

# **A DATASET OF ECONOMIC RESPONSES OF GOVERNMENTS TO COVID-19**

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## **ABSTRACT**

We introduce a new dataset of ten economic measures in percentage of gross domestic product implemented by governments worldwide between January 2020 and June 2021 to fight COVID-19. The measures coded include fiscal measures (wage support, cash transfers, in-kind transfers, tax cuts, sectorial support and credit schemes), tax deferrals, off-budget measures, and main policy rate cuts. The data can be used to study the impact of economic measures on different outcomes, and to understand the diffusion of economic policies during crises.

## INTRODUCTION

Several research groups expressed the intention to inventory all the measures taken by governments during the COVID-19 pandemic (Hale et al. 2021, Cheng et al. 2020, Porcher, 2020). However, most of these efforts have primarily focused on NPIs and have rarely included the systematically quantified expenses related to a variety of economic measures. Some projects either focus on some specific measures or on some geographical areas. For example, Gentilini et al. (2020) created a database that lists social protection actions taken by governments during the COVID-19 pandemic in 151 countries but does not cover overall fiscal responses. Other projects have focused on geographical areas, such as the Asian Development Bank's COVID-19 Policy or the COVID-19 Observatory in Latin America and the Caribbean.<sup>1</sup>

In this paper, we introduce a new dataset of government COVID-19 fiscal responses. It intends to categorize government spending directed at COVID-19 for each country worldwide as precisely as possible. It contains both on-budget measures (targeted at individuals, workers or firms) and off-budget measures (including credit schemes and tax deferrals). By including a quantitative dimension of the measures taken in the form of amounts spent for different measures, the database adds much value to the study of the types of policy instruments used as well as their outcomes following implementation during the pandemic.

## METHODOLOGY

The database draws up an inventory of the different economic and financial measures taken in 187 countries between January 1, 2020, and June 1, 2021. The data collection stopped after June 2021 as vaccination started to become generalized in many countries.

The data were collected via a wide variety of sources. The two main sources are the IMF fiscal monitor database in response to the COVID-19 pandemic<sup>2</sup> and the IMF COVID-19 policy tracker.<sup>3</sup> The IMF fiscal monitor database summarizes on a quarterly basis from January 2020 until October 2021 the key fiscal measures that governments have announced or taken in response to COVID-19 for the G20 Advanced and Emerging Market Economies, 26 Non-G20 Advanced Economies, 82 Non-G20 Emerging Market Economies, and 59 Low-Income Developing Countries. The database categorizes different types of fiscal support (above-the-

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<sup>1</sup>[COVID-19 \(Coronavirus\): ADB's Response | Asian Development Bank](#)  
[COVID-19 | Economic Commission for Latin America and the Caribbean \(cepal.org\)](#)

<sup>2</sup> [Fiscal Policies Database \(imf.org\)](#)

<sup>3</sup> <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

line and below-the line measures and contingent liabilities) that have different implications for public finances in the near term and beyond. For 115 countries, the list of economic measures is detailed, but few report a detailed inventory of the fiscal responses for each country. The second key source is the COVID-19 policy tracker of the IMF, which summarizes the various fiscal measures taken by countries. Crossing the two sources provides a clear overview of the overall amounts spent and allows us to ventilate the amounts among different measures. Secondary sources include the draft budgetary plans of the European Union countries published on the website of the European Commission, the Organization for Economic Cooperation and Development (OECD), the announcements of central governments and ministries, and official press articles. These secondary sources were useful in obtaining the exact date of the implementation of policies. We cross-checked the information to ensure its accuracy and adapted the figures when necessary.

Based on our reading of the economic measures, we identified 10 standard economic measures that have been taken by governments. For each country-day, we coded the percentage of 2019 GDP spent by the government on different economic measures, usually following a fiscal plan. Coding in percentage, rather than in amounts, allows us to make relevant cross-country comparisons. We used the 2019 GDP as a basis for comparison because countries have been affected very differently by the pandemic. As it is impossible to compute the exact fluxes of government spending on a given day, we coded the percentage disbursed on a given measure at the stated starting day of the plan. When this information could not be retrieved, we used the day of the bill's passage. To capture the real effort of governments, we only considered those amounts that have been disbursed. As governments can announce policies that are sometimes not funded, particularly in developing countries that sometimes rely on foreign or international financial institutions to fund the announced measures, our dataset captures only those measures that were both implemented and funded by governments.

The coded variables are as follows:

- *Fiscal*. This is the global amount spent on a given date, which is then divided between various categories. Fiscal includes additional or foregone revenues that had been specifically targeted at dealing with COVID-19. It does not account for delayed revenues such as tax deferrals and off-budget measures that do not directly affect the annual fiscal deficit. The breakdown of *fiscal* includes *wage support*, *cash transfers*, *in-kind transfers*, *sectoral support*, *tax cuts*, and *credit schemes*.

- *Wage support* gathers all the measures related to wage replacement for COVID-19-related unemployment, subsidies for job retention schemes, short-time work schemes, bonuses for some workers and increases in pensions. *Wage support* is conditional on employment status, e.g., being employed, retired, or recently unemployed.
- *Cash transfers* gather all cash transfers that target individuals rather than jobs. These transfers can either be universal, specifically targeted at some vulnerable populations including elderly individuals, students, and single mothers, or conditional on income.
- *In-kind transfers* include all in-kind benefits provided to the population. It usually takes the form of food baskets or food vouchers delivered to the population, especially to vulnerable households. In-kind transfers also include free public housing rents or electricity bills or vouchers for holidays.
- *Sectorial support*. This variable gathers the measures targeted at companies, administrations, or governments facing difficulties because of the pandemic. In some cases, they are sectorial and intended to protect strategic affected sectors, such as tourism, airlines, or culture-related firms. In other cases, the government may seek to support local governments or the health sector, e.g., to support vaccination efforts. We group in this variable all measures that are targeted at a given sector. This measure captures fiscal spending that is targeted at institutions rather than at individuals.
- *Tax cuts* are the amount of foregone tax revenues related to tax cuts.
- *Credit schemes* are guarantees and lines of credits opened by the government that are included in the annual budget to counteract the effects of COVID-19 on both firms and individuals. In most countries, credit schemes are targeted at firms rather than individuals.
- *Tax deferrals*. This is the amount of delayed taxes. Tax deferrals do not lead to foregone revenues, as the exempted individuals will have to pay taxes at a later date.
- *Off Budget* measures comprise below the line measures, such as equity injections, asset purchases, or loans, and other contingent liabilities, such as off-budget state guarantees on loans and the activity of public corporations on behalf of the government. Equity injections can be directed toward affected companies such as airlines or railway services. Many countries also created off-budget funds guaranteed by the State to provide quasi-equity support to firms. National development banks have also run quasi-fiscal operations on behalf of the State.

- *Policy Rate*. This is meant to capture the evolution of policy rates set up by the Central Bank. The values taken by the variable translate the nominal evolution. For example, a decrease of 1% will be coded -100.

Table 1 reports the descriptive statistics for the different measures.

### *Coding*

For all variables, the coding of the data is done directly in a Stata do file via lines of coding, following the coding method developed by Porcher (2020). Each line of coding identifies the measure to be coded, the scale of the measure in percentage of GDP, the targeted country and the period for which the measure is implemented. The format of the coding is standard and easy to read, even by non-Stata users.

For example, the first plan for wage support was implemented in France on March 20<sup>th</sup>, 2020, for a global amount representing 1.18% of the French 2019 GDP, but only 0.27% were disbursed in the first round, while 0.91% were spent in the second fiscal plan. The line coded is *replace fwage=1.18-0.91 if iso=="FRA" & tin(20mar2020, 20mar2020)*. The second fiscal plan implemented on April 15, 2020, is coded as *replace fiscal=3.43 if iso=="FRA" & tin(15apr2020, 15apr2020)*, and the global amount is ventilated among the different fiscal measures.

The spreadsheet data are created from the coding script, available on the online repository of the dataset ("script\_fiscal.do"). As noted by Porcher (2020), there are many advantages to using such a methodology rather than writing directly in the spreadsheet:

1. The script can be run easily, and potential mistakes in the coding can be easily corrected: if the script does not write, or if it writes more than a unit when it is run, then this indicates a mistake in the coding.
2. Potential errors on measures, scales, dates and countries are more visible to the cross-checkers than they are in a spreadsheet format and can be directly corrected. Verifications or errors can be easily flagged.
3. Our coding scheme forces coders to search and fulfill the dates of implementation of the policies. It also provides more valuable knowledge of the dataset, as we can observe the changes in policies across economic stimuli implemented to face COVID-19.

### *Technical validation*

Three different coders worked from January 2021 until June 2021 on the coding. The coding script was cross-checked by each coder on several occasions and several different points in time. This systematic verification process ensures a homogeneous coding method and avoids mistakes, especially those linked to contradictory interpretations of the classification of the different measures. It also allows, when necessary, correction of the script over time in cases where previously announced measures turned out to be misestimated or unimplemented.

We used the IMF Fiscal Monitor database and the IMF COVID-19 Policy Tracker to obtain information about the amounts spent. When necessary, we also used alternative sources to more precisely categorize the expenditures. All the extra sources that were used to feed the code are reported in an Excel file ('Source.xls'), which is available on the repository of the dataset. This ensures transparent, impartial and consistent coding. These sources, however, had to be consistent with the information supplied by the IMF.

We are aware that collecting data from other sources might lead to the importation of any measurement issues they bring with them. However, we did our best to triangulate the information from the IMF with other sources.

### *Usage note*

The dataset is based on the manual recording of economic measures implemented all around the world. We made our best attempt to capture the real nature of government spending to fight COVID-19, but there might be some remaining errors. Please email the corresponding author if you wish to point out any errors, or leave a message on the GitHub repository.

## **DESCRIPTIVE STATISTICS**

Figure 1 shows the percentage of GDP allocated to fiscal measures, tax deferrals, and off-budget spending, aggregated by continent, as of June 1, 2021. European countries are by far the ones who most often use off-budget measures to counteract the effects of COVID-19 on the economy. This shows that European countries tend to implement indirect measures – such as credit guarantees or capital injections in companies – rather than more direct measures targeted at individuals or firms such as wage compensation.

Figure 2 shows the breakdown of fiscal spending for each continent regarding measures that are neither off-budget nor deferred, as of June 2021. Interestingly, in-kind transfers have been

relatively more used in Africa and Asia. Cash transfers also represent a high share of the total spending in Africa, Asia, and America (including South America). These two observations are consistent with the idea that these regions mostly consist of developing countries, in which much of the economy is still informal. Europe is characterized by wider wage support while Oceania has a strong sectoral support (e.g. investments or increased budget for some sectors) due to its relative isolation.

Figures 3 and 4 map the intensity of measures at the country level. Figure 3 maps the intensity of fiscal measures, tax deferrals, and off-budget measures. Darker colors indicate higher spending in a given measure. Fiscal measures are particularly important in industrialized countries, e.g., Europe and the United States. Tax deferrals and off-budget measures are also particularly important in European countries. Figure 4 displays the intensity of the different fiscal measures at the country-level. Wage support schemes, tax cuts, and sectorial support were particularly generous in industrialized countries. Cash transfers are relatively more important in the Americas, but also in some Sub-Saharan and East Asian countries. In-kind transfers are usually more important in developing countries, e.g. South Asian, South American, and Sub-Saharan countries.

## **CONCLUSIONS**

This paper introduces a new dataset describing the economic measures implemented by governments to fight COVID-19. Further research could use this dataset to assess the impact of various measures such as cash or in-kind transfers on stress, mental health, or mobility across the world.

## REFERENCES

- Cheng, Cindy, Joan Barceló, Allison Hartnett, Robert Kubinec, and Luca Messerschmidt. 2020. COVID-19 Government Response Event Dataset (CoronaNet v1.0). <https://www.coronanet-project.org>
- Gentilini, Ugo, Mohamed Almenfi, Ian Orton, and Pamela Dale. *Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures*. Brief. Washington, DC: World Bank, April 17, 2020. <https://openknowledge.worldbank.org/handle/10986/33635>.
- Hale, Thomas, Noam Angrist, Rafael Goldszmidt, Beatriz Kira, Anna Petherick, Toby Phillips, Samuel Webster, et al. “A Global Panel Database of Pandemic Policies (Oxford COVID-19 Government Response Tracker).” *Nature Human Behaviour* 5, no. 4 (April 2021): 529–538. <https://doi.org/10.1038/s41562-021-01079-8>
- Porcher, Simon. “Response2covid19, a Dataset of Governments’ Responses to COVID-19 All around the World.” *Scientific Data* 7, no. 1 (November 25, 2020): 423. <https://www.nature.com/articles/s41597-020-00757-y>.



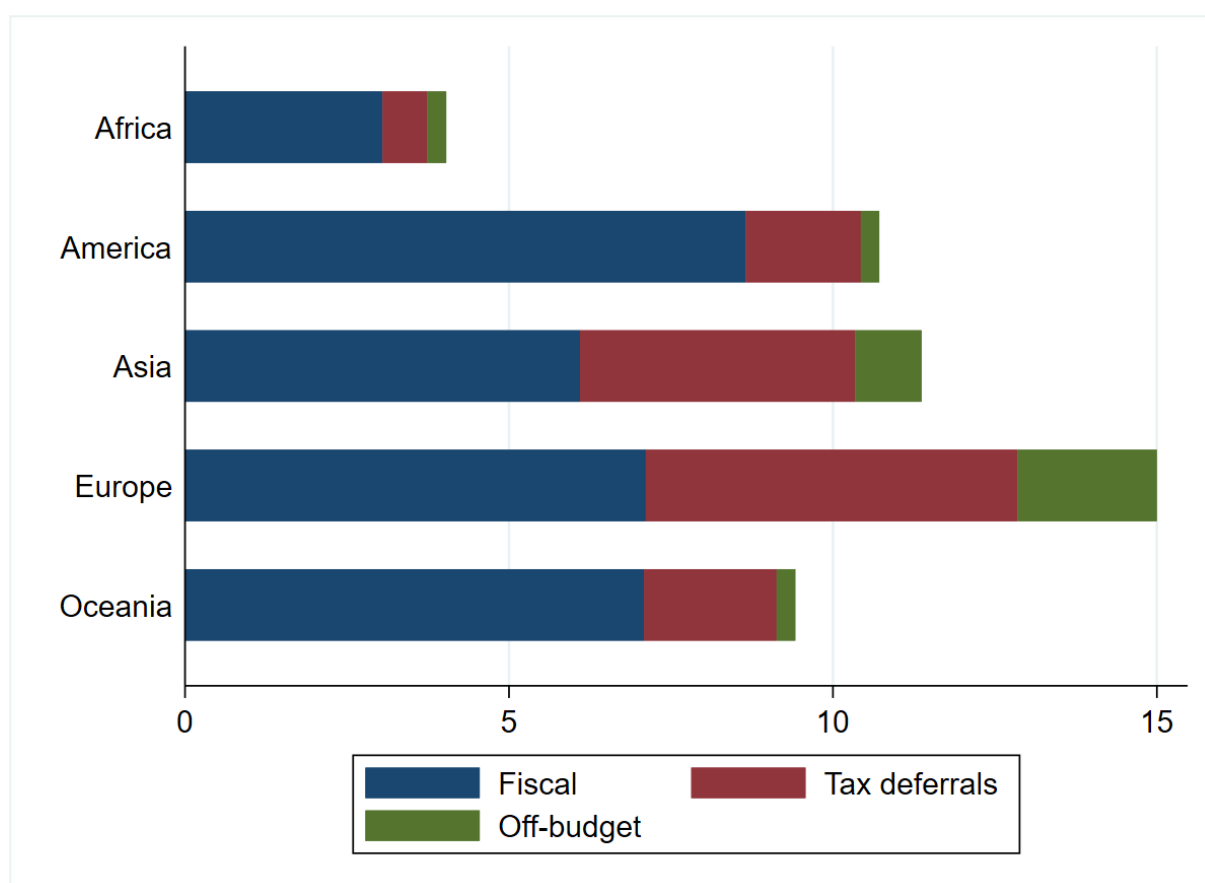
## TABLES AND FIGURES

**Table 1. Descriptive statistics and definitions**

| Variable          | Mean   | St.dev. | Min   | Max   |
|-------------------|--------|---------|-------|-------|
| Fiscal            | .0099  | .2195   | 0     | 15.83 |
| Wage support      | .0017  | .0561   | 0     | 6.3   |
| Cash transfers    | .0010  | .0392   | 0     | 4.6   |
| In-kind transfers | .0002  | .0106   | 0     | 1.27  |
| Sectorial support | .0028  | .0762   | 0     | 7.02  |
| Tax cuts          | .0006  | .0297   | 0     | 3.85  |
| Credit schemes    | .0007  | .0341   | 0     | 4.7   |
| Tax deferrals     | .0015  | .0802   | 0     | 13.8  |
| Off budget        | .0052  | .2111   | 0     | 28.66 |
| Policy rate       | -.1208 | 10.9804 | -2000 | 2000  |

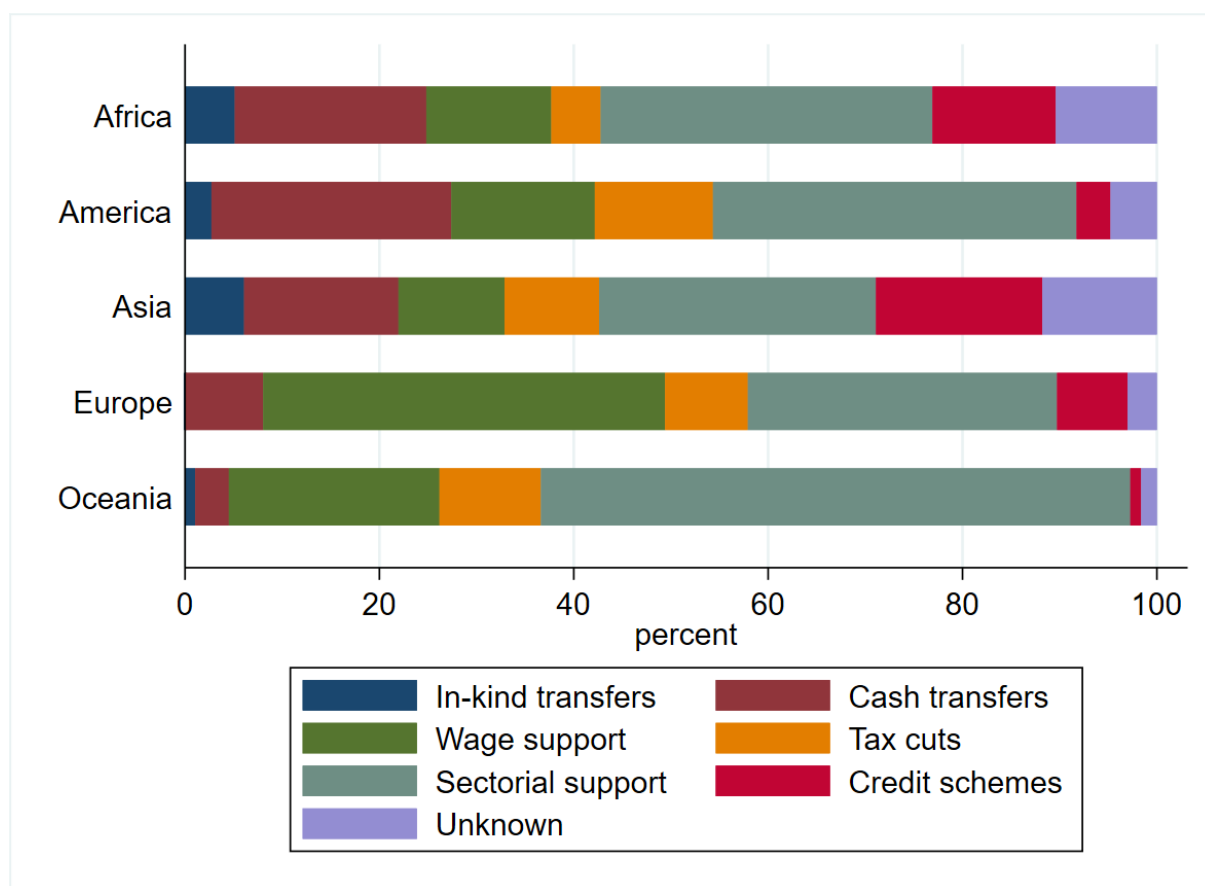
Note: the statistics are computed for each country-day of the sample.

**Figure 1. Fiscal measures, tax deferrals, and off-budget measures by continent**



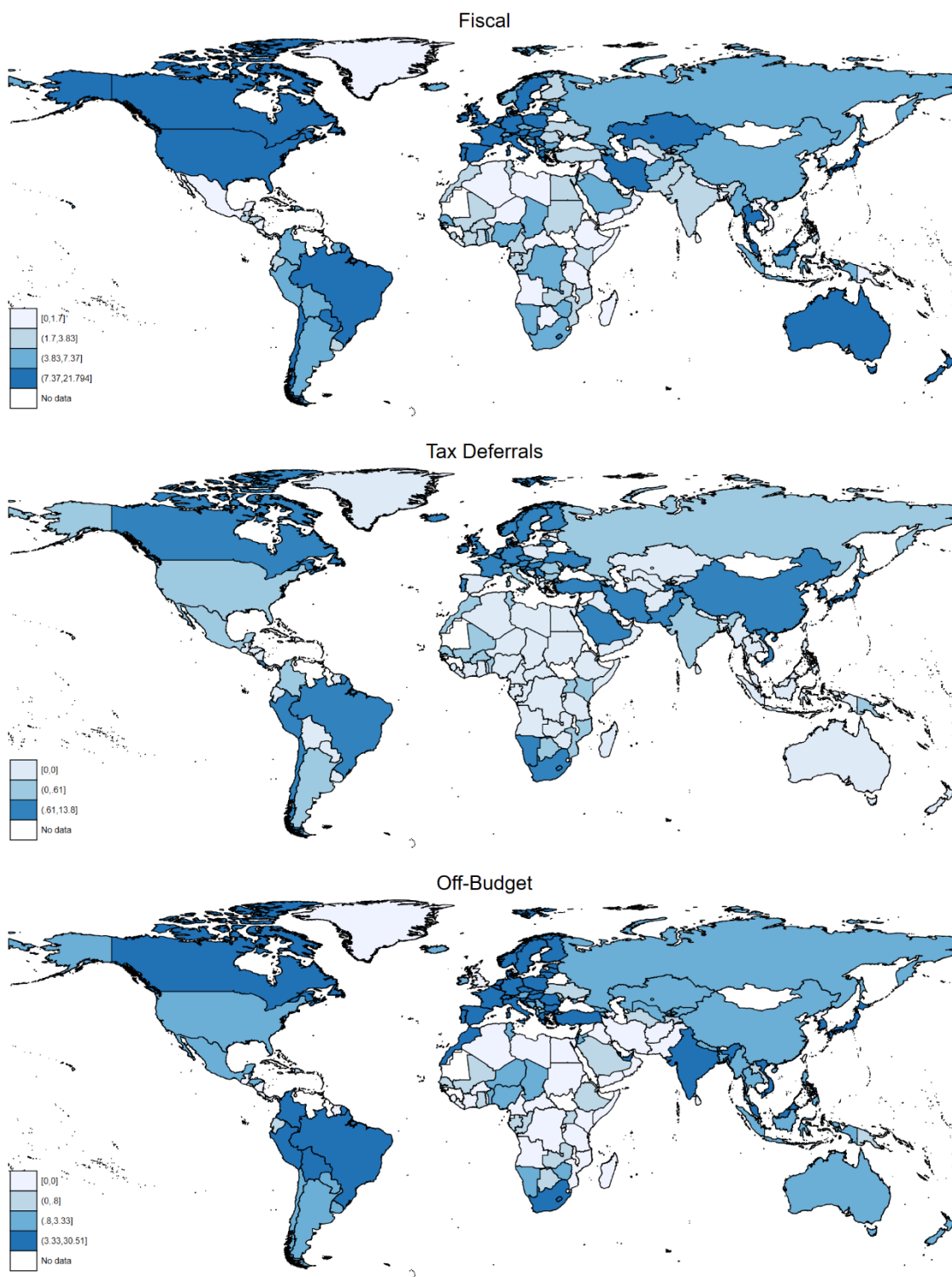
**Note:** The figure plots the average percentage of GDP allocated to fiscal spending, tax deferrals, and off-budget measures in each continent as of June 1, 2021.

**Figure 2. Distribution of fiscal spending by continent**



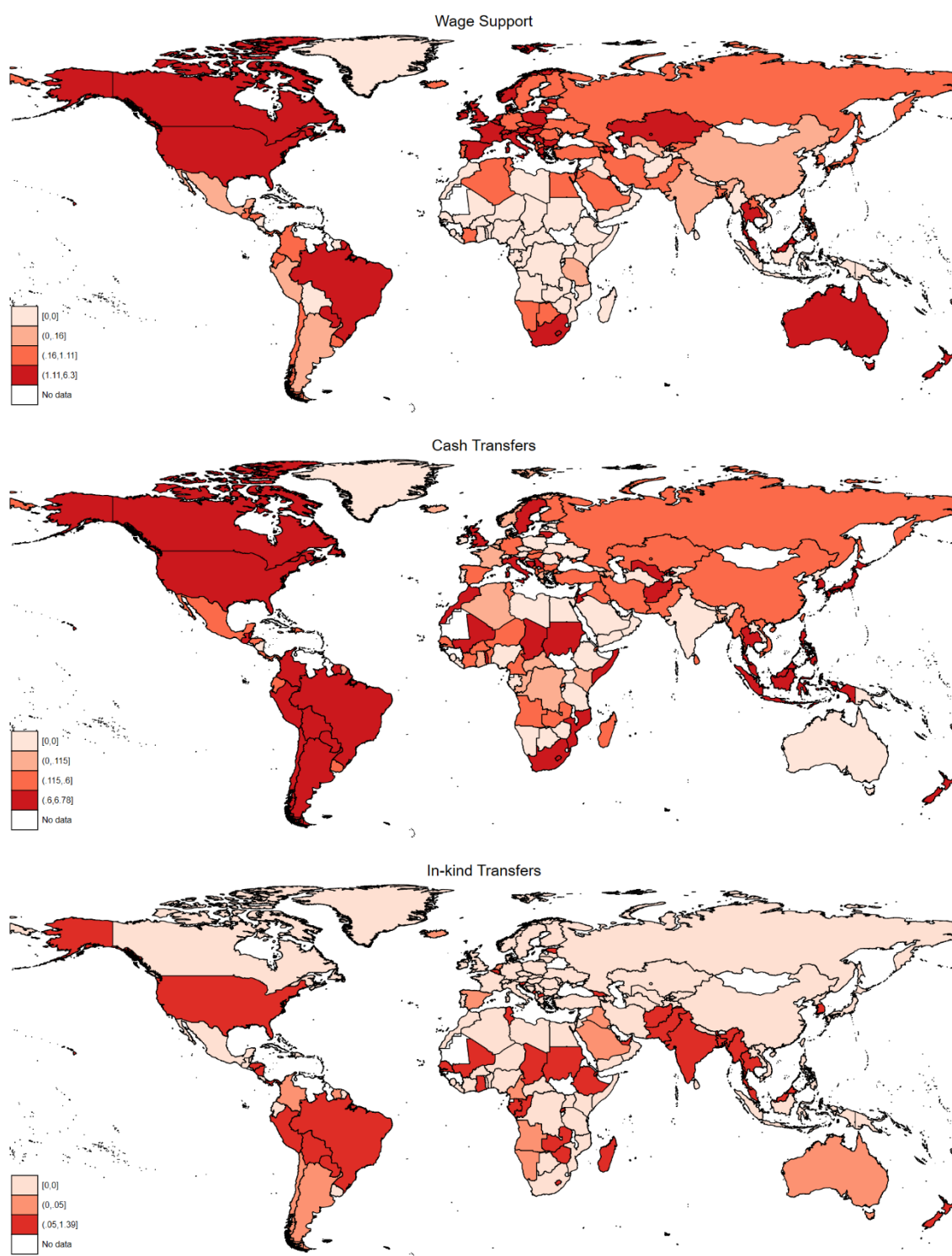
**Note:** The figure plots the breakdown of fiscal measures in each continent as of June 1, 2021 for 101 countries for which the unknown part of the breakdown is inferior to 1 point of GDP in absolute value.

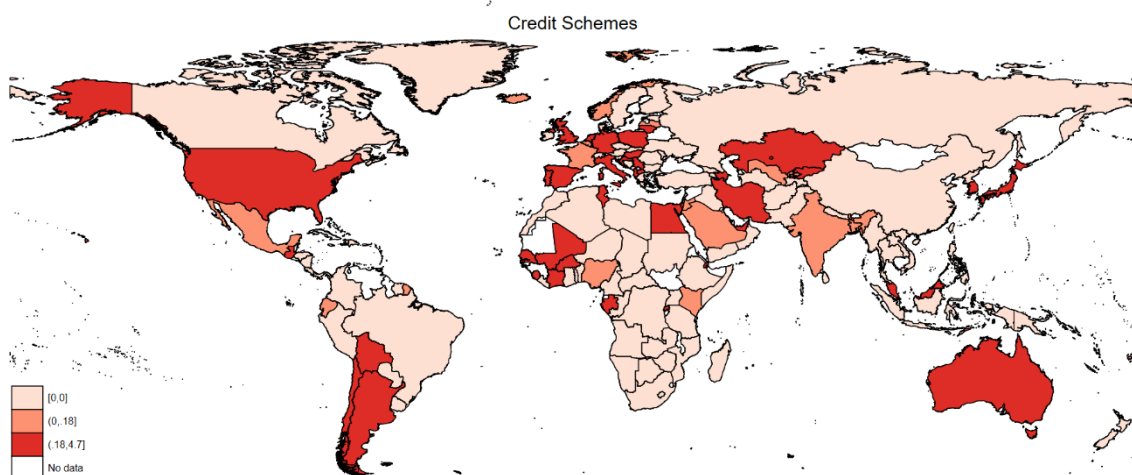
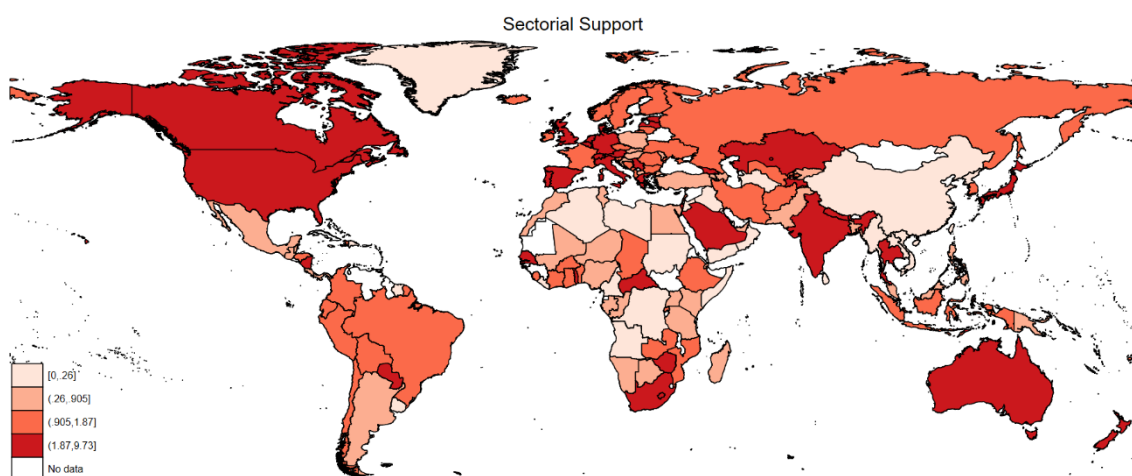
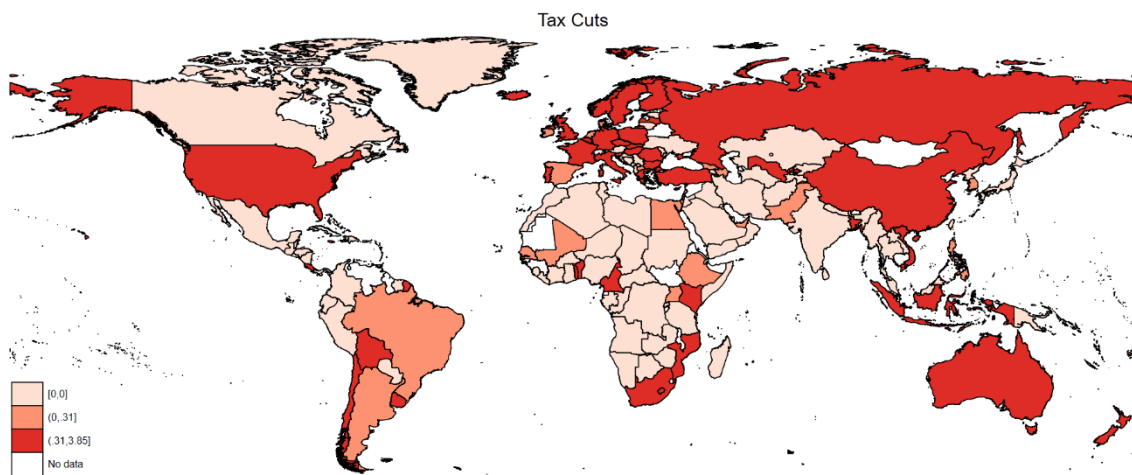
**Figure 3. World map of fiscal measures, tax deferrals, and off-budget measures**



Note: The maps represent the levels of spending for different measures (fiscal, tax deferrals, off-budget) at the country-level, as of June 1, 2021. Darker colors indicate higher spending.

**Figure 4. World map of the different fiscal measures**





Note: The maps represent the levels of spending for different fiscal measures at the country-level. Darker colors indicate higher spending.