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# The Political Economy of the Covid-19 Fiscal Stimulus Packages of 2020

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## Abstract

Almost all countries announced fiscal support programs once COVID-19 hit. However, there was significant diversity in the magnitude and composition of these fiscal stimulus programs. These differences were determined by myriad political, financial, social, and economic factors - these factors are our focus. We ask what were the factors that are associated with the structure of the fiscal programs that governments chose to adopt in the early stage of the pandemic in 2020. We answer this question using details about the fiscal programs that were announced by 98 governments in the first six months of the pandemic, together with a large set of explanatory variables. Maybe not surprisingly, we find that politics played a very significant part in determining the size and composition of these fiscal programs. Governments and societies that are less polarized and more capable were able to mobilise more fiscal resources. We also find that it was governments with bigger debt loads that announced bigger programs, but that sovereign spreads were not so clearly associated with the size of these program plans. There is a limit, however, to what we can glean from these cross-country comparisons. Ultimately, the understanding of the politics and political-economy considerations that led to the specific content of each fiscal program will have to rely on information about the actual deliberations in each government's halls of power, should these ever become public.

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# 1. Introduction

Almost all countries have implemented fiscal support programs once COVID-19 hit the world, seemingly out of nowhere, in early 2020 (Brodeur et al., 2021). However, there was significant diversity in the magnitude of these fiscal stimulus programs, in their stated aims, and in the ways they allocated resources to various goals. These differences were determined by myriad political, financial, social, and economic factors - these factors are the focus of this paper. We ask what were the factors that are associated with the structure of the fiscal programs that governments chose to adopt in the early stage of the pandemic in 2020.

The majority of studies that examined the COVID-19 related fiscal stimulus packages adopted worldwide indicate that high-income countries enacted, on average, much larger fiscal stimuli than middle- and lower-income countries. At its most basic, that implies that cross-sectional data from samples of countries show that the size of fiscal stimuli is positively correlated with countries' income levels (Alberola, Arslan, Cheng, & Moessner, 2020; Benmelech & Tzur-Ilan, 2020; Chen, Shi, Zhang, & Ding, 2021; Felipe et al., 2020; Hosny, 2021; Lee, 2020; Yeyati & Filippini, 2021).

It is also likely that average income levels influenced the type and structure of the fiscal stimulus program that was implemented. For example, Hosny (2021) notes that high-income countries were more likely to enact 'below the line' measures such as equity injections, asset purchases or loans, which would not have an immediate effect on the fiscal budget. On the other hand, the same paper also finds that low-income countries increased predominantly health-related fiscal spending (e.g., investments in public health infrastructure and pandemic preparedness)**.**

Beyond this distinction in level of income, the pandemic-related fiscal response may also have been determined by the fiscal space of individual countries; where fiscal space was measured by several relevant indicators, such as sovereign credit rating, sovereign bond spreads or a debt-to-tax revenue ratio. A positive and statistically significant relationship between sovereign credit rating and the size of the fiscal stimulus is empirically observed by Benmelech and Tzur-Ilan (2020), Lee (2020), Apeti, Combes, Debrun, and Minea (2021), Balajee, Tomar, and Udupa (2020), and Alberola et al. (2020). Balajee et al. (2020) even suggest that the fear of rating downgrades may have been a significant reason why some governments pursued a subdued fiscal response. Equally, the fiscal responses may also have been constrained by higher financing costs, as measured by sovereign bond spreads (Lee, 2020; Yeyati & Filippini, 2021) or government bond yields (Alberola et al., 2020).

Surprisingly, though, several papers find that the public debt levels (as share of GDP) do not determine the size of the related fiscal stimuli (e.g., Benmelech and Tzur-Ilan (2020); Apeti et al. (2021); and Chen et al. (2021)). However, Apeti et al. (2021) do find that a debt-to-tax revenue ratio is inversely related to fiscal stimuli. A limited fiscal space, high public debt, and high inflation also appear to have reduced the fiscal response of low-income countries in Africa (Adeniran, 2020).

The fiscal reactions to the pandemic may have also been influenced by the employment structure of individual countries. Using a sample of approximately 100 countries, Felipe et al. (2020) show that the fiscal package is positively related to the proportion of salaried and wage workers to total employment and inversely related to self-employment and vulnerable employment rates.

Countries' levels of social protection may also have an effect on the fiscal stimulus package, but more importantly, may shape the composition of these packages. Analysing a sample of 33 high-income economies and emerging market economies, Alberola et al. (2020) show that for the high-income countries, the level of social safety nets (measured as the sum of spending on social benefits) is negatively correlated with the budgetary measures and positively with non-budgetary measures. They conclude that for advanced economies the presence of generous social benefits "reduce the need for budgetary measures" (p. 5). On the other hand, this may not be the case for middle-income countries; as both Alberola et al. (2020) and Lee (2020) find that the fiscal response was not significantly correlated with the level of social protection.

Another line of investigation has been the effects of public health measures applied to mitigate the threat of the virus (such as mobility restrictions) on the pandemic-related fiscal packages. Yeyati and Filippini (2021) show that higher mobility stringency enacted early on during the pandemic (before infections peaked) is associated with lower fiscal stimuli. Similarly, Hosny (2021) finds that faster containment measures are associated with smaller fiscal responses. However, Balajee et al. (2020) find that the public health measures stringency overall was positively correlated with fiscal response for a large sample of countries. Interestingly, Lee (2020) does not find fiscal response to be correlated at all with the lockdown stringency.

With respect to epidemiological factors, countries' fiscal packages were found to be positively correlated with infection rates (Alberola et al., 2020; Chen et al., 2021; de Jong & Ho, 2020) and mortality rates (Felipe et al., 2020). However, Lee (2020) does not find the infection rates to have an effect in a smaller set of Asia-Pacific middle- and low-income countries. Hosny (2021) shows that health-related variables such as the infection rates or the share of elderly population have an effect predominantly on health-related fiscal spending only. Another demographic factor found to be positively associated with a higher fiscal stimulus was population density (Yao, 2021). Some papers have also found evidence of more nuanced links between the size of the fiscal packages and structural economic factors, such as the relative size of the tourism sector (Khalid, Okafor, & Burzynska, 2021).

We examine the determinants of the fiscal packages in more detail on two dimensions. First, we break the fiscal programs into their constituent components (e.g., wage subsidies, welfare support, business loans) and examine each component separately. Second, we include a wider set of explanatory variables, including political, social, financial, and economic indicators.

Our paper is not the only one that has looked at the impact of politics in determining the fiscal response, even if it is the most comprehensive examination of that link. Chen et al. (2021) and Elgin, Yalaman, and Yasar (2021) show that the size of fiscal spending is higher in more democratic countries and Erić, Popović, and

Bjelić (2021) find this to be the case for the pandemic-targeted economic stimulus in particular. However, Costa-Filho and Neto (2020) fail to identify this link statistically in a sample of 152 countries. They propose this may be because of additional constraints more democratic countries may face. Hosny (2021), for example, shows that higher budget transparency was associated with larger fiscal stimuli, revealing the need for strong public finance management practices.

Overall, we find that some patterns emerge from our cross-country comparisons, but that these have only a limited ability to explain the size of the programs and their compositions. The next section describes the data and our empirical approach. Section 3 details our findings, and Section 4 ends with some discussion of caveats and avenues for future research on this important topic.

## 2. Empirical specification and data

Our dependent variables are associated with each country's COVID-19 fiscal stimulus package announced as of September 2020. Our choice is to focus on the initial COVID-19 fiscal announcement since any follow-up program later on during the pandemic would also have been shaped by what came before. The continuation of these programs in late 2020 and 2021 was shaped by the further evolution of the pandemic, the early fiscal stimulus, its actual implementation (as distinct from its announced characteristics), and its perceived success. Our interest is, therefore, in the initial impetus to announce a fiscal program, and what determined the shape of that initial program.

The characteristics we analyse include the total fiscal responses and other specific components of the response package such as wage support, welfare benefits to individuals or households, loans and grants to small-and-medium size enterprises (SMEs) and corporates, business guarantees, industry grants, tax deferrals, and tax waivers. All are presented as a share of the country's GDP in 2019. The data was collected from different sources including the IMF Policy Tracker and individually for other countries from their national websites and official media channels. To access the determinants of fiscal responses to the COVID-19 pandemic, we focus on a range of pre-COVID explanatory variables, reflecting the countries' fiscal space, monetary space, political system, development level, demographics characteristics, cumulative deaths due to COVID, as well as other containment and closure policies composited in the Oxford stringency index.

We use debt-to-GDP ratio as of end of March 2020 or December 2019 to measure the fiscal space and a quantitative easing binary indicator to measure monetary space.[1] We include a set of country political risk indices including measurements of voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Other political variables such as polity fragmentation, government and opposition parties concentration indices, regime durability, as

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[1] Kose et al. (2017) find that fiscal space had improved in many countries before the global financial crisis. During the crisis, For advanced economies, fiscal space indicators deteriorated and then returned to levels in the mid-2000s, whereas fiscal space shrank in many emerging market and developing economies since the crisis.

well as checks and balances are proxies of the quality of the political system. We also use political rights and social polarization proxies. With regard to the stringency index, we use a range of different measurements over the March 2020 – May 2020 period including average, median, standard deviation to measure the volatility, and the difference between March and May 2020. We also include COVID-related cumulative deaths as of July 2020, real GDP per capita (in 2019 PPP$) and growth rate of real GDP per capita, as well as ratio of population aged 65 and above to total population. See the Appendix for variable description and data sources.

As many of the explanatory variables are correlated, we use two approaches. In the first, we regress each fiscal measure ($Covid19FISCAL_{ic}$), for country $i$ and type $c$, on each explanatory variable ($X_i$). We leave the omitted variable problem at this stage just to look at the impact of each independent variable.

$$Covid19FISCAL_{ic} = a + X_i + \varepsilon_i \qquad (1)$$

Where $a$ is a constant, and $\varepsilon_i$ is the residual. All 12 fiscal measure types ($c$) are examined.

Alternatively, we regress each fiscal measure on a set of explanatory variables so that the explanatory variables reflect the key determinant groups of interest. Specifically,

$$Covid19FISCAL_{ic} = a + \beta_1\, Debt/GDP_i + \beta_2\, QE_i + \beta_3\, Polrisk_i + \beta_4\, Stringency_i + \beta_5\, deaths_i +$$
$$\beta_6\, GDPpc_i + \beta_7\, \Delta GDP_i + \beta_8\, Dependency_i + \varepsilon_i \qquad (2)$$

where $QE$ is quantitative easing binary indicator, $Polrisk$ is political risk index, $Stringency$ is the volatility of containment measures, $deaths$ reflects the cumulative deaths due to COVID, $GDPpc$ is the real GDP per capita (in log), $\Delta GDP$ is the growth rate of GDP, and $Dependency$ is the ratio of elderly people in total population.

Our sample of 98 countries, depends on the data availability about the fiscal response packages as they were announced as of September 2020. As seen in Appendix Table A1, the data is available for many high-income (43) and middle-income (50) countries but for very few low-income countries (5).[2]

Table 1 below reports the main descriptive statistics of the variables. For fiscal response measures, the highest announced response is recorded for Germany (42.6% of GDP), followed by other high-income countries such as Japan and Luxembourg. Several low- and middle-income countries are recorded with very low fiscal stimulus ratios that are less than 1% of GDP; for example, Jordan, Tajikistan, Kyrgyz Republic, Angola, Malawi, Sri Lanka, Kenya, Bangladesh, and Dominican Republic. Among a range of fiscal stimulus packages, wage subsidies, guarantees to corporates, loans to SMEs, and tax deferrals are recorded with the highest ratios (12-27% of GDP).

Regarding the independent variables, the most noticeable statistical features are: The countries recording the highest level of debt-to-GDP ratios are high-income ones (e.g., Japan and Greece), as are the countries with

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[2] The 50 middle-income countries are divided equally between low-middle and high-middle income ones.

the lowest political risk levels (e.g., Finland, Norway, Sweden, and New Zealand). While the data on political and government fragmentation are available for quite a few countries, the data on social polarization are not (these are available for only 62 countries out of our sample). Philippines, Georgia, Kuwait, Peru, Italy are among the countries imposing the most stringent containment and closure policies against the COVID-19 pandemic spread during that early time period. However, Italy is also recorded as one of the countries relaxing the closure policies most significantly in May 2020 compared to March 2020. As of the end of July 2020, the countries recording the highest numbers of deaths due to COVID include Peru, Belgium, Spain, United Kingdom, and Italy.

Table 1 Descriptive statistics

| Variable | Observation | Mean | Min | Max | Standard deviation |
|---|---|---|---|---|---|
| **Dependent variables** | | | | | |
| fiscal/GDP | 98 | 6.87 | 0 | 42.62 | 7.53 |
| wage/GDP | 98 | 0.79 | 0 | 15.86 | 1.86 |
| welfare/GDP | 98 | 0.56 | 0 | 5.72 | 0.98 |
| SME grants/GDP | 98 | 0.25 | 0 | 2.32 | 0.51 |
| SME loans/GDP | 98 | 1.03 | 0 | 12.75 | 1.98 |
| corporate grants/GDP | 98 | 0.06 | 0 | 2.96 | 0.32 |
| corporate loans/GDP | 98 | 0.70 | 0 | 10.83 | 1.78 |
| guarantee/GDP | 98 | 1.77 | 0 | 27.04 | 4.61 |
| stimulus/GDP | 98 | 0.27 | 0 | 4.61 | 0.88 |
| industry grants/GDP | 98 | 0.20 | 0 | 3.26 | 0.51 |
| tax deferrals/GDP | 98 | 0.91 | 0 | 15.48 | 2.47 |
| tax waiver/GDP | 98 | 0.37 | 0 | 5.47 | 1 |
| **Independent variables** | | | | | |
| debt/GDP | 98 | 59.55 | 0 | 234.0 | 37.96 |
| quantitative easing | 98 | 0.44 | 0 | 1 | 0.50 |
| voice and accountability | 89 | 0.74 | 0.29 | 1 | 0.20 |
| political stability and absence of violence | 89 | 0.70 | 0.46 | 0.83 | 0.08 |
| government effectiveness | 89 | 0.67 | 0.25 | 1 | 0.23 |
| regulatory quality | 89 | 0.75 | 0.45 | 1 | 0.15 |
| rule of law | 89 | 0.66 | 0.25 | 1 | 0.20 |
| control of corruption | 89 | 0.52 | 0.25 | 0.92 | 0.19 |
| polity fragmentation | 95 | 0.14 | 0 | 3 | 0.50 |
| government concentration | 93 | 0.72 | 0.09 | 1 | 0.29 |
| opposition parties concentration | 86 | 0.53 | 0.10 | 1 | 0.25 |
| regime durability | 95 | 41.39 | 0 | 209 | 37.51 |
| checks and balances | 91 | 3.02 | 1 | 7 | 1.43 |
| political rights | 96 | 3.05 | 1 | 7 | 2.07 |
| income polarization | 62 | 2.69 | 1.64 | 3.75 | 0.38 |
| business ownership polarization | 62 | 2.54 | 1.69 | 3.68 | 0.47 |
| government responsibility polarization | 62 | 2.70 | 1.93 | 3.92 | 0.38 |
| competition polarization | 62 | 2.410 | 1.67 | 3.76 | 0.40 |
| mean stringency | 96 | 65.46 | 12.58 | 86.30 | 12.49 |
| median stringency | 96 | 74.74 | 16.67 | 96.30 | 15.46 |
| stringency volatility | 96 | 22.28 | 2.49 | 33.82 | 6.72 |
| March-May stringency difference | 96 | -28.30 | -62.49 | 18.84 | 15.69 |
| COVID-19 cumulative deaths | 98 | 0.01 | 0 | 0.17 | 0.02 |

| | | | | | |
|---|---|---|---|---|---|
| real GDP per capita | 97 | 9.89 | 7 | 11.63 | 1.02 |
| GDP growth | 97 | -0.85 | -66.57 | 8.71 | 7.48 |
| dependency ratio | 98 | 11.55 | 1.16 | 28 | 6.75 |

# 3. Results

## *3.1. Correlation matrix*

In Figures 1 and 2, we plot the correlation coefficients between the dependent and independent variables as heatmaps (correlation coefficients equal or larger than 50% that are statistically significant are noted). Further tables in the Appendix report the details of correlation coefficients between the variables and their corresponding significance levels. As can be seen from Figure 1, most of the fiscal measures are positively correlated, with the strongest being between total fiscal measures and wage subsidies and grants to corporates, wage subsidies and loans to corporates, guarantees and grants to corporates and tax deferrals, tax deferrals and tax waiver. In short, in many countries, one spending line was not a substitute to another, but these seem to be compliments – governments that were more 'generous' with one program type, tended to also have higher spending on other programs.

The most obvious patterns from Figure 2 include: (1) the countries' political risk indices are strongly and positively correlated; (2) the set of countries' political risk level is also highly and negatively correlated with regime durability, the competitively elected legislature and executives, development level, dependency ratio, and political rights, whereas it was positively correlated with social polarization; (3) the social polarization indices are positively correlated while this set of social polarization measures is negatively correlated with countries' per capita income; and (4) countries' elderly population ratio is positively correlated with their per capita income level.

Figure 1 Correlation heatmap of the dependent variables
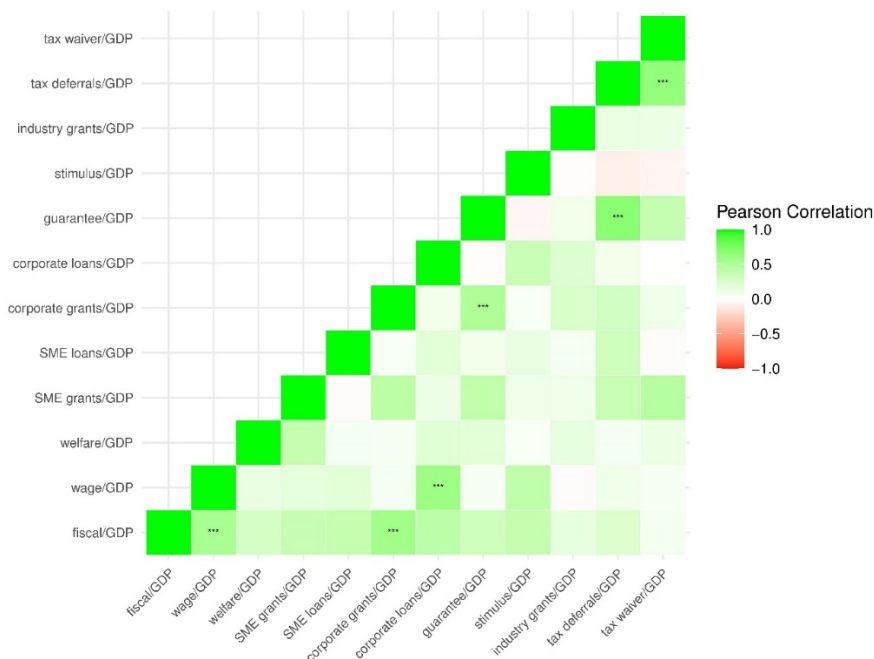


*Note: \*\*\* denotes the correlation coefficients equal or greater than 50% and significant at 1% level.*

Figure 2 Correlation heatmap of the independent variables
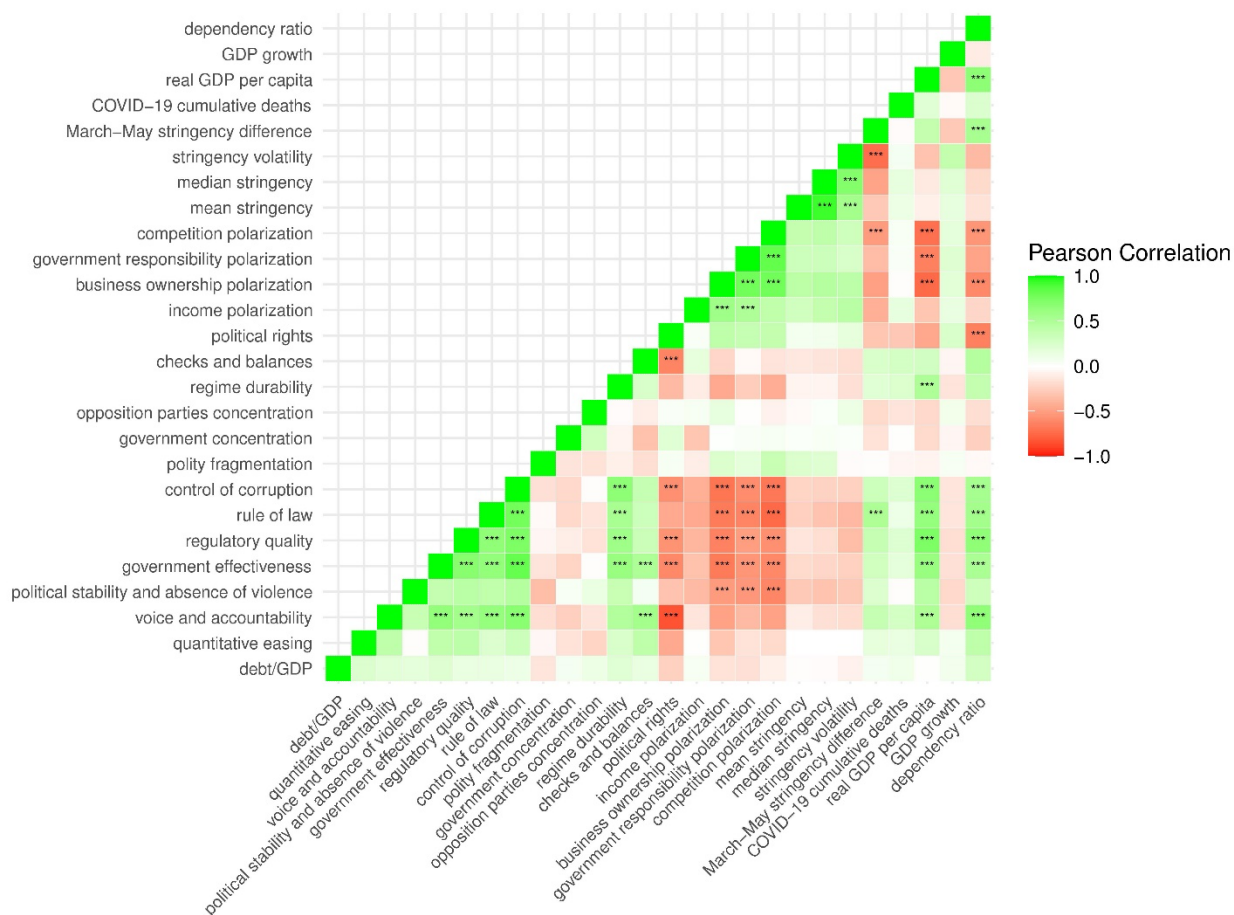


*Note: \*\*\* denotes the correlation coefficients equal or greater than 50% and significant at 1% level.*

### 3.2. Regression results

Table 2 summarizes the regression results using the first approach, when each fiscal measure is regressed on one explanatory variable at a time (i.e., in a bi-variate regression). The bi-variate associations between different fiscal response measures with the independent variables are consistent and largely as expected. The size of the fiscal stimulus packages are positively associated with quantitative easing dummy, the countries' political risk indices, regime durability, checks and balances, the difference in stringency index between March 2020 and May 2020, real GDP per capita, and population aged 65 and above, and negatively associated with polity fragmentation, government as well as opposition parties concentration, political rights index, stringency index, and GDP growth rate.

Interestingly, the size of the fiscal responses is found to be positively associated with debt-to-GDP ratio. This particular finding is, counterintuitively, sensible since the 35 high-income countries in our sample instituted much larger fiscal packages, but also have a much larger debt-to-GDP ratio (72.5%) when compared to that in the 63 emerging economies in our sample (52.3%).[3]

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[3] A t-test also shows that the difference in debt-to-GDP ratio across those two sub-groups is statistically significant (1%).

In other words, countries that have: A higher debt-to-GDP ratio, conducted quantitative easing during the initial phase of the pandemic, have lower political risk, more durable political regime, more competitively elected legislature and executives, adopted more stringent containment policies in the early stages of the pandemic, have more political rights, less social polarization, less stringent containment responses overall (on average), a higher number of cumulative deaths due to COVID, higher per capita income, higher dependency ratio, and lower GDP growth rate tended to announce a bigger fiscal stimulus package (as share of GDP) in response to the pandemic.

Next, we use a multi-variate approach, when a range of proxies for each dimension are considered. In this case, we now regress the fiscal stimulus measurements on a set of independent variables, with one key variable for each dimension (as within each dimension, the different proxies are too highly correlated). Accordingly, we include debt-to-GDP ratio and the quantitative easing binary indicator to proxy the fiscal and monetary stance; one political variable; the volatility of the stringency index over March-May 2020 period; the number of cumulative deaths due to COVID; real GDP per capita and the GDP growth rate; and the elderly ratio. As can be seen from Figure 2, most of the political variables are highly correlated and the six political risk components also reflect a large part of the variance of other political variables such as polity fragmentation. We thus include the average of these six political components as a commonly used proxy for the quality of the political system in each country. The social polarization measurements are excluded, as they significantly restrict the sample size. Table 3 reports only the significant regression results for the fiscal measures including total fiscal stimulus, wage subsidies, grants to SMEs, loans to corporations, guarantees, and tax deferrals.

Table 3 provides additional verification of the bi-variate results described in Table 2: debt-to-GDP ratio, quantitative easing, political quality, the number of cumulative deaths due to COVID, and dependency ratio are positively correlated with the size of fiscal responses. However, some other determinants lose their significance in the multi-variate case.

Overall, those determinants can explain up to 35% of the variations of the fiscal stimulus packages across the sampled countries. Furthermore, the results found in the bi-variate and multi-variate regressions are quite consistent. On average, 1% increase in debt-to-GDP ratio is associated with a 0.02-0.03% increase in the size fiscal responses (of GDP) whereas a country conducting quantitative easing tends to have a larger fiscal stimulus (1-5% of GDP) than a country having no similar monetary response. The association of the political variables and fiscal stimulus, shown in Tables 2 and 3, varies across the fiscal packages. The largest impacts of risk indices are found on total fiscal packages: one unit increase in the risk indices (i.e., higher political stability) is associated with a 13-24% increase in the size of total fiscal response but a 2-5% increase in wage assistance, a 1-3% increase in welfare benefit, about 1-1.6% increase in grants and 3% in loans to SMEs, a 2-5% increase in corporate loans, a large increase of 7-14% in the loan guarantees, less than 1% increase in grants to industries, a 3-6% increase in tax deferrals, and less than 2% increase in tax waiver (all fiscal packages are measured as percentage of GDP).

Regarding political polarization, one unit increase in polity fragmentation, government and opposition parties concentration is associated with small decreases in the components of the fiscal stimulus (less than 0.6% of GDP in most of the cases) except loans guarantee for businesses (3% of GDP). Regime durability also has a small impact: countries having one-year longer-lasting regime tend to increase the size of their total fiscal package by 0.05% of GDP and from 0.01-0.03% of GDP for the other components of the fiscal stimulus. However, one unit increase in election competitiveness is associated with a 1.4% increase in the size of total fiscal stimulus, as well as loans guarantee to businesses, with about 0.2% increase in other stimulus packages. The impact of political rights and social polarization on the size of fiscal responses also varies. While one unit increase in the political right index is associated with a 1.3% of GDP decrease in the size of total fiscal responses, one unit increase in social polarization indices is associated with 5-7.5% of GDP decrease in the same measure. The impacts on the size of fiscal component packages are much smaller.

The association between stringency measures and the size of fiscal stimulus packages is modest: one unit change in stringency indices is associated with a 0.1-0.3% change in the size of fiscal measures. The most striking finding may be the impact of the cumulative deaths due to COVID-19 on fiscal stimulus packages: 1% increase of COVID-19 cumulative death in population is associated with a 12-36% increase in the ratios of welfare benefits, loans to SMEs, and tax deferrals to GDP. For the proxies of development and demographic characteristics: a 1% increase in real GDP per capita and 1% increase in GDP growth rate are associated with a largest 0.03% increase and a 0.1% decrease in the size of total fiscal stimulus package to GDP respectively; a 1% increase of dependency ratio is associated with a largest 0.5% increase in the size of total fiscal response to GDP.

Table 2 Bi-variate regression results

| | (1) fiscal/ GDP | (2) wage/ GDP | (3) welfare/ GDP | (4) SME grants/ GDP | (5) SME loans/ GDP | (6) corporate grants/ GDP | (7) corporate loans/ GDP | (8) guarantee/ GDP | (9) stimulus/ GDP | (10) industry grants/ GDP | (11) tax deferrals/ GDP | (12) tax waiver/ GDP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| debt/GDP | | | | | | | 0.021** | 0.028* | | | 0.017* | |
| | | | | | | | (0.009) | (0.016) | | | (0.010) | |
| quantitative easing | 5.157*** | 0.995** | | | | | 0.898** | 3.147*** | | | 1.266** | |
| | (1.570) | (0.407) | | | | | (0.380) | (0.993) | | | (0.537) | |
| voice and accountability | 13.481*** | 2.620*** | 1.050** | 0.881*** | 2.724** | | 2.234*** | 10.083*** | | | 4.722*** | 1.406*** |
| | (3.753) | (0.674) | (0.495) | (0.284) | (1.162) | | (0.785) | (2.660) | | | (1.332) | (0.529) |
| political stability and absence of violence | 20.754** | 5.408** | | | | | 5.852** | | | | | |
| | (9.792) | (2.166) | | | | | (2.243) | | | | | |
| government effectiveness | 17.197*** | 3.137*** | 1.418** | 1.164*** | | | 2.310** | 7.400*** | | 0.215* | 3.223*** | 1.161** |
| | (3.949) | (1.151) | (0.540) | (0.269) | | | (0.938) | (2.326) | | (0.118) | (0.883) | (0.443) |
| regulatory quality | 23.617*** | 5.001*** | 2.717*** | 1.642*** | 2.740* | | 3.303*** | 14.197*** | | 0.729*** | 6.297*** | 2.234*** |
| | (5.320) | (1.434) | (0.912) | (0.388) | (1.533) | | (1.249) | (3.872) | | (0.255) | (2.200) | (0.739) |
| rule of law | 15.445*** | 3.100*** | 1.111* | 1.120*** | 2.277* | | | 7.786*** | | | 4.453*** | 1.382** |
| | (3.883) | (0.916) | (0.583) | (0.295) | (1.299) | | | (2.111) | | | (1.140) | (0.585) |
| control of corruption | 19.116*** | 3.453*** | 1.692** | 1.494*** | | | | 10.353*** | | | 4.942*** | 2.080*** |
| | (4.839) | (1.001) | (0.809) | (0.384) | | | | (3.148) | | | (1.330) | (0.697) |
| polity fragmentation | | -0.354*** | | | -0.370** | -0.037* | -0.407*** | | | | -0.515*** | |
| | | (0.118) | | | (0.183) | (0.020) | (0.120) | | | | (0.162) | |
| government concentration | | | | | | -0.161* | | | | | | |
| | | | | | | (0.093) | | | | | | |
| opposition parties concentration | | | | | | | | -3.209* | -0.547** | | | |
| | | | | | | | | (1.660) | (0.216) | | | |
| regime durability | 0.051*** | 0.017*** | 0.011** | 0.006*** | 0.012* | | 0.008* | 0.031* | | | 0.016*** | 0.005* |
| | (0.015) | (0.005) | (0.004) | (0.002) | (0.006) | | (0.004) | (0.016) | | | (0.006) | (0.003) |
| checks and balances | 1.350** | 0.230** | 0.110* | 0.159*** | | | 0.200* | 1.304*** | | | 0.701*** | |
| | (0.668) | (0.089) | (0.056) | (0.046) | | | (0.111) | (0.448) | | | (0.226) | |
| political rights | -1.345*** | -0.252*** | -0.140*** | -0.072*** | -0.183** | | -0.209*** | -0.842*** | | | -0.366*** | -0.132*** |
| | (0.324) | (0.090) | (0.040) | (0.024) | (0.090) | | (0.078) | (0.211) | | | (0.119) | (0.042) |
| income polarization | -5.163* | | | -0.351* | | | | | | | | -0.626* |
| | (3.024) | | | (0.189) | | | | | | | | (0.333) |

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|---|---|---|---|---|---|---|---|---|---|---|
| business ownership polarization | -7.566*** | -1.823** | | -0.489*** | | | -2.722** | -0.534* | -1.330*** | -0.585* |
| | (2.461) | (0.893) | | (0.151) | | | (1.122) | (0.277) | (0.469) | (0.294) |
| government responsibility polarization | -6.190*** | -1.246* | | -0.408** | | | -3.033*** | | -1.288* | -0.724** |
| | (2.084) | (0.689) | | (0.183) | | | (1.078) | | (0.685) | (0.333) |
| competition polarization | -5.575*** | -1.171*** | | -0.525*** | | | -2.753** | -0.307** | -0.976* | -0.518* |
| | (1.834) | (0.380) | | (0.189) | | | (1.174) | (0.142) | (0.491) | (0.304) |
| mean stringency | -0.122* | | | | | | | | | |
| | (0.073) | | | | | | | | | |
| median stringency | | | | -0.005* | | | | | | |
| | | | | (0.003) | | | | | | |
| stringency volatility | -0.335** | | -0.028* | -0.023*** | | | -0.117* | | | -0.030* |
| | (0.152) | | (0.014) | (0.008) | | | (0.069) | | | (0.017) |
| March-May stringency difference | 0.160** | | 0.008* | 0.009*** | 0.031** | | 0.086** | | 0.059** | 0.018** |
| | (0.062) | | (0.004) | (0.003) | (0.015) | | (0.042) | | (0.024) | (0.009) |
| COVID-19 cumulative deaths | | | 12.581** | | 14.301* | | | -4.065** | 35.551* | |
| | | | (5.391) | | (8.017) | | | (1.981) | (18.583) | |
| real GDP per capita | 3.321*** | 0.536*** | 0.216** | 0.206*** | 0.463** | 0.365*** | 1.469*** | 0.111* | 0.719*** | 0.225** |
| | (0.684) | (0.135) | (0.089) | (0.048) | (0.232) | (0.126) | (0.403) | (0.061) | (0.220) | (0.085) |
| GDP growth | -0.122*** | | -0.017*** | -0.007** | | | | | | |
| | (0.046) | | (0.006) | (0.003) | | | | | | |
| dependency ratio | 0.541*** | 0.123** | 0.033** | 0.030*** | 0.076*** | 0.106*** | 0.303*** | 0.015** | 0.153*** | 0.046** |
| | (0.136) | (0.051) | (0.014) | (0.008) | (0.025) | (0.038) | (0.087) | (0.007) | (0.046) | (0.017) |

*Note: Table reports regression results when a fiscal measure (% of GDP 2019) is regressed on one independent variable (each coefficient denotes a separate cross-country regression that also includes a constant. Unreported results are when the coefficient for this variable is not significant (p-value is larger than 10%). Robust standard errors are in parentheses. \*\*\*, \*\*, \* denote 1%, 5%, and 10% level of significance.*

Table 3 Multi-variate regression results

| | (1)<br>fiscal/GDP | (2)<br>wage/GDP | (3)<br>SME grants/GDP | (4)<br>corporate loans/GDP | (5)<br>guarantee/GDP | (6)<br>tax deferrals/GDP |
|---|---|---|---|---|---|---|
| debt/GDP | 0.040 | 0.018 | -0.001 | 0.018** | 0.006 | 0.007 |
| | (0.031) | (0.015) | (0.002) | (0.009) | (0.016) | (0.009) |
| quantitative easing | 1.939 | 0.217 | -0.068 | 0.252 | 1.496** | 0.276 |
| | (1.364) | (0.289) | (0.137) | (0.298) | (0.742) | (0.520) |
| political risk | 10.796 | 1.593 | 1.561** | -0.743 | 7.004 | 2.959 |
| | (8.041) | (2.100) | (0.675) | (1.689) | (4.589) | (2.445) |
| stringency volatility | -0.140 | -0.021 | -0.011 | -0.038 | -0.037 | -0.022 |
| | (0.125) | (0.051) | (0.009) | (0.031) | (0.062) | (0.036) |
| COVID-19 cumulative deaths | -34.501 | -8.761 | -0.372 | -3.828 | 51.711 | 24.566* |
| | (43.524) | (8.719) | (1.670) | (8.322) | (35.937) | (13.266) |
| real GDP per capita | 1.371 | 0.104 | 0.006 | 0.110 | -0.446 | -0.162 |
| | (0.964) | (0.215) | (0.060) | (0.197) | (0.475) | (0.202) |
| GDP growth | 0.102 | 0.019 | 0.006 | 0.034 | -0.154 | -0.069 |
| | (0.186) | (0.054) | (0.017) | (0.042) | (0.115) | (0.086) |
| dependency ratio | 0.117 | 0.059* | 0.008 | 0.063** | 0.121 | 0.073* |
| | (0.141) | (0.034) | (0.011) | (0.031) | (0.076) | (0.043) |
| Observations | 87 | 87 | 87 | 87 | 87 | 87 |
| p-value | 0.001 | 0.007 | 0.008 | 0.094 | 0.006 | 0.012 |
| R-squared | 0.352 | 0.339 | 0.273 | 0.305 | 0.330 | 0.272 |

*Note: Each column denotes one regression. Robust standard errors are in parentheses. \*\*\*, \*\*, \* denote 1%, 5%, and 10% level of significance.*

In Figure 3 below, we assess the economic significance of the predictors in the individual regressions by multiplying their estimated coefficients in Table 2 and standard errors reported in Table 1. Focusing on the total fiscal stimulus package and wage assistance (the latter is the largest component in most countries' fiscal measures), the left panel in Figure 3 shows that government effectiveness has the largest positive association with the size of fiscal stimulus responses, followed by dependency ratio, other political risk indices, development level, and quantitative easing. On the other hand, social polarization, political rights, stringency index, and business ownership polarization have a large negative economic association with the size of the fiscal stimulus. The right panel of Figure 2 assesses the economic significance of the predictor to the size of wage assistance, suggesting similar patterns as with the size of total fiscal stimulus package, notably demographic variable, political risk, real GDP per capita, quantitative easing, and checks and balance having the positive association, whereas business ownership polarization, political rights, and social polarization proxies having the negative association with the stimulus.

Figure 3 Economic significance of the independent variables – bi-variate regressions
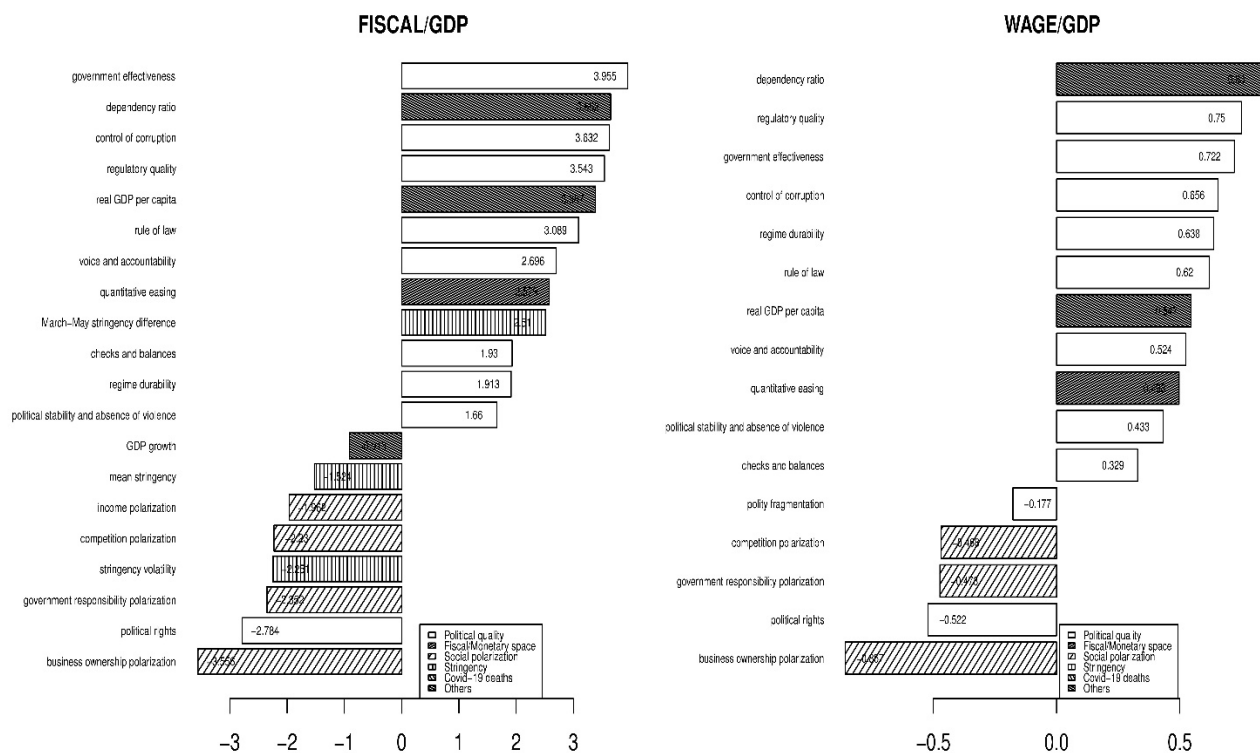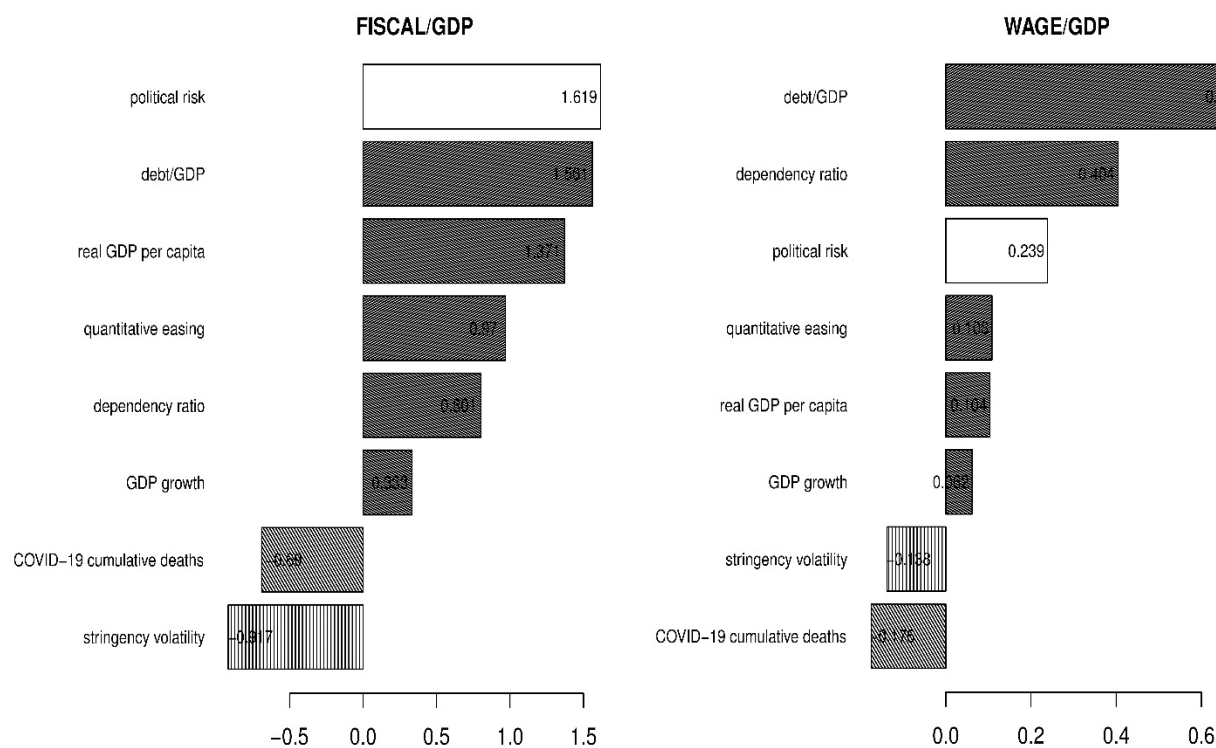


*Note: Figure reports the economic significance of the predictors with statistically significant coefficient from bi-variate regressions shown in Table 2. The economic significance of each predictor is computed by multiplying its coefficient reported in Table 2 by a corresponding standard error reported in Table 1.*

In Figure 4, we provide the economic significance of the predictor to the size of total fiscal packages and wage assistance from the multi-variate regression shown in Table 3. In the left panel of Figure 4, the average political risk index has the largest association with the size of the total fiscal stimulus package to the COVID-19 pandemic, followed by debt-to-GDP ratio and real GDP per capita. Quantitative easing, dependency ratio, stringency volatility, and cumulative deaths due to COVID-19 have similar economic significance, while GDP growth has the smallest absolute economic significance. The ranking of economic

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significance across the predictors varies in the case of wage assistance with debt-to-GDP ratio having the largest association, followed by dependency ratio, political risk, COVID-19 cumulative deaths, volatility of stringency index, quantitative easing, real GDP per capita, and GDP growth rate.

Figure 4 Economic significance of the independent variables – multi-variate regressions



*Note: The economic significance of each predictor is computed by multiplying its coefficient reported in Table 3 by a corresponding standard error in the common sample used in the multi-variate regression reported in the Appendix Table A5.*

## 4. Conclusion

Maybe not surprisingly, we find that politics played a significant part in determining the size and composition of the fiscal programs that were announced in the aftermath of the emergence of COVID-19 and the global lockdown that it engendered in March 2020. Governments and societies that are less polarized, were, to some extent, able to mobilise more fiscal ammunition to attempt to counteract the pandemic and the economic recession it created.

We also find that variables measuring the fiscal space may be considered somewhat less intuitively connected to the fiscal packages that were announced. It is governments with bigger debt loads that announced bigger programs. Debt/GDP ratios are, of course, not the only way to measure fiscal space, as the example of Japan and its very high, decades-long, ratio, and very low borrowing costs amply demonstrated. It seems reasonable to argue that in an emergency situation such as the emergence of a global pandemic, the longer-term considerations of debt sustainability – usually proxied by debt/GDP averages – do not matter much. Indeed, the major multilateral global financial institutions have all suggested that governments should spend aggressively to counter the economic decline brought about by the pandemic and its lockdowns, and

that governments should worry about deficits and paying back these debts later. In such a situation, it is the immediate borrowing costs that matter, rather than the stock of previously incurred debt. Data on sovereign spreads, however, is more limited, and when we included it in regressions, we found no useful results.

This last point suggests the main drawback of our analysis. We rely on a cross-section of country-level policy announcements undertaken in the early parts of the pandemic. This leaves us with a relatively small sample and therefore relatively under-powered capacity to test different hypotheses regarding the political, environmental, and other determinants of the fiscal programs. Furthermore, the political necessities of a sudden and acute emergency led most governments to decide on their fiscal programs behind closed doors, and therefore with little ex-post transparency. This was even the case in New Zealand, a country that is usually ranked very high on transparency indices, and where stay-at-home orders were not that severe (after an initial program of quite draconian lockdowns). Thus, ultimately, the understanding of the politics and political-economy considerations that led to the specific content of each fiscal program will have to rely on textual-analysis of the actual deliberations in the halls of power, should these ever become public.

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# Appendix

Table A1 Country list

| | | | |
|---|---|---|---|
| Albania | Gambia | Macedonia | Serbia |
| Angola | Georgia | Malawi | Singapore |
| Argentina | Germany | Malaysia | Slovak Republic |
| Armenia | Ghana | Mauritius | Slovenia |
| Australia | Greece | Mexico | South Africa |
| Austria | Hong Kong | Moldova | Spain |
| Azerbaijan | Hungary | Mongolia | Sri Lanka |
| Bahrain | Iceland | Morocco | Sweden |
| Bangladesh | India | Mozambique | Switzerland |
| Belarus | Indonesia | Namibia | Taiwan |
| Belgium | Ireland | Netherlands | Tajikistan |
| Botswana | Israel | New Zealand | Thailand |
| Brazil | Italy | Nigeria | Trinidad and Tobago |
| Canada | Jamaica | Norway | Tunisia |
| Chile | Japan | Pakistan | Turkey |
| China | Jordan | Papua New Guinea | Uganda |
| Colombia | Kazakhstan | Paraguay | Ukraine |
| Czech Republic | Kenya | Peru | United Arab Emirates |
| Denmark | Korea | Philippines | United Kingdom |
| Dominican Republic | Kuwait | Poland | United States |
| Egypt | Kyrgyz Republic | Portugal | Uzbekistan |
| Estonia | Latvia | Romania | Vietnam |
| Fiji | Lithuania | Russia | Zambia |
| Finland | Luxembourg | Rwanda | |
| France | Macao | Saudi Arabia | |

Table A2 Variable description and data sources

| Variables | Description | Source |
|---|---|---|
| **Dependent variables** | | |
| fiscal/GDP | Total fiscal impulse as a response to the COVID-19 pandemic, % of GDP 2019 | International Monetary Fund (2021); OECD (2020); National government websites and official media channels including Reuters, KPMG, etc. |
| wage/GDP | Wage assistance to businesses, including transfers, cancellation of social security contributions, etc., % of GDP 2019 | |
| welfare/GDP | Welfare benefit to individuals, households, parents, young people, the sick, the disable, etc. in income support, social assistance, unemployment insurance, childcare benefit, expanded parental allowance, etc., % of GDP 2019 | |
| SME grants/GDP | Grant commitments and loans to small-and-medium businesses, % of GDP 2019 | |
| SME loans/GDP | Loans to small-and-medium businesses, % of GDP 2019 | |
| corporate grants/GDP | Grant commitments to large corporates, % of GDP 2019 | |
| corporate loans/GDP | Lending support to corporates including credit expansion to firms, introduction of new schemes or facilities to provide more finance to businesses, subsidized lending, etc., % of GDP 2019 | |
| guarantee/GDP | Government loan guarantee for businesses, % of GDP 2019 | |
| stimulus/GDP | Other fiscal measures targeting employment and infrastructure projects, % of GDP 2019 | |
| industry grants/GDP | Sector-specific on agriculture, tourism, high-tech, air and transport, health and education, % of GDP 2019 | |
| tax deferrals/GDP | Suspension on individual and business tax and social contribution payment, % of GDP 2019 | |
| tax waiver/GDP | Tax cut for corporates and individuals, tax waiver of social and health insurance payments, etc., % of GDP 2019 | |
| **Independent variables** | | |
| debt/GDP | Gross General Government debt, % of GDP: 2020Q1 or 2019Q4 | The World Bank 41 countries, Datastream/Oxford Economics: 53 countries, Federal Reserve Data: 4 countries |
| quantitative easing | Dummy variable of quantitative easing; equals 1 if country has announced quantitative easing by September 2020, or zero otherwise | International Monetary Fund (2021) |
| voice and accountability | Voice and accountability risk index in 2019; value range 0 - 1; higher value means higher voice and accountability | The PRS Group (2021) |
| political stability and absence of violence | Political stability and absence of violence risk index in 2019; value range 0 - 1; higher value means higher political stability and absence of violence | |
| government effectiveness | Government effectiveness risk index in 2019; value range 0 - 1; higher value means higher government effectiveness | |
| regulatory quality | Regulatory quality risk index in 2019; value range 0 - 1; higher value means higher regulatory quality | |

| rule of law | Rule of law risk index in 2019; value range 0 - 1; higher value means higher rule of law | |
| control of corruption | Control of corruption risk index in 2019; value range 0 - 1; higher value means higher control of corruption | |
| polity fragmentation | 2018 Polity fragmentation; 0 - 3 scaled; higher value means more serious fragmentation | Marshall and Gurr (2020) |
| government concentration | 2017 sum of squared seat shares of all parties in the government; higher value means more concentrated government (i.e., having a few large parties) | Cruz, Keefer, and Scartascini (2018) |
| opposition parties concentration | Same calculation as Government concentration but for opponent parties (not in government); higher value means more concentrated opposition parties | Cruz et al. (2018) |
| regime durability | Number of years since the most recent regime change as of 2018 | Marshall and Gurr (2020) |
| checks and balances | The election competitiveness of legislature and executives; higher value means more competitively elected legislature and executives. | Cruz et al. (2018) |
| political rights | 1 - 7 scaled; lower value means higher degree of political freedom | Freedome House |
| income polarization | Standard deviation of responses to the income question: "Incomes should be make more equal" – "We need larger income differences as incentives" | EVS/WVS (2021) |
| business ownership polarization | Standard deviation of responses to the ownership question: "Private ownership of business should be increased" – "Government ownership of business and industry should be increased" | |
| government responsibility polarization | Standard deviation of responses to the government responsibility question "People should take more responsibility to provide for themselves"  - "The government should take more responsibility to ensure that everyone is provided for" | |
| competition polarization | Standard deviation of responses to the competitiveness question: "Competition is good. It stimulates people to work hard and develop new ideas" – "Competition is harmful. It brings out the worst in people" | |
| mean stringency | Average stringency index over March 2020 – May 2020 | Authors calculation from Hale et al. (2021) |
| median stringency | Median stringency index over March 2020 – May 2020 | |
| stringency volatility | Standard deviation of stringency index over March 2020 – May 2020 | |
| March-May stringency difference | The difference between the stringency index in March 2020 from May 2020 | |
| COVID-19 cumulative deaths | Cumulative Covid deaths as of 31 July 2020 (% of total population in 2019). | Authors calculation from WHO |
| real GDP per capita | Natural logarithm of real GDP (chained PPPs 2017$US) per capita in 2019. | Authors calculation from Feenstra, Inklaar, and Timmer (2015) |
| GDP growth | Year-on-year GDP growth rate at 2020Q1 or 2019Q4 (%) if latest data is unavailable. Real GDP series are seasonally adjusted. | Authors calculation from Datastream/Oxford Economics |
| dependency ratio | Population aged 65 and above (% of total population) in 2019. | The World Bank |

Table A3 Correlation matrix of dependent variables

| | fiscal/ GDP | wage/ GDP | welfare/ GDP | SME grants/ GDP | SME loans/ GDP | corporate grants/ GDP | corporate loans/ GDP | guarantee/ GDP | stimulus/ GDP | industry grants/ GDP | tax deferrals/ GDP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| fiscal/GDP | 1 | | | | | | | | | | |
| wage/GDP | 0.54*** | 1 | | | | | | | | | |
| welfare/GDP | 0.29*** | 0.15 | 1 | | | | | | | | |
| SME grants/GDP | 0.38*** | 0.19* | 0.39*** | 1 | | | | | | | |
| SME loans/GDP | 0.4*** | 0.2** | 0.07 | -0.02 | 1 | | | | | | |
| corporate grants/GDP | 0.58*** | 0.07 | 0.06 | 0.44*** | 0.05 | 1 | | | | | |
| corporate loans/GDP | 0.43*** | 0.6*** | 0.21** | 0.12 | 0.2* | 0.1 | 1 | | | | |
| guarantee/GDP | 0.33*** | 0.06 | 0.2** | 0.41*** | 0.1 | 0.52*** | -0.01 | 1 | | | |
| stimulus/GDP | 0.4*** | 0.42*** | 0.05 | 0.11 | 0.15 | 0.05 | 0.37*** | -0.04 | 1 | | |
| industry grants/GDP | 0.17* | -0.02 | 0.16 | 0.11 | 0.07 | 0.26*** | 0.23** | 0.1 | -0.01 | 1 | |
| tax deferrals/GDP | 0.25** | 0.11 | 0.07 | 0.37*** | 0.33*** | 0.31*** | 0.1 | 0.69*** | -0.08 | 0.14 | 1 |
| tax waiver/GDP | 0.08 | 0.06 | 0.13 | 0.47*** | -0.02 | 0.11 | 0.01 | 0.39*** | -0.05 | 0.12 | 0.65*** |

*Note: \*\*\*, \*\*, \* denote 1%, 5%, 10% level of significance.*

Table A4 Correlation matrix of independent variables

| | debt/GDP | quantitative easing | voice and accountability | political stability and absence of violence | government effectiveness | regulatory quality | rule of law | control of corruption |
|---|---|---|---|---|---|---|---|---|
| quantitative easing | 0.24** | 1 | | | | | | |
| voice and accountability | 0.2* | 0.42*** | 1 | | | | | |
| political stability and absence of violence | 0.19* | -0.01 | 0.37*** | 1 | | | | |
| government effectiveness | 0.22** | 0.41*** | 0.65*** | 0.39*** | 1 | | | |
| regulatory quality | 0.15 | 0.43*** | 0.57*** | 0.45*** | 0.7*** | 1 | | |
| rule of law | 0.15 | 0.24** | 0.64*** | 0.41*** | 0.65*** | 0.66*** | 1 | |
| control of corruption | 0.12 | 0.34** | 0.69*** | 0.47*** | 0.83*** | 0.74*** | 0.78*** | 1 |
| polity fragmentation | -0.13 | -0.04 | -0.17 | -0.34** | -0.14 | -0.05 | -0.03 | -0.16 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| government concentration | 0.07 | -0.15 | -0.25** | 0.05 | -0.22** | -0.09 | -0.2* | -0.2* |
| opposition parties concentration | 0.13 | -0.22** | -0.14 | 0.14 | -0.01 | -0.15 | -0.14 | -0.01 |
| regime durability | 0.21** | 0.26** | 0.49*** | 0.37*** | 0.62*** | 0.59*** | 0.54*** | 0.67*** |
| checks and balances | 0.15 | 0.42*** | 0.57*** | 0.07 | 0.51*** | 0.35** | 0.34** | 0.38*** |
| political rights | -0.24** | -0.44*** | -0.83*** | -0.31** | -0.6*** | -0.55*** | -0.44*** | -0.57*** |
| income polarization | 0.06 | 0.01 | -0.13 | -0.36** | -0.32** | -0.38** | -0.44*** | -0.41** |
| business ownership polarization | -0.15 | -0.3** | -0.48*** | -0.51*** | -0.66*** | -0.63*** | -0.66*** | -0.69*** |
| government responsibility polarization | -0.16 | -0.15 | -0.36** | -0.53*** | -0.54*** | -0.5*** | -0.62*** | -0.58*** |
| competition polarization | -0.08 | -0.19 | -0.48*** | -0.61*** | -0.6*** | -0.57*** | -0.74*** | -0.68*** |
| mean stringency | -0.01 | 0 | -0.09 | -0.28** | -0.19* | -0.13 | -0.25** | -0.22** |
| median stringency | -0.02 | 0 | -0.16 | -0.31** | -0.21* | -0.17 | -0.31** | -0.23** |
| stringency volatility | -0.07 | 0 | -0.18 | -0.28** | -0.24** | -0.34** | -0.37*** | -0.24** |
| March-May stringency difference | 0.07 | 0.17* | 0.38*** | 0.24** | 0.32** | 0.38*** | 0.52*** | 0.34** |
| COVID-19 cumulative deaths | 0.11 | 0.15 | 0.29** | -0.01 | 0.19* | 0.23** | 0.12 | 0.23** |
| real GDP per capita | 0.01 | 0.27** | 0.52*** | 0.45*** | 0.62*** | 0.74*** | 0.64*** | 0.68*** |
| GDP growth | 0.09 | 0.08 | -0.17 | -0.2* | -0.16 | -0.17 | -0.13 | -0.13 |
| dependency ratio | 0.3** | 0.42*** | 0.66*** | 0.33** | 0.53*** | 0.66*** | 0.57*** | 0.56*** |

| | polity fragmentation | government concentration | opposition parties concentration | regime durability | checks and balances | political rights | income polarization | business ownership polarization | government responsibility polarization | competition polarization |
|---|---|---|---|---|---|---|---|---|---|---|
| government concentration | -0.14 | 1 | | | | | | | | |
| opposition parties concentration | -0.15 | 0.32** | 1 | | | | | | | |
| regime durability | -0.08 | -0.06 | -0.02 | 1 | | | | | | |
| checks and balances | -0.17 | -0.32** | -0.09 | 0.27** | 1 | | | | | |
| political rights | 0.06 | 0.21** | 0.04 | -0.36*** | -0.62*** | 1 | | | | |
| income polarization | -0.09 | -0.3** | 0.06 | -0.1 | 0.17 | 0.04 | 1 | | | |
| business ownership polarization | 0.25* | 0.02 | 0.16 | -0.44*** | -0.21 | 0.42*** | 0.59*** | 1 | | |
| government responsibility polarization | 0.19 | 0.04 | 0.01 | -0.26** | -0.03 | 0.38** | 0.51*** | 0.79*** | 1 | |
| competition polarization | 0.37** | 0.06 | -0.07 | -0.42*** | -0.14 | 0.4** | 0.41** | 0.79*** | 0.84*** | 1 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mean stringency | 0.25** | 0.03 | -0.03 | -0.06 | -0.12 | 0.08 | 0.32** | 0.44*** | 0.34** | 0.4** |
| median stringency | 0.22** | 0.05 | 0.03 | -0.06 | -0.14 | 0.09 | 0.4** | 0.47*** | 0.34** | 0.42*** |
| stringency volatility | -0.02 | 0.03 | 0.13 | -0.16 | -0.17 | 0.17 | 0.45*** | 0.43*** | 0.27** | 0.33** |
| March-May stringency difference | -0.01 | -0.15 | -0.19* | 0.21** | 0.26** | -0.3** | -0.41** | -0.49*** | -0.35** | -0.51*** |
| COVID-19 cumulative deaths | -0.05 | 0.01 | -0.14 | 0.25** | 0.29** | -0.29** | 0.16 | -0.01 | 0.04 | 0.05 |
| real GDP per capita | -0.06 | -0.19* | -0.2* | 0.51*** | 0.31** | -0.45*** | -0.3** | -0.74*** | -0.64*** | -0.71*** |
| GDP growth | 0.06 | -0.05 | 0.1 | -0.14 | -0.05 | 0.26** | 0.15 | 0.2 | 0.22* | 0.19 |
| dependency ratio | -0.03 | -0.25** | -0.17 | 0.39*** | 0.47*** | -0.64*** | -0.21 | -0.6*** | -0.47*** | -0.54*** |

| | mean stringency | median stringency | stringency volatility | March-May stringency difference | COVID-19 cumulative deaths | real GDP per capita | GDP growth |
|---|---|---|---|---|---|---|---|
| median stringency | 0.94*** | 1 | | | | | |
| stringency volatility | 0.57*** | 0.71*** | 1 | | | | |
| March-May stringency difference | -0.28** | -0.47*** | -0.72*** | 1 | | | |
| COVID-19 cumulative deaths | 0.13 | 0.16 | 0.07 | -0.02 | 1 | | |
| real GDP per capita | -0.08 | -0.11 | -0.31** | 0.4*** | 0.21** | 1 | |
| GDP growth | 0.16 | 0.21** | 0.4*** | -0.28** | -0.03 | -0.29** | 1 |
| dependency ratio | -0.15 | -0.19* | -0.36*** | 0.54*** | 0.24** | 0.67*** | -0.1 |

*Note: \*\*\*, \*\*, \* denote 1%, 5%, 10% level of significance.*

Table A5 Descriptive statistics of independent variables in multi-variate regression

| Variable | Observation | Mean | Min | Max | Standard deviation |
|---|---|---|---|---|---|
| debt/GDP | 87 | 62.09 | 0.28 | 234 | 39.02 |
| quantitative easing | 87 | 0.46 | 0 | 1 | 0.5 |
| political risk | 87 | 0.68 | 0.43 | 0.93 | 0.15 |
| stringency volatility | 87 | 22.29 | 2.71 | 33.82 | 6.55 |
| COVID-19 cumulative deaths | 87 | 0.01 | 0 | 0.17 | 0.02 |
| real GDP per capita | 87 | 9.95 | 7 | 11.63 | 1 |
| GDP growth | 87 | -0.31 | -12.03 | 8.71 | 3.26 |
| dependency ratio | 87 | 12 | 1.160 | 28 | 6.85 |