	.	44.5	Impossible	.	19.4
Pakistan	2	2	2	103.5	118.7	101.6	Impossible	.	Impossible	Impossible	.	2155.5	Impossible	.	112.6
Tunisia	1	1	3	116.7	122.7	99.8	Impossible	Impossible	.	Impossible	Impossible	.	.	0.4	15.2
Benin	1	3	3	198.8	81.9	99.6	Impossible	Impossible	.	.	5.0	11.1	.	0.2	3.8
St. Vincent and the Grenadines	1	1	3	125.3	110.8	99.4	Impossible	Impossible	.	Impossible	Impossible	.	.	1.5	4.3
Morocco	2	2	3	109.7	106.3	99.3	Impossible	.	26.0	Impossible	.	58.6	.	5.4	68.9
Tonga	1	3	3	110.5	93.7	98.7	Impossible	Impossible	.	.	68.6	162.3	.	7.3	13.2
Marshall Islands	3	3	3	96.9	79.2	97.5	.	422.1	1594.6	.	3299.6	4657.1	.	370.7	531.2
India	2	2	3	105.0	105.9	97.5	Impossible	.	3759.4	Impossible	.	128.4	.	Impossible	Impossible
Nicaragua	2	1	3	100.7	123.0	97.1	Impossible	.	7580.1	Impossible	Impossible	.	.	2237.4	8476.0
Bhutan	2	3	3	102.3	84.7	95.9	Impossible	.	9.3	.	41.4	100.3	.	20.3	60.7
Kenya	1	3	3	118.9	95.2	95.5	Impossible	Impossible	.	.	Impossible	Impossible	.	153.3	432.9
Sierra Leone	1	1	3	167.2	150.7	95.5	Impossible	Impossible	.	Impossible	Impossible	.	.	20.9	16.5
Lao PDR	2	2	3	105.1	121.0	95.0	Impossible	.	94.9	Impossible	.	Impossible	Impossible	Impossible	Impossible
Comoros	3	3	3	77.2	90.7	93.9	.	No contingency	No contingency	.	192.9	644.0	.	146.9	343.7
Malawi	3	2	3	89.7	111.4	93.1	.	439.3	1325.8	Impossible	.	5.9	.	757.4	653.8
Tajikistan	1	2	3	125.2	121.1	93.1	Impossible	Impossible	.	Impossible	.	14.3	.	177.7	389.6
Togo	1	1	3	124.0	121.9	91.1	Impossible	Impossible	.	Impossible	Impossible	.	.	85.9	76.9
Maldives	1	3	3	118.5	88.2	88.8	Impossible	Impossible	.	.	Impossible	Impossible	.	56.6	62.1
Liberia	1	3	3	128.7	95.5	87.5	Impossible	Impossible	.	.	130.6	483.3	.	108.0	99.8
Mauritania	1	2	3	119.2	118.0	85.1	Impossible	Impossible	.	Impossible	.	7.4	.	33.5	51.9
Ghana	3	3	3	73.6	89.1	84.5	.	238.2	362.3	.	182.6	546.5	.	452.9	692.7
Kyrgyz Republic	1	2	3	120.2	118.7	80.9	Impossible	Impossible	.	Impossible	.	4537.4	.	214.0	306.1
Burundi	2	1	3	114.5	115.4	76.6	Impossible	.	1611.1	Impossible	Impossible	.	.	2793.2	2680.7
Uzbekistan	2	3	3	107.6	99.9	75.4	Impossible	.	151.5	.	1.9	390.8	.	590.7	788.0
Guyana	1	1	3	119.1	122.6	74.4	Impossible	Impossible	.	Impossible	Impossible	.	.	213.4	222.5
Grenada	3	3	3	82.9	77.0	66.6	.	Impossible	Impossible	.	Impossible	Impossible	.	235.6	243.3
Cambodia	2	1	3	109.6	158.5	64.7	Impossible	.	6.9	Impossible	Impossible	.	.	33.7	41.6

Source: Authors' calculations

## Best- and Worst-Case Scenarios

The study constructed best- and worst-case scenarios to assess the largest plausible impact of the omitted government health spending components on country-level trends. For each scenario, resulting shifts in trends were measured by counting the number of countries that transition between categories (for example, moderate to low response for CGHS levels or low to high landing for CGHS share). The two scenarios were defined independently for the landing (2022) and response (2020–21), and for both, CGHS levels and CGHS shares.

The best-case scenario assumed that any omitted component that could potentially increase a country's landing or response would do so. Components that could lower a country's landing or response were disregarded. This meant moving countries from a low landing or response to the moderate category or from a moderate landing or response to the high category. The increased impact derived mainly from the incorporation of special funds.

Conversely, the worst-case scenario assumed that any omitted component that could potentially increase a country's landing or response would do so. Components that could lower a country's landing or response were disregarded. This meant moving countries from a high landing or response to the moderate category and from a moderate landing or response to the low category. The lower impact exclusively derived from the incorporation of social health insurance contributions and, to a lesser extent, from the incorporation of subnational spending.

The best- and worst-case scenarios do not account for interactions between the additional components. Theoretically, a combined effect from SHI and subnational could move the CGHS index below the boundary, whereas no movement would have been detected by looking at SHI and subnational in isolation. While this is possible, it is unlikely to happen, as high subnational shares and high SHI shares rarely go together. Additionally, special funds tend to have the opposite effect of SHI and subnational.

The results presented in the following tables summarize the outcomes of the best- and worst-case scenarios. They indicate the country category in the base case and the potential movements between categories based on the two scenarios. It is worth noting that even with extreme assumptions, the number of countries shifting between categories is relatively small. In most scenarios, the total number of country movements remains in single digits.

Furthermore, the best- and worst-case scenarios exhibit symmetry around the base case. While some countries may experience higher or lower changes in government health spending levels or shares than indicated by CGHS, these variations are likely to balance out at an aggregate level. Overall, the trends in CGHS levels and shares should accurately reflect the aggregate trends in government health spending levels and shares.

## Government Health Spending Levels, Landing, 2022

### Best-Case Scenario

	Best-Case Scenario Landing Category		
Base Case Landing Category	High	Moderate	Low
High	n/a	n/a	n/a
Moderate	Kosovo, Tong, Tunisia, India, Maldives, Pakistan, Morocco, Vanuatu, Mali, Tuvalu, Bolivia, Algeria	Moved to high landing.	n/a
Low	None	Ghana, Marshall Islands, Grenada, Tanzania, Cambodia	Moved to moderate landing.
<b>Net change</b>	<b>+12</b>	<b>-7</b>	<b>-5</b>

### Worst-Case Scenario

	Worst-Case Scenario Landing Category		
Base Case Landing Category	High	Moderate	Low
High	Moved to moderate or low landing.	Egypt	Nicaragua
Moderate	n/a	Moved to low landing.	Tunisia, Morocco, Bolivia, Algeria
Low	n/a	n/a	n/a
<b>Net change</b>	<b>-2</b>	<b>-3</b>	<b>+5</b>

Source: Authors' calculations.

## Government Health Spending Levels Response, 2020-21

### Best-Case Scenario

	Best-Case Scenario Response Category		
Base Case Response Category	High	Moderate	Low
High	n/a	n/a	n/a
Moderate	Egypt, Tonga, Vanuatu, Mali, Fiji, Bolivia, Uzbekistan	Moved to high response.	n/a
Low	Marshall Islands	PNG, Tuvalu, Dominica	Moved to moderate or high response.
<b>Net change</b>	<b>+8</b>	<b>-4</b>	<b>-4</b>

### Worst-Case Scenario

	Worst-Case Scenario Response Category		
Base Case Response Category	High	Moderate	Low
High	Moved to moderate or low response.	Rwanda, Mauritania, Bhutan, Tunisia, Sri Lanka, El Salvador	Nicaragua, Morocco, Algeria
Moderate	n/a	Moved to low response.	Honduras, Bolivia, Ghana
Low	n/a	n/a	n/a
<b>Net change</b>	<b>-9</b>	<b>+3</b>	<b>+6</b>

Source: Authors' calculations.

## Government Health Spending Share, Landing, 2022

### Best-Case Scenario

	Best-Case Scenario Landing Category	
Base Case Landing Category	Higher share	Lower share
Higher share	n/a	n/a
Lower share	Benin, Sierra Leone, Bhutan, St. Vincent and the Grenadines, Nicaragua, Tonga, Tunisia, Morocco, Marshall Islands, Haiti	Moved to higher share.
<b>Net change</b>	<b>+10</b>	<b>-10</b>

### Worst-Case Scenario

	Worst-Case Scenario Landing Category	
Base Case Landing Category	Higher share	Lower share
Higher share	Moved to lower share.	Philippines, Rwanda, Mali, Bolivia
Lower share	n/a	n/a
<b>Net change</b>	<b>-4</b>	<b>+4</b>

Source: Authors' calculations.

## Government Health Spending Share, Response, 2020-21

### Best-Case Scenario

	Best-Case Scenario Response Category		
Base Case Response Category	High	Moderate	Low
High	n/a	n/a	n/a
Moderate	Morocco, Mali, Côte d'Ivoire, Samoa, El Salvador	Moved to high response.	n/a
Low	Benin, Tonga, Papua New Guinea, Tuvalu, Uzbekistan, Marshall Islands	None	Moved to moderate or high response.
<b>Net change</b>	<b>+11</b>	<b>-5</b>	<b>-6</b>

### Worst-Case Scenario

	Worst-Case Scenario Response Category		
Base Case Response Category	High	Moderate	Low
High	Moved to moderate or low response.	Egypt, Sri Lanka	Mongolia, Nicaragua, Tunisia, Bolivia, Cambodia
Moderate	n/a	Moved to low response.	Rwanda, Morocco
Low	n/a	n/a	n/a
<b>Net change</b>	<b>-7</b>	<b>0</b>	<b>+7</b>

Source: Authors' calculations.