Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
World equity markets and COVID-19: Immediate response and recovery prospects

Ünal Seven, Fatih Yılmaz

Abstract

Following the spread of the COVID-19 pandemic, most global equity market indices experienced significant falls. Recognizing the severe economic impacts of the pandemic, starting from mid-March, many governments announced unprecedented economic rescue packages, which appear to restore investors' confidence, given the recoveries recorded in most stock markets. However, the recovery performance significantly varies across countries. This paper provides an empirical analysis on what may explain this variation in the recovery performance observed in equity markets across countries. We find that among different types, fiscal stimulus supports seem to be strongly and positively associated with higher recovery that may justify more targeted fiscal supports for the real sector firms to restore investors' confidence. We also find that the severity of the outbreak, reliance more on natural resource and tourism revenues are negatively associated with countries' stock market recovery performance.

1. Introduction

The COVID-19 pandemic, initially broke out in China, has since posed a severe threat to our lives and economies. Millions of infections and hundreds of thousands of deaths have been recorded globally, with more casualties expected in the coming days and months. In response, many countries have had to halt daily life and suspended most international travel. The measures taken to limit the spread of COVID-19 have hit all economies. While the actual macroeconomic impacts of the pandemic will be realized over time, its impact on financial markets was much faster and dramatic. Most major global equity market indices had experienced significant drops up to 60% (for instance, MXCO Index of Colombia dropped about 60%, ASE Index of Greece dropped by 47% and the US Dow Jones Index dropped about 37%). Recognizing the short and long-run economic impacts of COVID-19, many governments announced

---

* We would like to thank the participants at the KAPSARC Seminar Series for their valuable contributions. The views expressed in this paper are solely the responsibilities of the authors and should not be interpreted as reflecting the view of their affiliated institutions.

** Corresponding author.

E-mail addresses: unal.seven@tcmb.gov.tr (Ü. Seven), fatih.yilmaz@kapsarc.org (F. Yılmaz).

1 Hale et al. (2020) introduced a stringency index to combine measures and describe variation in government responses in various areas.

2 Goodell (2020) provided a comprehensive literature review on the economic impact of natural disasters, and pointed out the wide ranging impact of pandemic on financial sector.

3 Zhang et al. (2020) showed that risks associated to the pandemic caused to higher volatility in global financial markets. In addition, several attempts have been taken to test the relationship between the COVID-19 crisis and market volatility (see for example, Albulescu, 2020; Baker et al., 2020; Onali, 2020, among others).

https://doi.org/10.1016/j.ribaf.2020.101349

Received 4 June 2020; Received in revised form 18 October 2020; Accepted 1 November 2020

Available online 12 November 2020

0275-5319/© 2020 Elsevier B.V. All rights reserved.
multi-trillion US Dollars economic rescue packages starting from mid-March. Following this positive signal, global equity markets started to rebound with gradual recovery. However, the recovery performance appears to vary across countries significantly. This paper aims to shed light on explaining these differences in markets’ recovery performance across countries.

Using daily data on benchmark indices, Google search statistics, and the announcement of economic rescue packages from 78 countries, we first identify the reference dates (e.g., peaks and dips) for global equity markets. Most equity markets seem to have reached their peaks around February 19 with the spread of the pandemic to Europe, and have recorded their dips around March 23, following the announcement of economic rescue packages. Using these reference dates, we compute the immediate response of equity markets to the pandemic (i.e., the loss), the difference between the peak and dip values of the benchmark indices. We then compute the recovery rate, percentage of the loss that had been recovered until April 24th. Exploiting the large variation in the recovery rates across countries, we conduct a cross-sectional empirical analysis on what factors may explain these differences. The empirical analysis particularly focuses on factors that have been widely stressed in the related literature including economic rescue packages, country COVID-19 fight performance and the structure of domestic economy (e.g., reliance on resource revenues, tourism revenues and exports).

Our results show that not all types of rescue packages are effective in restoring investors’ valuation of equity markets. In particular, we find that fiscal stimulus policies, among others (e.g., easing financial market regulations, rate cuts, etc.), are statistically significantly and positively associated with the recovery rate. One interpretation of this result can be that investors have more cogent believes for direct liquidity injections to listed firms (via fiscal policy) that may more effectively mitigate the adverse economic effects of the pandemic. This finding may justify more targeted fiscal supports for the real sector firms to restore investors’ confidence. We also find that higher pandemic related deaths (and positive case numbers), i.e., poor performance in handling the pandemic, is statistically significantly but negatively associated with the recovery rate. The pandemic related risks (e.g., more pandemic related deaths) increase uncertainty and thus, market volatility, which weakens the future value of markets. Our results also point that the structure of economies also play a role in affecting investors’ expectations. This is to say that higher economic reliance on tourism or on natural resource revenues is negatively associated with the recovery rate. This finding is in line with the general expectations noted in the recent reports by many international institutions. For instance, according to the OECD (2020), the pandemic related concerns could decrease the global tourism economy by 45–70% in 2020. Similarly, commodity markets lost significant value, creating considerable worries on the future of resource-rich economies, especially the commodity-dependent emerging and developing economies, which are listed among the most vulnerable economies to COVID-19 (UN, 2020; World Bank, 2020). Despite the concerns on the disruption of the COVID-19 on global value chains (WTO, 2020), we did not find a statistically significant relationship between countries export revenues and their stock market recovery performance.

This study contributes to the existing literature in at least three dimensions. First, the newly developing literature looking at the immediate impact of COVID-19 on financial markets mostly focuses on stock market return and volatility within a daily empirical framework (e.g., Al-Awadhi et al., 2020; Zhang et al., 2020; Ashraf, 2020; Okorie and Lin, 2020; Ahmar and del Val, 2020). In contrast, our focus here is on the recovery performance observed in a longer time frame, which can help to understand mid- to long-term equity market recovery prospects. For instance, Al-Awadhi et al. (2020) from a single country, China, and Zhang et al. (2020) and Ashraf (2020) from cross-country studies well establish the negative (positive) link between the daily growth of COVID-19 related death or positive case numbers and stock market return (volatility). Our results compliments these papers by showing that a month long recovery performance is also strongly associated with COVID-19 related death and case numbers. Secondly, our paper establishes an important link between the recovery performance of equity markets and the announcement of rescue packages, which has been missing in the literature. After controlling for several things, including COVID-19 related deaths (or cases), we show that type and size of these rescue packages play a statistically significant role in explaining the recovery performance. Thirdly, very few papers consider the relation between countries’ macro economic structure and their equity markets’ performance during the pandemic crises (e.g., Ashraf, 2020). This is rather a difficult task to achieve with a model relying on daily data. By focusing on a longer term perspective and cross-country variation, we can provide empirical evidence on the relation between countries’ equity market recovery performance and their general economic structure – e.g., reliance on natural resource, tourism and export revenues. These relations have been discussed in various policy reports, yet to be widely established in an econometric study.

We should also note that this paper is an exploratory empirical study which does not claim any causal interpretation, such that our regression results may suffer from endogeneity and omitted variable bias problems. Despite these limitations, our study still provides valuable discussion on understanding the immediate impact of the pandemic on equity markets and how the policy responses restored investors’ confidence. Such an assessment is also useful to infer the possible paths forward out of the COVID-19 crisis.

The next section presents the details of our data and also discusses the economic timeline of the pandemic. Section 3 presents our econometric results. Finally, Section 4 concludes.

2. Data

Daily benchmark equity market indices are downloaded from Bloomberg Terminal for the period of January 1 to April 24, 2020. Stock markets that were fully or partially closed during the pandemic period are dropped from the sample. Given their small market

---

4 Zaremba et al. (2020) studied the influence of non-pharmaceutical policy responses to the COVID-19 pandemic and showed that government responses increase the volatility in international equity markets. They, however, did not look at the relationship between government responses and equity market returns. Moreover, they focus on the role of non-pharmaceutical policies rather than the rescue packages.
capitalization and volatile nature, we exclude small island countries from the study. Daily official COVID-19 related case and death numbers are obtained from the European Centre for Disease Prevention and Control (ECDPC) for the same period. Our macro variables come from the World Bank’s World Development Indicators. Lastly, our measure of COVID-19 stimulus packages, which covers the packages since mid-March until the end of April, are obtained from Elgin et al. (2020). To construct a comparable sample of countries, we restrict our sample to the countries with at least 1000 US Dollars in real GDP per capita (2010 prices) in 2018. Our final data covers 78 countries from all the regions in the world. A full list of countries covered in our study along with their Bloomberg Terminal ticker is reported in Table A.1 in the Appendix. The countries covered in our sample account for 93.3 percent of the world GDP and 91.8 percent of the world trade in 2018. Most of the stock market benchmark indices in our sample are weighted price indices.

---

5 We naturally could not include countries that do not have an organized stock exchange market, such as the regional stock exchange markets serving to several African countries, or countries, whose market data is covered by Bloomberg, such as Iran.

6 The COVID-19 data is compiled from the ECDPC’s website.

7 The index and its components are revised frequently and reported in Elgin’s website, we use the April revision.

8 Very few countries in our sample either do not report a price index or their widely used benchmark index is not a price index in which case we use their return index instead.
In what follows, we describe the steps for the construction of our dependent variable, the recovery rate. Complementing the daily stock market data with Google search statistics and the announcement dates of economic rescue packages, we identify two reference dates, the global peak date – i.e., when most markets peaked before the pandemic crises – and the global dip date – i.e when most markets recorded dips and rebounded following the announcement of rescue packages. Using these peak and dip dates, we compute the initial respond of equity markets to the COVID-19 pandemic crisis (i.e., the loss), and proportion of the loss that had been recovered (i.e., the recovery rate) until the last trading day covered in our sample.

2.1. How did COVID-19 spread over the world stock markets?

The benchmark equity market indices, normalized\(^9\) to be between zero and one, are displayed in Fig. 1. Panel (a) of the figure shows a selection of countries from different world regions to illustrate the general tendency in world stock markets over the first four months of 2020, while the full sample is displayed in Panel (b). Three key dates – January 13, February 19 and March 23 – flash out from the figure. The first date shows the date that China’s Shangai Stock Exchange (SSE) peaked. The second date displays the peak for most of the countries in the rest of the world, and finally, the third date is the beginning of recovery process, where most countries declared economic rescue packages to mitigate negative economic impact of the pandemic crises. As visually evident in Fig. 1b, the general tendency is preserved in the full sample. To provide further visual evidence on the reference dates, we show the number of countries peaked in January and February, and recorded dips in March in Fig. 2. According to Fig. 2a, some moderate number of countries, including the economies with greater exposure to Chinese economy (e.g., major oil and gas exporters, such as Saudi Arabia and Qatar, Fig. 1a), reached to their peaks around the same time with China, while many more countries in the rest of the world peaked around February 19.

In order to mitigate the negative economic impact of COVID-19, many governments announced unprecedented economic rescue packages starting from mid-March.\(^{10}\) According to the IMF COVID-19 Policy Tracker data,\(^{11}\) some of the most significant ones include a 2 trillion stimulus package in the United States (U.S.) (10% of its GDP) and a 0.8 trillion package in Germany (20.5% of its GDP). The giant rescue packages appear to restore investor confidence, given that the markets started to pick up since mid-March. Similarly, following the global trend, most equity markets recorded their dips between March 18 and 23, Fig. 2b.

The timeline followed by the equity markets seems to be closely inline with the Google search statistics trends for the keyword “coronavirus” in the world and in major countries, as depicted in Fig. 3. In the figure, we display the relevant Google search trends for the World, China (i.e., the origin of the pandemic), Italy (i.e., the first infected in Europe), and finally, the United States (i.e., a major economy). It is interesting to see that in the early days of the pandemic, there was little interest on the issue in the world, perhaps due to the assumption that the pandemic would be preserved locally in China. However, the interest on the pandemic quickly picked up around the same time that the virus spread to Italy and then to the rest of the world, while the equity markets responded immediately. As we reached to mid-March, the interest started to decline.

Given the global trend, we treat February 17–21 as the global peak, and March 18–23 as the global dip windows in the analysis. We use these reference dates to compute the loss, and the recovery rate until April 24th for all the countries in our sample. Although the

---

\(^9\) The normalization is done by \([x-min(x)]/(min(x)-max(x))\), where \(x\) is index value.

\(^{10}\) Most of these packages were firstly communicated with the public usually a few days before the actual legal process in respective parliaments and congresses. For instance, the initial Coronavirus Aid, Relief, and Economic Security Act in the United States was designed to be 1.4 trillion USD, which did not pass the Senate in March 23. The revised bill with 2 trillion USD passed in March 25. However, global markets were already informed about the bailout earlier. For the full story, see the Washington Post article.

\(^{11}\) The IMF produces an up-to-date policy tracker database that summarizes government responses against the human and economic impact of the pandemic for 193 economies, see the IMF Policy Tracker Database.
global trend persists in most countries, some countries deviate from the global trend especially in their peak dates (Fig. 2a). Several factors may explain this behavior, including their economic exposure to Chinese Economy (e.g., energy supplying countries such as Gulf countries) or the development of the pandemic in these countries. To account for these deviations from the global trend, we allow country specific peak and dip reference dates in an alternative specification, “flexible dates”. Under the flexible dates approach, we identify peaks as the highest index value between January 13th (i.e., the peak date for China) and the last day of February, and also, identify dips as the lowest index value in March.

As next, we describe the computation of the recovery rate following the global trend approach, however, we also follow the same the computation and the analysis with the flexible dates approach.

2.2. Measuring the stock market recovery rate

The recovery rate for an equity market benchmark index (index) is computed as the ratio of the recovered amount (from its dip to April 24, the last data in our sample) to the absolute value of loss, the index difference between the peak and dip dates:

\[
\text{recovery rate} = \frac{\text{index}_{\text{last}} - \text{index}_{\text{dp}}}{|\text{index}_{\text{dp}} - \text{index}_{\text{peak}}|}. \quad (1)
\]

For convenience, we take the absolute value of the loss amount in the denominator to make it positive.\(^\text{12}\) Hence, the recovery rate is a positive number, when there is actually a positive recovery; zero, if no recovery observed, and negative, if further losses accrued. Despite the growing concerns on a potential second wave of the pandemic, most equity markets have made significant recoveries since their dips in mid-March (Fig. 4). As of the last day in our sample, the US Dow Jones had recovered 48% of the losses it incurred between February 19 and March 23. During the same period, the German DAX index recovered 35%, and the UK FTSE 100 regained 31% of their losses. It is also evident from the figure that some country benchmark indices experienced further decline following the global dip dates.

2.3. COVID-19 rescue measures

Using the IMF COVID-19 Policy Tracker data, Elgin et al. (2020) created a COVID-19 Economic Stimulus Index (CESI) that we use to measure the size of rescue packages in the analysis. The rescue packages contain various types of supports for households, firms, and the financial industry. Fiscal supports usually occupy the biggest portion in these packages, which include direct cash transfers (e.g., enhanced employment benefits, improved food safety, etc.), tax rebates (to individuals and firms), credit guarantees (i.e., preventing firm bankruptcies), forgiving loans (i.e., usually for small and medium size enterprises). Monetary and macro-financial supports

\(^{12}\) All the equity market indices in our sample recorded losses until the global dip date and thus, shows positive numbers once taken their absolute value.
usually include easing market liquidity with policy rate cuts and relaxing regulations and supervision controls, as well as asset purchase programs by the central banks. We use both the composite index and its components in our analysis.

2.4. Descriptive analysis

The summary statistics for all the variables used in the analysis are presented in Table 1. According to the summary statistics, the average recovery rate under the global dates approach is 28.5%, that is slightly higher, 35.5%, under the flexible dates. Total COVID-19 related official case numbers (until April 24th) for the countries in our sample averages to 156 (per one million population) that is

| Variable                                         | Obs | Mean   | Std. Dev. | Min  | Max   |
|--------------------------------------------------|-----|--------|-----------|------|-------|
| Recovery rate (Global Dates, %)                  | 78  | 28.51  | 23.08     | −99.10 | 72.20 |
| Recovery rate (Flexible Dates, %)                | 78  | 35.45  | 19.03     | −49.07 | 75.68 |
| Death rate (per 1,000,000 people)                | 78  | 3.16   | 12.61     | 0.00  | 100.56|
| Total cases (per 1,000,000 people)               | 78  | 155.97 | 300.08    | 0.20  | 1663.02|
| Death per 100 Cases                              | 78  | 1.52   | 2.11      | 0.00  | 9.51  |
| CESI index                                       | 78  | 0.37   | 0.27      | 0.00  | 1.00  |
| Fiscal (% of GDP)                                | 78  | 6.01   | 5.34      | −5.00 | 22.14 |
| Rate cut (%)                                     | 78  | 22.42  | 32.16     | −105.56 | 100.00|
| Reserve requirement and buffer (%)               | 78  | 25.05  | 34.76     | −8.33 | 100.00|
| Macro-financial (% of GDP)                       | 78  | 5.07   | 6.38      | 0.00  | 28.00 |
| BoP (% of GDP)                                   | 78  | 0.26   | 0.98      | 0.00  | 6.50  |
| Other BoP                                        | 78  | 0.26   | 0.44      | 0.00  | 1.00  |
| Resource rich dummy                              | 78  | 0.22   | 0.42      | 0.00  | 1.00  |
| Tourism revenue (% of GDP)                       | 78  | 4.93   | 4.89      | 0.27  | 22.89 |
| Total exports (% of GDP)                         | 78  | 52.57  | 39.02     | 8.24  | 223.08|
| GDP per capita (000 USD)                         | 78  | 26.16  | 23.89     | 1.20  | 110.74|

The tables presents the summary statistics for all the variables used in the analysis. Recovery rate is computed as the ratio of the recovered amount from the dip of each index to its value on April 24 to the loss amount between the peak and dip dates. Death rate is the ratio of total number of COVID-19 related deaths till March 24 to population. Total cases variable represents the total number of cases (per 1 million people) till March 24. Death per 100 cases variable represents the total number of COVID-19 related deaths per 100 cases. The CESI index is a composite index for measuring the combined impact of all adopted policies against the economic impact of the COVID-19 pandemic measures as defined by Elgin et al. (2020), and it is normalized to [0, 1] interval. Fiscal stands for the fiscal policy package as a percent of GDP, Rate Cut is the interest rate cut as a percent of the pre-crisis level, Macro-Financial is the monetary stimulus package as a percent of GDP, BoP is the monetary intervention to control the balance of payments and the exchange rate as a percent of GDP and finally, Other BoP is a dummy variable taking the value of 1 if there are other accompanying measures towards stabilizing BoP and exchange rate a la Elgin et al. (2020). Resource rich takes value of 1 for resource rich countries, zero otherwise. Tourism revenue represents the international tourism receipts as a percentage of GDP while total exports variable is defined as the ratio of total exports of goods and services to GDP.

![Recovery Rate and CESI Index](image1)
![Recovery Rate and Fiscal Package](image2)

**Fig. 5.** Recovery rate and stimulus packages. *Notes:* The CESI index is normalized to the [0,1] interval. Recovery rate is computed as the ratio of the recovered amount from the dip of each index to its value on April 24 to the loss amount between the peak and dip dates.

usually include easing market liquidity with policy rate cuts and relaxing regulations and supervision controls, as well as asset purchase programs by the central banks. We use both the composite index and its components in our analysis.

2.4. Descriptive analysis

The summary statistics for all the variables used in the analysis are presented in Table 1. According to the summary statistics, the average recovery rate under the global dates approach is 28.5%, that is slightly higher, 35.5%, under the flexible dates. Total COVID-19 related official case numbers (until April 24th) for the countries in our sample averages to 156 (per one million population) that is
Table 2
Estimation results with overall CESI index.

|                          | Baseline (Global dates) | Flexible dates |
|--------------------------|-------------------------|----------------|
|                          | 1           | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
| CESI index               | 9.696      | 10.02       | 5.857       | −2.605     | 10.38       | 10.64       | 6.893       | −2.215     |
|                          | (9.309)    | (9.512)    | (4.679)    | (4.483)    | (8.131)    | (8.295)    | (4.105)    | (3.856)    |
| Death rate (per 1,000,000 people) | −0.134∗   | −0.248*** | −0.301*** | −0.107∗   | −0.207*** | −0.264*** | 0.00226    | (0.0292)   |
|                          | (0.0565)   | (0.0301)   | (0.0113)   | (0.0561)   | (0.0290)   | (0.0136)   | (0.2509)   | (0.0193)   |
| Resource rich            | −23.51**   | −22.72**   | (8.441)    | (7.682)    | (6.879)    | (6.219)    | 0.0161     | −0.0279    |
|                          | (9.352)    | (9.351)    | (8.102)    | (8.203)    | (7.692)    | (6.193)    | (0.287)    | (0.316)    |
| Tourism revenue (% of GDP) | −0.907** | −0.749*    | (0.324)    | (0.343)    | (0.287)    | (0.316)    | 0.0161     | −0.0279    |
|                          | (0.342)    | (0.343)    | (0.287)    | (0.316)    | (0.287)    | (0.316)    | (0.287)    | (0.316)    |
| Exports of goods and services (% of GDP) | −0.00226 | −0.0432 | (0.0292) | (0.0263) | (0.0264) | (0.0265) | (0.0263) | (0.0264) |
| GDP per capita           | 0.195      | 0.195       | (0.0881)   | (0.0881)   | (0.0881)   | (0.0881)   | (0.0881)   | (0.0881)   |
| Constant                 | 24.88***   | 25.18***   | 36.82***   | 36.25***   | 31.56***   | 31.80***   | 42.67***   | 42.06***   |
|                          | (3.595)    | (3.884)    | (3.818)    | (4.560)    | (3.457)    | (3.665)    | (3.803)    | (4.597)    |

The table presents the cross-country OLS results for the regression between the recovery rate, economic stimulus packages, the pandemic related death rate and certain country characteristics. Dependent variable is recovery rate in all the specifications. In “Baseline (Global Dates)” results (columns 1 to 4), the recovery rate is computed from benchmark indices’ peaks and dips recorded in global dates (i.e., maximum value in February 17–21; minimum value in March 18–23). In “Flexible Dates” results (columns 5 to 8), the peaks and dips are computed using the maximum benchmark index values recorded in January and February, and the minimum index value in March. The CESI index is a composite index for measuring the combined impact of all adopted policies against the economic impact of the COVID-19 pandemic measures as defined by Elgin et al. (2020), and it is normalized to [0, 1] interval. Fiscal stands for the fiscal policy package as a percent of GDP. Rate Cut is the interest rate cut as a percent of GDP. Robust (clustered) standard errors are in parentheses. The clustering is done at the World Bank eight region level.

Correlations across the variables are presented in Table A.2. In particular, we show the correlations between the recovery rate and the Elgin et al. (2020)’s CESI index, as well as its main component, fiscal stimulus packages in Fig. 5. The correlation between the variables appears to be positive and notably stronger in the second panel. Most countries heavily used fiscal stimulus packages that are presumably more inclusive and direct than other alternatives, as many agents in the economy (e.g., households, firms, financial markets) widely benefit from them. On the contrary, CESI’s other components, such as macro-finance and the balance of payment supports, appear to be less correlated with the recovery rate. This may be expected, as they tend to be more relevant for the macro economic stability (Table A.2). The table also indicates highly significantly but negative correlation between recovery performance and countries’ dependence on natural resource and tourism revenues.

3. Regression analysis: what may explain the cross-country differences in recovery performance?

In this section, we first discuss the details of our model specification. We then present the estimation results along with further robustness checks of the main findings.

3.1. Model specification

We estimate a cross-sectional OLS model that is specified as:

\[ \text{recovery rate} = \alpha + \beta_1 \text{economic stimulus} + \beta_2 \text{covid19 fight} + \beta_3 \text{domestic economy} + \beta_4 \text{income} + \epsilon, \]  

where \( \epsilon \) is country and \( \epsilon \) is the error term. The recovery rate, our dependent variable, measures the percentage of COVID-19 induced loss in the benchmark stock market index that had been recovered until the last trading day in our sample. Economic stimulus variable captures the size and the type of rescue packages implemented to mitigate the negative economic impact of the pandemic. As discussed
Research in International Business and Finance 56 (2021) 101349

Table 3

|                          | Baseline (global dates) | Flexible dates |
|--------------------------|-------------------------|---------------|
|                          | 1          | 2          | 3          | 4          | 5          | 6          | 7          | 8          |
| Fiscal (% of GDP)        | 1.468***   | 1.468***   | 1.083***   | 0.696***   | 1.253***   | 1.253***   | 0.922***   | 0.480*     |
|                          | (0.380)    | (0.385)    | (0.161)    | (0.148)    | (0.331)    | (0.336)    | (0.207)    | (0.217)    |
| Rate cut (%)             | 0.0486     | 0.0460     | 0.128      | 0.113      | 0.0357     | 0.0336     | 0.0917     | 0.0753     |
|                          | (0.0896)   | (0.0939)   | (0.133)    | (0.124)    | (0.0853)   | (0.0891)   | (0.127)    | (0.113)    |
| Reserve requirement and buffer (%) | 0.136***   | 0.134***   | 0.0960**   | 0.0755*    | 0.126*     | 0.124**    | 0.0826     | 0.0593     |
|                          | (0.0367)   | (0.0353)   | (0.0333)   | (0.0320)   | (0.0412)   | (0.0398)   | (0.0372)   | (0.0370)   |
| Macroeconomic (% of GDP) | −0.540     | −0.530     | −0.361     | −0.407     | −0.430     | −0.422     | −0.264     | −0.317     |
|                          | (0.569)    | (0.577)    | (0.371)    | (0.298)    | (0.454)    | (0.465)    | (0.287)    | (0.206)    |
| BoP (% of GDP)           | −0.617     | −0.598     | −1.474     | −2.151     | −1.265     | −1.250     | −1.629     | −2.402     |
|                          | (1.501)    | (1.541)    | (2.452)    | (2.448)    | (0.891)    | (0.915)    | (1.561)    | (1.610)    |
| Other BoP                | 12.71%     | 12.50%     | 14.66      | 16.53%     | 9.827%     | 9.651%     | 10.32%     | 12.45%     |
|                          | (6.223)    | (6.427)    | (7.798)    | (8.444)    | (4.306)    | (4.262)    | (5.262)    | (5.563)    |
| Death rate (per 1,000,000 people) | −0.0485   | −0.131**   | −0.181***  | −0.0393    | −0.122**   | −0.179***  |
|                          | (0.0778)   | (0.0490)   | (0.0335)   | (0.0652)   | (0.0454)   | (0.0201)   |
| Resource rich            | −24.62%    | −24.85%    | −18.60%    | −18.85%    | −9.768%    | −8.776%    |
|                          | (11.77)    | (10.83)    | (27.89)    | (29.42)    | (25.33)    | (24.36)    |
| Tourism revenue (% of GDP) | −0.615**   | −0.466     | −0.992***  | −0.822**   | (0.259)    | (0.352)    |
|                          | (0.250)    | (0.322)    | (0.9066)   | (0.332)    | (0.0994)   | (0.136)    |
| Exports of goods and services (% of GDP) | −0.00761 | −0.0390    | 0.00665    | −0.0298    | 0.00251    | 0.0367    |
|                          | (0.0365)   | (0.0330)   | (0.0301)   | (0.0365)   | (0.0017)   | (0.0023)   |
| GDP per capita           | 0.195**    | 0.185**    | 0.223**    | (0.0811)   | 0.00401    | 0.0136    |
| Constant                 | 14.84      | 15.10      | 24.41**    | 23.51**    | 23.96***   | 24.17***   | 33.90***   | 32.88***   |
|                          | (8.046)    | (8.511)    | (7.479)    | (8.443)    | (5.853)    | (6.172)    | (6.432)    | (7.070)    |
| Observations             | 78         | 78         | 78         | 78         | 78         | 78         | 78         | 78         |
| R-squared                | 0.145      | 0.146      | 0.308      | 0.326      | 0.154      | 0.155      | 0.321      | 0.353      |

The table presents the cross-country OLS results for the regression between the recovery rate, the components of economic stimulus packages, the pandemic related death rate and certain country characteristics. Dependent variable is recovery rate in all the specifications. In “Baseline (Global Dates)” results (columns 1 to 4), the recovery rate is computed from benchmark indices’ peaks and dips recorded in global dates (i.e., maximum value in February 17–21; minimum value in March 18–23). In “Flexible dates” results (columns 5 to 8), the peaks and dips are computed using the maximum benchmark index values recorded in January and February, and the minimum index value in March. The CESI index is a composite index for measuring the combined impact of all adopted policies against the economic impact of the COVID-19 pandemic measures as defined by Elgin et al. (2020), and it is normalized to [0, 1] interval. Fiscal stands for the fiscal policy package as a percent of GDP, Rate Cut is the interest rate cut as a percent of the pre-crisis level, Macro-Financial is the monetary stimulus package as a percent of GDP, BoP is the monetary intervention to control the balance of payments and the exchange rate as a percent of GDP and finally, Other BoP is a dummy variable taking the value of 1 if there are other accompanying measures towards stabilizing BoP and exchange rate à la Elgin et al. (2020). Death rate is the ratio (per 1 million people) of total number of COVID-19 related deaths till March 24 to population. Resource Rich takes value of 1 for resource rich countries, zero otherwise. Tourism revenue represents the international tourism receipts as a percentage of GDP while total exports variable is defined as the ratio of total exports of goods and services to GDP. Robust (clustered) standard errors are in parentheses. The clustering is done at the World Bank eight region level.

*p < 0.1.

**p < 0.05.

***p < 0.01.

above, we employ both the composite index (CESI) and its components to capture both size and types of the packages. To account for country performance in dealing with the pandemic crisis, we employ COVID-19 related deaths per one million population. Considering the discussions on the gradual recovery of commodity markets (e.g., particularly oil and gas), expectations on slow recovery of tourism and concerns on supply-chain networks and exports, we also employ the relevant controls in the model, including a dummy for countries resource richness, tourism and total export revenues as a percentage of GDP. Real GDP per capita, a proxy for average income, is also controlled in all the specifications to account for income differences across countries.

In general, spillover effects are expected across stock markets, where movements in major markets would be followed by others (Morales and Callaghan, 2012). Using the recovery rate, computed from the global trend, as the dependent variable assumes that the peak and dip dates are determined by the global trend (due to spillover effects); however, local policies (e.g., stimulus packages), pandemic fight performance (e.g., death rate), and structure of the domestic economy (e.g., dependence on tourism revenues) may still play an important role in explaining the heterogeneity in recovery performance across countries. On the contrary, the alternative “flexible dates” approach relaxes the global trend approach, where domestic factors, including the development of the pandemic, may also determine the reference peak and dip dates along with the recovery performance. For the robustness of our baseline estimates (with the global trend approach), we also repeat the analysis with the flexible dates approach.

Moreover, our focus here is on capturing the immediate recovery performance of the equity markets motivated by the stimulus packages and country economic structure in a relatively shorter period during the COVID-19 pandemic crisis. This is mainly because,
Table 4
Robustness tests.

| Baseline (global dates) | Flexible dates |
|-------------------------|----------------|
|                         | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
| CESI index              |     |     |     |     |     |     |     |     |
|                         | –1.759 | –2.604 | –1.574 | –2.516 |     |     |     |     |
| (4.884) (5.520)         | (4.198) (4.662) |     |     |     |     |     |     |     |
| Fiscal (% of GDP)       | 0.732*** | 0.745*** | 0.509* | 0.528*** |     |     |     |     |
|                         | (0.180) (0.157) | (0.265) (0.114) |     |     |     |     |     |     |
| Rate cut (%)            | 0.117 | 0.0868 | 0.0767 | 0.0430 |     |     |     |     |
|                         | (0.119) (0.120) | (0.106) (0.0990) |     |     |     |     |     |     |
| Reserve requirement and buffer (%) | 0.0846* | 0.0870** | 0.0675 | 0.0708 (0.0348) |     |     |     |     |
|                         | (0.0359) (0.0291) | (0.0400) (0.0348) |     |     |     |     |     |     |
| Macro-financial (% of GDP) | –0.420 | –0.396 | –0.319 | –0.298 |     |     |     |     |
|                         | (0.313) (0.253) | (0.214) (0.217) |     |     |     |     |     |     |
| BoP (% of GDP)          | –1.905 | –2.463 | –2.059 | –2.769 |     |     |     |     |
|                         | (2.504) (2.356) | (1.616) (1.566) |     |     |     |     |     |     |
| Other BoP               | 17.11* | 18.34 | 13.02* | 14.44* |     |     |     |     |
|                         | (8.192) (9.702) | (5.395) (5.961) |     |     |     |     |     |     |
| Resource rich           | –22.10** | –23.13 | –16.79** | –17.94 | –18.50* |     |     | –19.35 |
|                         | (7.969) (6.143) | (6.243) (4.555) | (8.839) (6.528) |     |     |     |     |
| Tourism revenue (% of GDP) | –0.641* | –0.992** | –0.943** | –1.341** | –0.737** |     |     | –1.073 ** |
|                         | (0.318) (0.394) | (0.346) (0.346) | (0.303) (0.297) | (0.305) (0.313) |     |     |     |     |
| Exports of goods and services (% of GDP) | –0.0345 | –0.0531 | –0.0204 | –0.0232 | –0.0569 |     |     |     |
|                         | (0.0187) (0.0349) | (0.0266) (0.0414) | (0.0121) (0.0275) | (0.0272) (0.0412) |     |     |     |     |
| GDP per capita          | 0.229* | 0.152 | 0.260 | 0.257* | 0.207* |     |     |     |
|                         | (0.107) (0.0885) | (0.0840) (0.0565) | (0.144) (0.112) | (0.128) (0.0921) |     |     |     |     |
| Total cases (per 1,000,000 people) | –0.00928 | –0.00521 | –0.0107* | –0.00756 |     |     |     |     |
|                         | (0.00394) (0.00162) | (0.00478) (0.00259) |     |     |     |     |     |     |
| Deaths per 100 cases    | –2.707 | –2.779* | –3.052* | –3.219** |     |     |     |     |
|                         | (1.765) (1.257) | (1.447) (1.229) |     |     |     |     |     |     |
| Constant                | 34.42*** | 42.35*** | 21.89** | 40.29*** | 49.25*** | 31.14*** | 40.03*** |     |
|                         | (3.569) (5.895) | (7.203) (10.07) | (3.925) (4.069) | (6.008) (6.751) |     |     |     |     |
| Observations            | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| R-squared               | 0.205 | 0.252 | 0.320 | 0.372 | 0.255 | 0.342 | 0.350 | 0.451 |

The table presents the cross-country OLS results for the regression between the recovery rate, the components of economic stimulus packages, the pandemic related cases/deaths and certain country characteristics for the robustness. Dependent variable is recovery rate in all the specifications. In “Baseline (Global Dates)” results (columns 1 to 4), the recovery rate is computed from benchmark indices’ peaks and dips recorded in global dates (i.e., maximum value in February 17–21; minimum value in March 18–23). In “Flexible Dates” results (columns 5 to 8), the peaks and dips are computed using the maximum benchmark index values recorded in January and February, and the minimum index value in March. The CESI index is a composite index for measuring the combined impact of all adopted policies against the economic impact of the COVID-19 pandemic measures as defined by Elgin et al. (2020), and it is normalized to [0, 1] interval. Fiscal stands for the fiscal policy package as a percent of GDP, Rate Cut is the interest rate cut as a percent of the pre-crisis level, Macro-Financial is the monetary stimulus package as a percent of GDP, BoP is the monetary intervention to control the balance of payments and the exchange rate as a percent of GDP and finally, Other BoP is a dummy variable taking the value of 1 if there are other accompanying measures towards stabilizing BoP and exchange rate a la Elgin et al. (2020). Death rate is the ratio (per 1 million people) of total number of COVID-19 related deaths till March 24 to population. Resource Rich takes value of 1 for resource rich countries, zero otherwise. Tourism revenue represents the international tourism receipts as a percentage of GDP while total exports variable is defined as the ratio of total exports of goods and services to GDP. Total cases variable represents the total number of cases (per 1 million people) till March 24. Death per 100 cases variable represents the total number of COVID-19 related deaths per 100 cases. Robust (clustered) standard errors are in parentheses. The clustering is done at the World Bank eight region level.

* p < 0.1.
** p < 0.05.
*** p < 0.01.

many other factors, besides the COVID-19 crisis, may become important in the longer term. Identification of such longer term factors needs a stronger setup with richer data.

3.2. Results

We present our main empirical results in Tables 2 and 3, where the former displays the results with the overall CESI index and the
latter displays the same with its components. In each table, we present two sets of results with global dates (columns 1 to 4) and flexible dates (columns 5 to 8) approaches. The former constitutes our baseline results, while the latter is presented for robustness.

According to the baseline results in Table 2, the relationship between the recovery rate and the CESI index is statistically insignificant. This finding remains the same in the robustness specification with flexible dates. The death rate is statistically significantly and negatively associated with the recovery rate, which is consistent across all the specifications, suggesting that higher pandemic related death rates implies slower recovery. Our results also suggest that economies with high reliance on natural resource and tourism revenues experience slower recovery from the pandemic crisis given their statistically significant and negative association with the recovery rate. This is to say that concerns on energy demand and swinging oil and gas prices had a negative impact on the equity market performances of resource rich economies during the pandemic era.\(^{13}\) Similarly, halting daily life and imposing restrictions on international activity also negatively affected the equity markets of economies that rely more on tourism revenues. Amid discussions on a potential shrink of world trade, the export variable is not statistically significantly related to the recovery rate. These results are robust to controlling for average income differences across countries and more importantly, remain unchanged when allowing more flexibility in the construction of recovery rate.

In Table 3, we present our estimation results from the same model except that we now employ components of CESI index instead of the overall index to account for the relation between different types of stimulus supports and stock market recovery. Among the six sub-components of CESI index, the fiscal support is statistically significantly and positively associated with the recovery rate across all the specifications. Put it differently, countries providing more direct fiscal support i.e., generally in the form of direct cash injections, grants, reduction in tax bills seem to experience relatively stronger recovery. Additionally, these results also suggest some weak and positive association between the recovery rate and reduction in reserve requirement and balance of payment supports. Death per capita remains to be statistically significantly and negatively associated with the recovery rate across the specifications. Similar to earlier results, reliance on natural resource and tourism revenues is statistically significantly and negatively correlated with the recovery rate. Export (as a share of GDP) remains to be statistically insignificant across the specifications. These results are consistent across the specifications, baseline and flexible dates, as well as, to the controlling of average income.

3.3. Further robustness

Studies in the literature (mentioned above, e.g., Al-Awadhi et al., 2020; Ashraf, 2020) also employ the number of official COVID-19 positive cases instead of the death rate to account for countries’ performance to deal with the pandemic. In an attempt to further test our main results (with full set of controls), we re-estimate the model with the number of cases (per million population) and also with the death-to-case ratio (per 100 cases) instead of the death rate. We present the robustness results in Table 4. As before, the results are reported with both approaches followed in the construction of the recovery rate: the baseline (global dates) and the flexible dates. Our general findings remain mostly stable and robust across the specifications. More specifically, CESI index is never statistically significant. Among the components of CESI, fiscal stimulus supports remain to be positively and statistically significantly associated with positive recovery in all the specifications. Resource richness dummy and tourism revenues remain almost always statistically significant and negatively associated with the recovery rate. In line with the literature, official case numbers and death-to-case ratio are also statistically significantly and negatively associated with the recovery rate across the specifications.

4. Conclusions

COVID-19, initially broke out in China, first hit human life and the domestic economy in China. The rest of the world remained mostly unaffected until the virus began to spread to Europe. Using daily stock market data, Google search statistics and also the timing of rescue package announcements, we establish reference dates for global peaks and dips for the benchmark equity market indices in our sample. We then compute the COVID-19 induced losses, as well as the recovery rates following the announcement of rescue packages since mid-March until the end of April.

In a simple regression setup, we analyze the main factors that can explain the cross-country differences in the recovery rates across the countries. We find that fiscal stimulus packages are especially effective in supporting equity market recovery during the pandemic era. In particular, countries with larger fiscal rescue packages seem to have experienced a stronger recovery than countries offering smaller fiscal rescue packages. Our findings show that there is a significant negative relationship between the COVID-19 related death rate and the recovery rate, suggesting that the evaluation of the pandemic is closely considered in investment decisions. We also show that countries with high dependence on natural resource and tourism revenues appear to experience a slower recovery. These results are robust to various checks and additional controls.

We should note that our exploratory study provides suggestive evidence from strong correlations without claiming any causal inference. However, the presented results significantly contribute to the discussions on understanding the immediate impact of the pandemic on financial markets and how the policy responses may restore investors’ confidence. That also provides valuable inference on the longer term recovery prospects from the COVID-19 pandemic crises.

\(^{13}\) For a more detailed discussion on COVID-19 impact on oil and gas exporting economies and different type of green versus traditional assets, see Yilmaz (2020).
Table A.1
Countries included in the study and their bloomberg ticker.

| Country         | Benchmark index | Country         | Benchmark index |
|-----------------|-----------------|-----------------|-----------------|
| Argentina       | MERVAL Index     | Luxembourg      | LUXXX Index     |
| Australia       | AS25 Index       | Malaysia        | FBMKLC1 Index   |
| Austria         | ATXPRIME Index   | Mexico          | MALTEX Index    |
| Bahrain         | BHSEASI Index    | Mongolia        | MSETOP Index    |
| Belgium         | BEL20 Index      | Montenegro      | MNSE10 Index    |
| Brazil          | IBOV Index       | Morocco         | MOSENEW Index   |
| Bulgaria        | SOFIX Index      | Namibia         | FTN098 Index    |
| Cambodia        | CSX Index        | Netherlanden    | AEX Index       |
| Canada          | TXEQ Index       | Nigeria         | NGSEINDEX Index |
| Chile           | IPSA Index       | New Zealand     | NZSE50FG Index  |
| China           | SHCOMP Index     | North Macedonia | MBI Index       |
| Colombia        | MXCO Index       | Norway          | OSEAX Index     |
| Croatia         | CRO Index        | Oman            | MSM30 Index     |
| Cyprus          | CYSSMAPA Index   | Pakistan        | KSE100 Index    |
| Czech Republic  | PX Index         | Peru            | SPBLPGPT Index  |
| Denmark         | RAX Index        | Philippines     | PCOMP Index     |
| Egypt           | EGX30 Index      | Poland          | WIG Index       |
| Estonia         | TALSE Index      | Portugal        | PSI20 Index     |
| Finland         | HEX25 Index      | Qatar           | QEAS Index      |
| France          | CAC Index        | Romania         | BET Index       |
| Germany         | DAX Index        | Russia          | RTSI Index      |
| Ghana           | GGSECI Index     | Saudi Arabia    | SASEIDX Index   |
| Greece          | ASE Index        | Serbia          | BELEX15 Index   |
| Hong Kong       | HSI Index        | Singapore       | STI Index       |
| Hungary         | BUX Index        | Slovak Republic | SKSM Index      |
| Iceland         | ICEXI Index      | Slovenia        | SBITOP Index    |
| India           | SENSEX Index     | South Africa    | JN0U Index      |
| Indonesia       | JCI Index        | South Korea     | KOSPI Index     |
| Ireland         | ISEQ Index       | Spain           | IBEX Index      |
| Israel          | TA-25 Index      | Sweden          | OMX Index       |
| Italy           | FTSEMB Index     | Switzerland     | SMI Index       |
| Jamaica         | JMSMX Index      | Thailand        | SET100 Index    |
| Japan           | NKY Index        | Tunisia         | TUSISE Index    |
| Kazakhstan      | KZKAK Index      | Turkey          | XU100 Index     |
| Kenya           | NSEASI Index     | United Arab Emirates | ADSMI Index |
| Kuwait          | KWSEAST Index    | United Kingdom  | UKX Index       |
| Laos            | LSXC Index       | United States   | DJI Index       |
| Latvia          | RIGSE Index      | Vietnam         | VNINDEX Index   |
| Lithuania       | VILSE Index      |                 |                 |

Appendix A

References

Ahmar, A., del Val, E.B., 2020. SutteARIMA: short-term forecasting method, a case: covid-19 and stock market in Spain. Sci. Total Environ. 729, 138883.

Al-Awadhi, A.M., Alsaifi, K., Al-Awadhi, A., Alhammadi, S., 2020. Death and contagious infectious diseases: impact of the COVID-19 virus on stock market returns. J. Behav. Exp. Finance 27, 100326.

Albulescu, C., 2020. Coronavirus and Financial Volatility: 40 Days of Fasting and Fear (arXiv preprint). arXiv:2003.04005.

Ashraf, B.N., 2020. Stock markets’ reaction to COVID-19: cases or fatalities? Res. Int. Bus. Finance 54, 101249.

Baker, S.R., Bloom, N., Davis, S.J., Kost, K.J., Sammon, M.C., Viratyosin, T., 2020. The Unprecedented Stock Market Impact of COVID-19. NBER Working Paper No. 26945. Available from: https://www.nber.org/papers/w26945.

Morales, L., Andreosso-O’Callaghan, B., 2012. The current global financial crisis: do Asian stock markets show contagion or interdependence effects? J. Asian Econ. 23 (6), 616–626.

OECD, 2020. Tracking Coronavirus (COVID-19): Tourism Policy Responses. Technical Report.

Onali, E., 2020. COVID-19 and Stock Market Volatility, https://doi.org/10.2139/ssrn.3571453.

United Nations, 2020. Commodity Exporters Face Mounting Economic Challenges as Pandemic Spreads. Policy Brief No60, World Bank, 2020. Commodity Market Outlook: Implication of COVID-19 for Commodities. Technical Report, WTO, 2020. Export Prohibitions and Restrictions. Information Note.
Table A.2 Correlation coefficients.

| Variables          | Recovery rate (G.D.) | Recovery rate (F.D.) | Death rate | Total cases | Death per cases | CESI index | Fiscal | Macro-financial | BoP | Resource rich | Tourism revenue | Total exports | GDP per capita |
|--------------------|----------------------|----------------------|------------|-------------|----------------|------------|--------|----------------|-----|---------------|----------------|--------------|----------------|
| Recovery rate (F.D.) | 0.8928*              | 1                    |            |             |                |            |        |                |     |               |                |              |                |
| Death rate         | – 0.0671             | – 0.0633             | –          | – 0.0853    | 0.5266*        | 1          |        |                |     |               |                |              |                |
| Total cases        | 0.0552               | 0.0485               | 0.0807     | 0.0485      | 0.5446*        | 0.1266     | 1      |                |     |               |                |              |                |
| CESI index         | 0.1114               | 0.1447               | 0.0512     | 0.3387*     | 0.0853         | 1          |        |                |     |               |                |              |                |
| Fiscal             | 0.2343*              | 0.2549*              | 0.3676*    | 0.5722*     |                |            |        |                |     |               |                |              |                |
| Macro-financial    | – 0.0726             | – 0.0497             | 0.1142     | 0.2190*     | 0.0304         | 0.6982*    | 0.2254* | 1              |     |               |                |              |                |
| BoP                | 0.0265               | – 0.0102             | –          | 0.2010*     | 0.0667         | –          | –      | – 0.1387       | 1   |               |                |              |                |
| Resource rich      | – 0.3824*            | – 0.3404*            | –          | – 0.0422    | –              | –          | –      | – 0.0287       | – 1 |               |                |              |                |
| Tourism revenue    | – 0.1138             | – 0.2303*            | – 0.1095   | 0.2586*     | 0.0066         | 0.0444     | 0.0477  | 0.0583         | 0.1666 |              |                | 1            |                |
| Total exports      | – 0.0036             | – 0.0023             | – 0.2943*  | 0.2145*     | 0.2445*        | 0.3960*    | 0.1323  | –              | – 0.1026 | 0.3199         | 1              |              |                |
| GDP per capita     | 0.1966*              | 0.2630*              | 0.1811     | 0.6107*     | – 0.0738       | 0.5804*    | 0.6133* | 0.2480*        | 0.1298 | – 0.1561       | – 0.0512       | 0.4125*      | 1              |

The table reports the correlation coefficients for the main variables. Recovery rate is computed as the ratio of the recovered amount from the dip of each index to its value on April 24 to the loss amount between the peak and dip dates. Death rate is the ratio of total number of COVID-19 related deaths till March 24 to population. Total cases variable represents the total number of cases (per 1 million people) till March 24. Death per cases variable represents the total number of COVID-19 related deaths per 100 cases. The CESI index is a composite index for measuring the combined impact of all adopted policies against the economic impact of the COVID-19 pandemic measures as defined by Elgin et al. (2020), and it is normalized to [0, 1] interval. Fiscal stands for the fiscal policy package as a percent of GDP, Rate Cut is the interest rate cut as a percent of the pre-crisis level, Macro-Financial is the monetary stimulus package as a percent of GDP, BoP is the monetary intervention to control the balance of payments and the exchange rate as a percent of GDP and finally, Other BoP is a dummy variable taking the value of 1 if there are other accompanying measures towards stabilizing BoP and exchange rate à la Elgin et al. (2020). Resource rich takes value of 1 for resource rich countries, zero otherwise. Tourism revenue represents the international tourism receipts as a percentage of GDP while total exports variable is defined as the ratio of total exports of goods and services to GDP. “G.D.” refers to global dates whilst “F.D.” refers to flexible dates.

* \( p < 0.1 \).
Yilmaz, F., 2020. Long and Short-Term Economic Impact of COVID-19: Does the Future Look Greener? KAPSARC Instant Insight.
Zaremba, A., Kizys, R., Aharon, D.Y., Demir, E., 2020. Infected markets: novel coronavirus, government interventions, and stock return volatility around the Globe. Finance Res. Lett. 35, 101597.
Zhang, D., Hu, M., Ji, Q., 2020. Financial markets under the global pandemic of COVID-19. Finance Res. Lett. 101528.