Economic Brief

Covid-19

Reaction Functions, Paradoxes, and Latest Economic Data

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Covid-19 – Reaction Functions, Paradoxes, and Latest Economic Data

The Covid-19 pandemic has spread all over the world now. Governments and societies have reacted in various ways. Containment measures taken have negative economic consequences along with the pandemic itself. Economic data, which come in now, allow a first glimpse on the magnitude of the adverse impact. As expected, it is severe, although for most countries only one month was seriously affected by containment measures in Q1 2020, including for the CAREC countries. Q2 data will be, in all likelihood, much worse.

There is general optimism that the pandemic can be controlled soon and that V-shaped economic recoveries are possible. Some countries have already begun to ease their containment policies. However, questions remain. There is a paradox: infection and death rates are much higher in high-income countries with better prepared health systems than in lower-income countries. This brief finds a significant correlation between high rates of confirmed infections and the number of tests conducted. This might indicate underreporting in countries with little testing, and that the pandemic is still a serious threat globally. The paradox also extends to mortality: there appears to be no correlation between health care systems rated as highly prepared and reported fatality rates.

The brief provides stylized "reaction functions" for the CAREC countries and – for comparison - a set of selected other countries by looking at the stringency of containment measures in relation to the number of confirmed infections. CAREC countries have done well both with regard to infections and fatalities. The reaction functions indicate that decisive early containment measures were key for keeping infection rates down. This is to some extent also confirmed by investigating a larger set of countries. However, the results are not robust, and more research is needed.

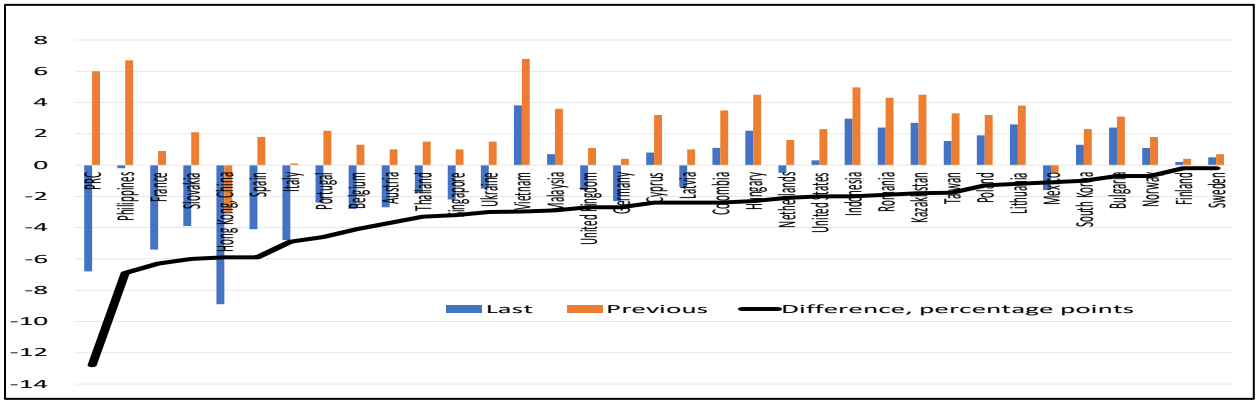
Main conclusions drawn from the findings are that the danger of second waves continues to be relatively high and that the identification of cases must be further improved. Early, decisive reaction matters. Health care systems have to be prepared by concentrating on a number of most critical issues such as protective gear for medical personnel, ventilators, masks in the case of the current pandemic. To facilitate early and effective warning and adoption of measures, exchange of information, cooperation and mutual help among the CAREC countries is of high importance.

Latest economic data

Incoming data confirm that the economic downturn caused by the Covid-19 pandemic is severe.
Exhibit 1 shows the swing in annual real GDP growth from Q4 to Q1 2020. At the difference between plus 6.0% and minus 6.8%, that is by 12.8 percentage points, it is largest in the PRC. The swing in Spain, Italy, Belgium, Austria, countries we use for comparison in this brief, is at 5.9, 4.9, 4.1, 3.7 percentage points, respectively, somewhat less pronounced. However, one has to keep in mind that in these countries a significant number of Covid-19 cases were confirmed only in late February or early March and countermeasures taken were rather moderate until the end of February (see Annex 1). Containment measures thus affected the economy seriously only during one month in the first quarter. In the PRC, by contrast, highly stringent containment measures were in place already since 25 January.

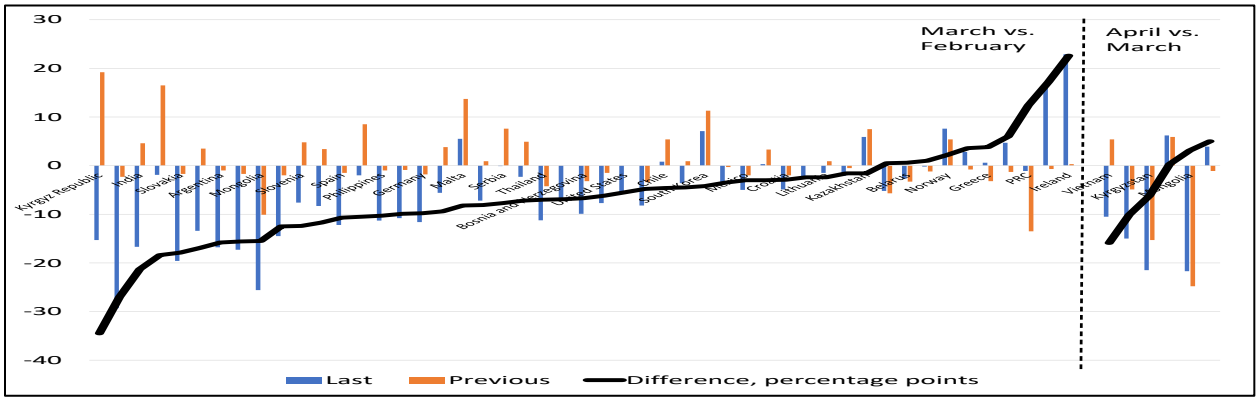
Among the CAREC countries, growth eased in Kazakhstan from 4.5% YoY in Q4 2019 to 2.7 % YoY in Q1 2020, a reduction by 1.8 percentage points, in the Kyrgyz Republic from 4.5% in 2019 as a whole to 3.8% in Jan-April, 9.3 less than a year earlier, in Uzbekistan from 5.6% in 2019 as a whole to 4.1% in 2020, in Azerbaijan to from 3.0% a year earlier to 1.1%,

Exhibit 1: Real GDP growth, % YoY Q1 2020*



* There are no data on CAREC countries other than Kazakhstan and the PRC available from this source, but please see the discussion in the text of Azerbaijan, the Kyrgyz Republic and Uzbekistan where 2020 GDP data have already been published by the national statistical agencies.
Source: TradingEconomics, author's calculations

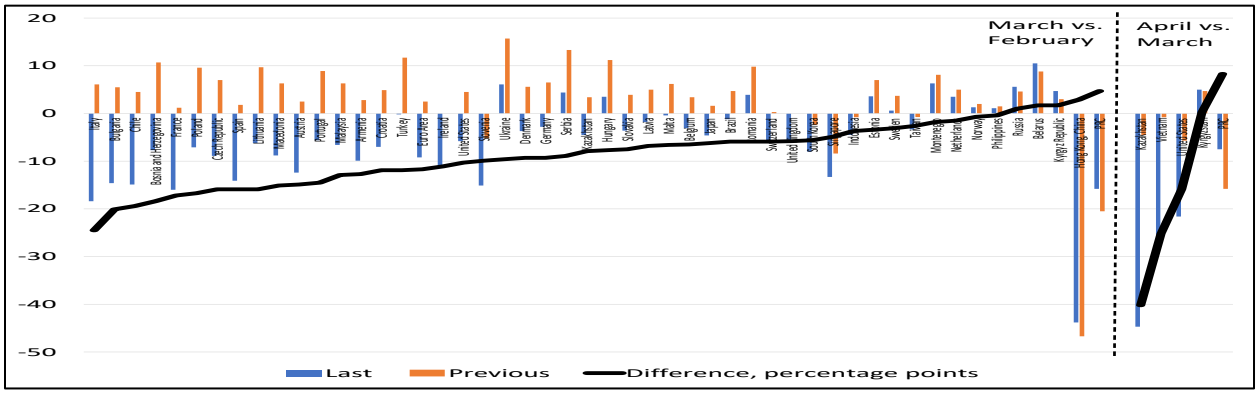
Exhibit 2: Industrial production, % YoY 2020*



* No data available for the CAREC countries not depicted in the chart
Source: TradingEconomics, author's calculations

In many countries industrial production contracted sharply or slowed at least substantially (Exhibit 2). Among the CAREC countries, the Kyrgyz Republic experienced a very sharp decline of 15.3% YoY in March. Without the gold mining company Kumtor, a major contributor to production in the Kyrgyz Republic, the decline was at 20.9% YoY even more pronounced. In April, the contraction deepened to 21.5% YoY. In Mongolia industrial production was minus 21.7% YoY in April after 24.8% YoY in March and minus 10.1% YoY in February. In Kazakhstan industrial production held up at +5.9% YoY still quite well in March and even accelerated to 6.2% YoY in April, interestingly thanks to strong growth of oil production. The PRC saw a recovery from minus 13.5% YoY in February to minus 1.1% YoY in March and plus 3.9% in April.

Exhibit 3: Retail sales, % YoY 2020*



* No data available for the CAREC countries not depicted in the chart
Source: TradingEconomics, author's calculations

Consumer demand has been shrinking in most economies globally in March (Exhibit 3). Retail sales fell in Kazakhstan by 4.5% YoY in March, and the fall was extended to a staggering 44.7% YoY in April. The Kyrgyz Republic saw however still a 4.7% YoY increase in March and a 5.0% YoY increase in April. In the PRC the fall eased from minus 20.5% YoY in February and 15.8% YoY in March to minus 7.5% YoY in April. Hong Kong, the PRC, went from minus 46.7% YoY in February to minus 43.8 in March.

The recovery in the PRC's industrial production and the less pronounced fall in retail sales and some receding of the pandemic in Europe fuels hopes of easing of the economic downturn soon. However, the upward moments are globally still rare. The industry of such an important economy as the US was still contracting by 15% YoY in April, and retail sales fell by 21.6% YoY. There is a high probability that Q2 2020 real GDP figures will for many countries be a lot worse than Q1 figures.

Governments and international organizations have come up with unprecedented relief packages to support the economy, central banks have resorted to monetary easing not seen since war times. A number of economies have begun to loosen containment policies. However, V-shaped recoveries, for which we all hope, can only happen if the pandemic can be controlled successfully.

Reaction functions

Economies have adopted a series of measures to slow the spread of the SARS-CoV-2 virus. The longevity and severity of these measures have a profound impact on the economic performance. To measure the severity of containment policies is not straightforward, given that there is broad variation of policies.

Fortunately, "The Oxford Coronavirus Government Response Tracker (OxCGRT)" project[1] together with the "Our World in Data"[2] initiative has developed a "Government Response Stringency Index (GRSI)"[3]. This paper attempts to exploit this index to present stylized functions of the reactions of the authorities to the spread of the pandemic. This should help to characterize where the CAREC countries stand with regard to

[1] https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker
[2] https://ourworldindata.org/
[3] https://ourworldindata.org/policy-responses-covid;

the pandemic. To put things in perspective, the brief compares the CAREC countries to 10 selected other countries, mostly from Europe, but also the US, and Russia and India as important neighboring countries, and has also a look at global developments. As a special, very successful case, also South Korea has been included.

The OxCGRT project calculates the GRSI as a composite measure of nine metrics: school closures; workplace closures; cancellation of public events; restrictions on public gatherings; closures of public transport; stay-at-home requirements; public information campaigns; restrictions on internal movements; and international travel controls.[4] The stringency of countermeasures in the CAREC and comparator countries, along with the development of confirmed infections, is depicted in Annex 1.

The reaction functions vary greatly in shape and timing as can be seen in Annex 1. For some countries, containment measures are front-loaded, some countries increase stringency only after infections have reached substantial numbers, some react stepwise along the infection curves.

To come up with some single indicator for this brief, stringency over the full time period has been calculated as the average stringency of government containment measures for each day starting from 23 January, the first day for which the GRSI has been given, until the last day for which the GRSI is available (14 May for this brief).

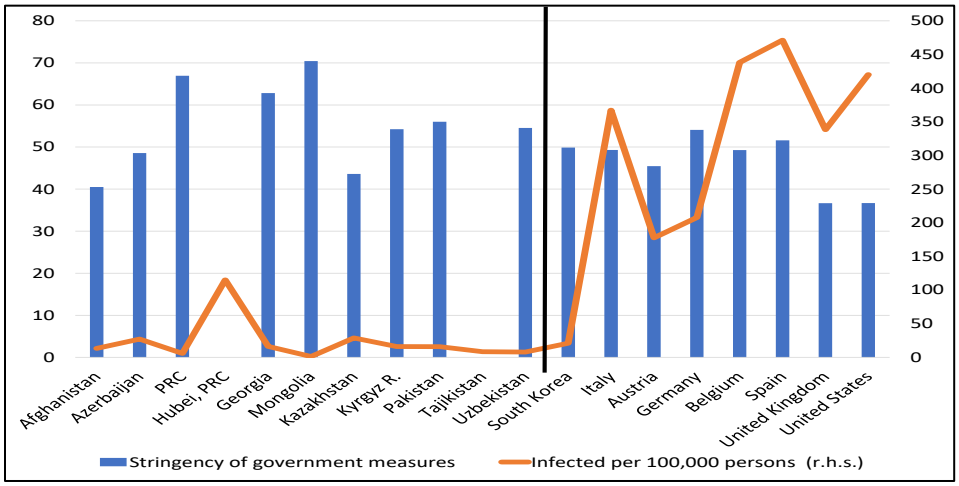
Exhibit 4 summarizes the findings from the curves shown in Annex 1. The blue bars in the first chart of Exhibit 4 represent the average stringency of government measures over the whole period. The orange line represents the number of infected per 100,000 persons (as of 14 May).

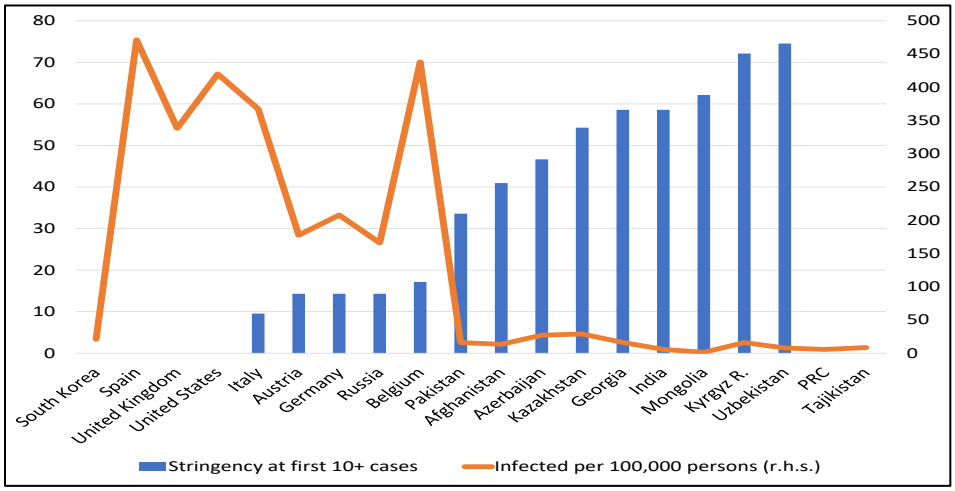
Infections: CAREC countries have done significantly better than many high-income countries

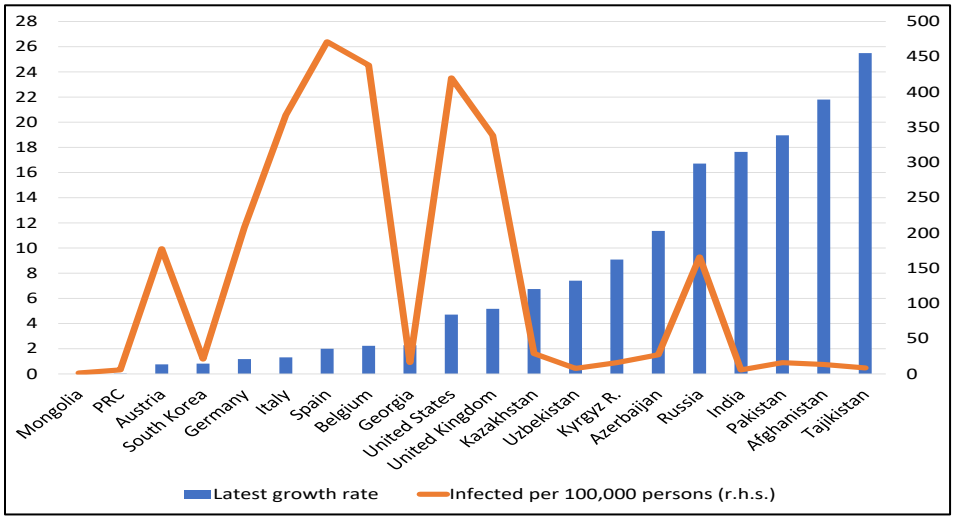
The CAREC countries have very low confirmed infection rates. Kazakhstan has at 29 the highest number of confirmed cases per 100,000 persons, all others CAREC countries have less infected. For the PRC, this is owed to the successful containment of most of the cases in Hubei, the PRC. Hubei alone has more than 100 cases. South Korea and India have low numbers as well, 21 and 4, respectively. South Korea has been very successful in containing the pandemic, for India with its very large population there is probably a similar effect as for the PRC. Most countries on the right-hand side of the first chart of Exhibit 4 have more than 150 confirmed cases. Belgium and Spain have about 450. Russia, although still in early stages of the pandemic, has also more than 150 cases.

[4] For a detailed description please see: https://www.bsg.ox.ac.uk/sites/default/files/2020-05/BSG-WP-2020-032-v5.0_0.pdf , https://www.bsg.ox.ac.uk/sites/default/files/Calculation%20and%20presentation%20of%20the%20Stringency%20Index.pdf

Exhibit 4: Confirmed infected versus government measures stringency (as of 14 May 2020)*







* There are no data for Turkmenistan, and no GRSI for Hubei and Tajikistan. However, Tajikistan has begun to apply measures such as holidays for 1st, 2nd and 3rd year university students from 4 May 2020 on and wearing face masks in public. The initial 10+ cases for the PRC happened too early to be depicted in the second chart.

Source: Center for Systems Science and Engineering (CSSE) at Johns Hopkins University, Oxford Coronavirus Government Response Tracker, author's calculations

No clear relation between stringency of measures and the number of confirmed infected persons

As can be seen from the first chart of Exhibit 4, there is not a clear relation between the average stringency of government measures and the cumulative number of confirmed infected persons as of 14 May. Italy has a similar stringency as Mongolia, but Italy has 357 confirmed infected per 100,000 persons, whereas Mongolia has only one. The USA with 380 cases scores roughly the same on the GRSI as Kazakhstan with 29 cases.

Decisive early reaction helps

The second chart of Exhibit 4 depicts the relation between the stringency of measures at the moment when the first 10 (or slightly more) infections were confirmed and the cumulative number of confirmed infections until 14 May. This chart indicates that early decisiveness matters: the orange line on the left-hand side, representing the number of infected, is generally high whereas the blue bars are low, and the opposite is true on the right-hand side. A number of CAREC countries obviously exploited their advantage of being late to learn from countries with earlier experience to react strongly. However, South Korea, Kazakhstan and India are exceptions as they combine low numbers of confirmed infections with a moderate stringency of initial measures.

Some countries are still in an early stage

The third chart of Exhibit 4 calls for caution on whether the number of infected is actually low in some countries or whether these countries simply are just in early stages of the pandemic. The blue bars in this chart represent the latest growth rates of confirmed infections (that is as of 14 May).[5] Higher bars mean higher growth rates, that is an earlier stage of the pandemic. Russia, India, Pakistan, Afghanistan and Tajikistan look like the pandemic is still spreading quite fast.

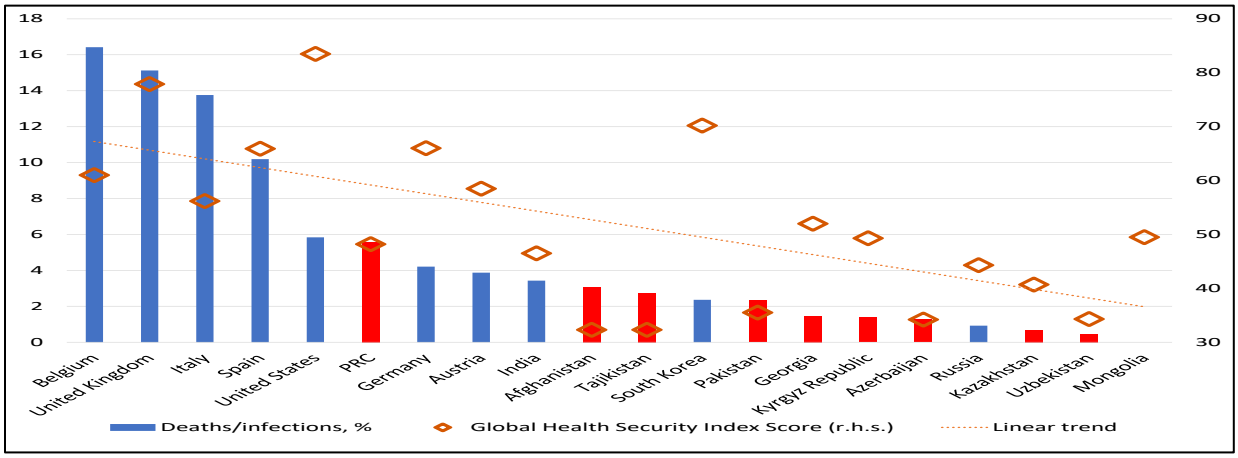
Fatalities: CAREC countries have done better than many high-income countries also in this respect

Fatalities due to the pandemic should be lower in countries with well-prepared health care systems. However, also this is not as straightforward as one might expect. An indicator for the quality of health care systems should be how many of the infected they can rescue from death. The brief therefore looks into the ratio of confirmed fatalities to confirmed infections. The confirmed deaths to confirmed infected ratio (the so-called case fatality rate) is then compared with the Global Health Security Index (GHSI)[6].

[5] They are calculated as the number in the last three days compared to the numbers in the three days before. They are proxies for tangents at the endpoints of the curves in Annex 1.

[6] https://www.ghsindex.org/ The GHS Index is a project of the Nuclear Threat Initiative (NTI) and the Johns Hopkins Center for Health Security (JHU) and was developed with The Economist Intelligence Unit (EIU).

Exhibit 5: Confirmed deaths per confirmed infected (as of 14 May 2020) vs Global Health Security Index



Source: Center for Systems Science and Engineering (CSSE) at Johns Hopkins University, GHS index, author's calculations

Case fatality rates are much lower in the CAREC region than in such wealthy countries as Belgium, UK or the US (Exhibit 5)[7]. Moreover, the countries on the left-hand side of Exhibit 5 with the highest case fatality rates, Belgium, UK, Italy, Spain and the US, have all significantly higher GHSI scores than the CAREC countries. The dotted trendline in Exhibit 5 has the opposite slope one would expect.

Questions remain

CAREC countries have done better in the pandemic than many richer countries with regard to confirmed infections. This has probably been achieved in a number of CAREC countries by early decisive reaction by the authorities. In Mongolia, Kazakhstan and the Kyrgyz Republic this was to some extent triggered by the proximity of these countries to the PRC. They have also done better with respect to fatality rates.

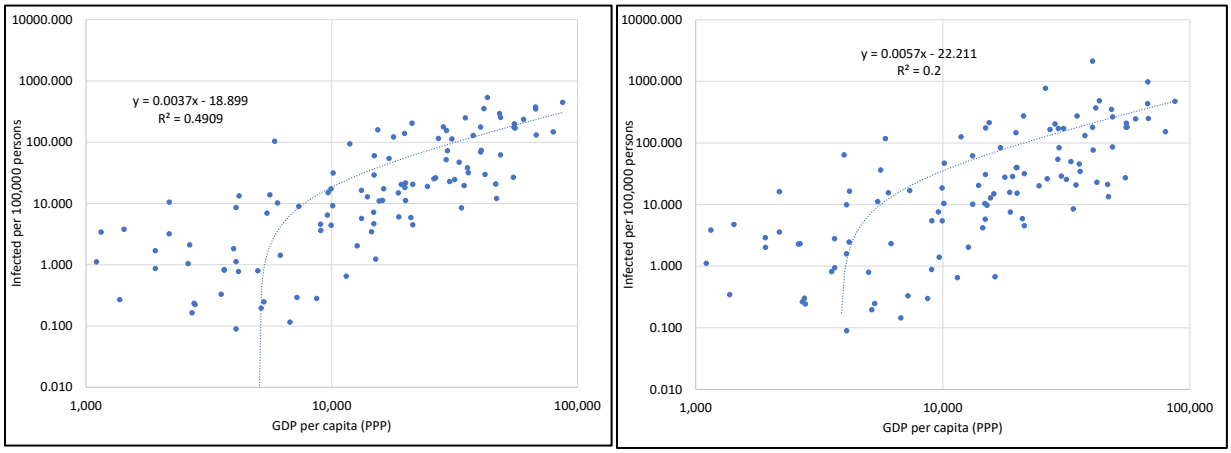
However, the international environment has remained tough. There is a paradox: most reported infections (Exhibit 6) as well as deaths are in higher-income countries. In lower-income countries the number of cases is lower, even though one would expect that richer countries with higher developed health care systems are in a better position to react. This can in part be attributed to the spreading of the pandemic largely via Europe to other parts of the world, and probably also to the fact that lower-income countries had more time to react. However, the correlation between GDP per capita and the number of confirmed infected per inhabitants is diminishing now (Exhibit 6)[8]. This can be interpreted as a sign that the pandemic is spreading further and is reaching more low-income countries than before, or that reporting has improved, or both. But the difference between lower-income countries and higher-income countries is still huge: the average number of confirmed infections was 37,415 for the more wealthy half

[7] The Centre for Evidence-Based Medicine's calculations of global Covid-19 case fatality rates also show that fatality rates are highest for a large number of the wealthiest countries whereas many less wealthy countries have much lower rates (see Annex 2); https://www.cebm.net/wp-content/uploads/2020/03/CFR_analysis2020-05-07part1.png

[8] R^2 in the first chart is 0.49, in the second 0.20, which indicates less correlation in the later period.

of the 113 countries of the sample depicted in Exhibit 6 as of 15 May, compared with 7,370 for the poorer half; the corresponding numbers for confirmed deaths are 192 and 20, respectively.

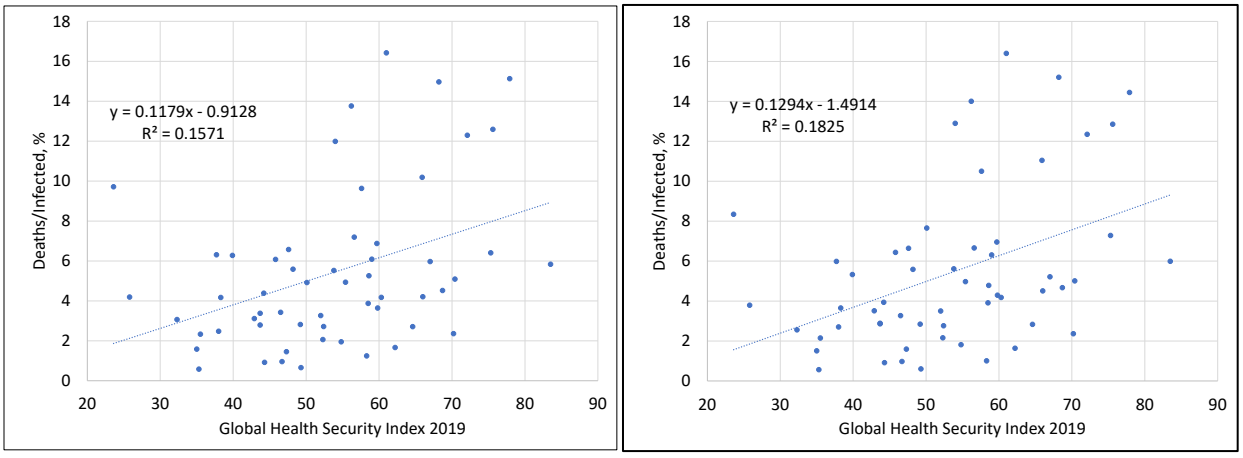
Exhibit 6: Confirmed infections per 100,000 persons versus GDP per capita, as of 6 May and 15 May



Source: TradingEconomics, United Nations Department of Economic and Social Affairs, author's calculations

There is also the paradox that many lower-income countries have done better than richer countries with higher developed health systems with regard to confirmed deaths per confirmed infections. Exhibit 7 shows the relation between case fatality rates and the Global Health Security Index. To avoid the bias from early stages of the pandemic when there are few fatalities yet, we excluded countries with less than 100 deaths. The result: there is no significant correlation between the index and the case fatality rates – if there is any correlation, then with the opposite sign one would expect. There is also no improvement over time.

Exhibit 7: Confirmed deaths per confirmed infected versus the GHSI, 6 May and 15 May



Source: Johns Hopkins Center for Health Security, Global Health Security Index, October 2019, Center for Systems Science and Engineering (CSSE) at Johns Hopkins University, author's calculations

The Global Health Security Index is a serious exercise. It is based on 140 indicators including 14 under the heading "Early detection & reporting epidemics of potential international concern." The introduction to the explanation of the index, written in October 2019, states: "The GHS Index is a project of the Nuclear

Threat Initiative and the Johns Hopkins Center for Health Security, and was developed with The Economist Intelligence Unit. These organizations share a firm belief that, over time, the GHS Index will spur measurable changes in national health security and *ultimately improve international capability to address one of the world's most omnipresent risks: infectious disease outbreaks that can lead to international epidemics and pandemics*. (*Italics by the author*)"[9]

In explanation why the predictive power has nevertheless been weak, and in particular for the highest ranked USA, the authors of the GHSI write: "The United States' response to the COVID-19 outbreak to date shows that capacity alone is insufficient if that capacity isn't fully leveraged. Strong health systems must be in place to serve all populations, and effective political leadership that instills confidence in the government's response is crucial."[10]

The Global Health Security Index is correlated with GDP per capita. Case fatality rates are higher in richer countries. Philip Schellekens and Diego Sourrouille discuss in their "Tracking COVID-19 as Cause of Death" paper[11] a set of explaining variables, including demography, comorbidity due to the prevalence of other diseases, population density and informality to explain the concentration of deaths in high-income countries. However, they have not succeeded. It is not demography. "In absolute terms, the developing world has many more old people than the high-income countries together: their 70+ population is 1.8 times as large and their 60+population is 2.4 times bigger."[12] The share of the developing world in confirmed deaths from Covid-19 is only about 15%.

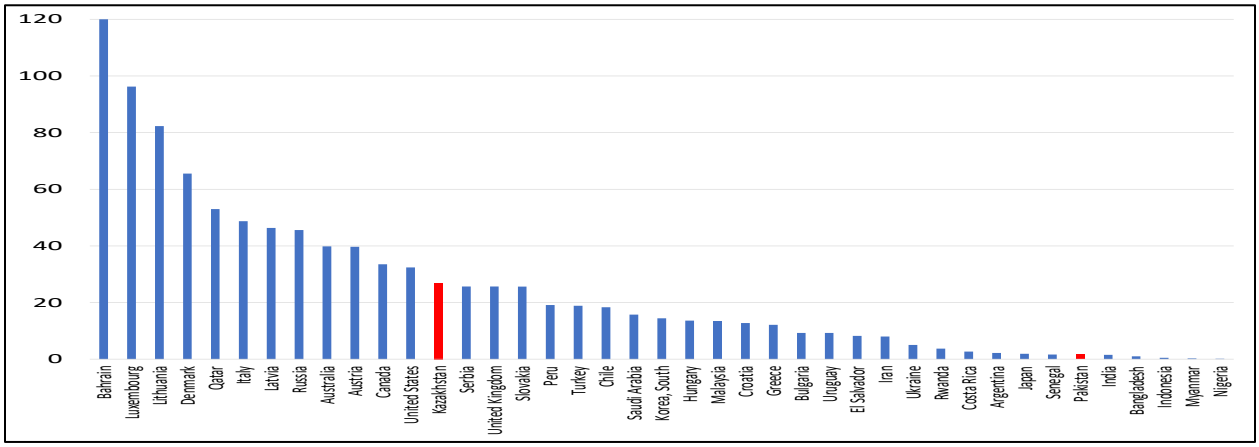
Under the heading "Covid, Quo vadis?" Schellekens and Sourrouille summarize: "In which direction will the burden of COVID-19 mortality travel as we look to the future? Will new epicenters emerge outside of the high-income world? Is this just the beginning for the poorer countries? While these questions are hard to answer, this paper has argued that the observed concentration in reported mortality data should be considerably overestimated given their demographic profile as well as other host-specific and environmental factors. Developing countries may of course be at earlier stages of the pandemic compared to high-income countries. If true, this would indicate only temporary respite as the virus has already travelled to more than 210 countries and territories and structural features of developing countries may make them more susceptible to contagion. To the extent that data quality is not at play, we should expect developing countries to catch up with and overtake high-income countries as the pandemic continues to work its way through the age distributions of the developing world…Data quality will remain a key challenge going forward. The need for adequate measurement and reporting cannot be emphasized enough…"[13]

[9] https://www.ghsindex.org/about/
[10] https://www.ghsindex.org/news/the-us-and-covid-19-leading-the-world-by-ghs-index-score-not-by-response/
[11] https://www.brookings.edu/wp-content/uploads/2020/05/Tracking_COVID-19_as_-Cause_of_Death-Global_Estimates_of_Severity.pdf
[12] ibidem
[13] Ibidem

Testing matters

Data quality might indeed explain a part of the paradoxes. Exhibit 8 shows the number of tests conducted per 1000 persons. It is obvious that there was much less testing in lower-income countries than in higher-income ones. We tried to figure out how much testing could matter. We thus estimated to what extent the cumulative number of confirmed infected per 100,000 persons is explained by the cumulative number of tests conducted. The sample consisted of the 33 countries, for which we had a full data set, as of 14 May. To control for the length, the pandemic has been ongoing in the specific country, we added a variable counting the number of days since for the first 10 infections (or slightly more) were confirmed. We were also interested to what extent the stringency of government measures has an impact. Under the impression that early decisive action matters, we added a variable reflecting average stringency between mid-March and mid-April, the time many countries went on an upward trajectory of infection cases. This early metric also helps avoid correlation between the infected and stringency because stringency followed the development of infection cases over time.

Exhibit 8: Tests per 1000 persons (cumulative, as of 16 May 2020)



Source: Our World in Data; Statistics and Research, Coronavirus (COVID-19) Testing[14]; author's calculations

The result: testing matters with an 0.001 error probability[15]. The number of days and stringency variables do not significantly contribute to the explanation of the number of infection cases. The stringency variable has however the right sign, meaning that higher early stringency keeps infection cases lower. Doing the same exercise with stringency over the whole period instead of mid-March to mid-April stringency yields an insignificant stringency variable as well, and it has on top the wrong sign. Testing remains however significant.

[14] https://ourworldindata.org/coronavirus-testing#world-map-total-tests-performed-relative-to-the-size-of-population

[15] The estimated equation is
$\log(\text{confirmed infections})=a_1*\log(\text{tests})+a_2*(\text{days since first 10 infections})+a_3*\text{stringency}+\text{constant}+\varepsilon$
$R^2=38$ is not great, but significant at the 0.003 level. The significance levels of the coefficients are 0.001, 0.940, 0.852 and 0.215, respectively. The explaining power of testing is robust over several settings, the explaining power of stringency is not.

The interpretation of the equation is not straight forward. There is obviously a high correlation between the quantity of testing per person and the quantity of confirmed infected per person. However, it can't be excluded that the testing is triggered by an increase in the number of confirmed cases, and not the other way round. However, there is anecdotal evidence that testing increases the number of confirmed infections. In Russia, for example, "Officials have said the rise of the daily rate is in part due to aggressively testing, even of those showing no symptoms."[16]

In any case, as long as we don't have good explanations for the above paradoxes (and no vaccination, at least in large enough volumes and a foreseeable time horizon, and not a full understanding of the virus yet) uncertainty remains high. A continued further deepening of the pandemic in low-income countries can't be excluded. Second and third waves might thus re-occur also in countries, which have already overcome the pandemic to some extent.

Main conclusions

- Incoming data confirm that the global economic downturn is severe. The severity will most likely be even more visible from data for Q2, including for the CAREC countries, than it is currently the case for the incoming Q1 2020 data. This will, in all likelihood, increase pressure on the countries of the region to fast track easing of government's counter measures.
- The CAREC countries have done well both with regard to confirmed infections and with regard to confirmed deaths per infection due to various factors. However, too early easing of countermeasures, following the actions of developed economies, can potentially erode advantages.
- The pandemic is not over globally and might still continue to spread or deepen, especially to/in low income countries. This might cause second and third waves also in countries that already have almost overcome the pandemic.
- The huge differences between countries in confirmed infection and deaths rates, and the positive correlation between confirmed infections and testing, suggest that there is substantial underreporting in a whole number of countries. Disease classifications might also play a role. The countries of the region need to augment testing capacity as a top priority, as this provides the basis for well-informed subsequent actions.
- Early, decisive reactions seem to help better to contain the pandemic than high average stringency of government measures over the whole period. However, early easing of measures due to waning capacity of the governments to bear the economic cost of the measures, can potentially aggravate health crisis
- Given that uncertainty and the danger of a resurgence of the pandemic continue to be a threat, and renewed containment measures might be needed, governments, institutions, businesses, households should not spend all their financial reserves already now, if any possible. Significant expenditures might still be needed later. Maintaining fiscal space for public policy options for stringent countermeasures, at least till Q3 2020, must remain a priority.
- Highly rated health care systems have not prevented fatality rates going high in a substantial number of countries. To keep fatality rates low, obviously investment in most critical devices and

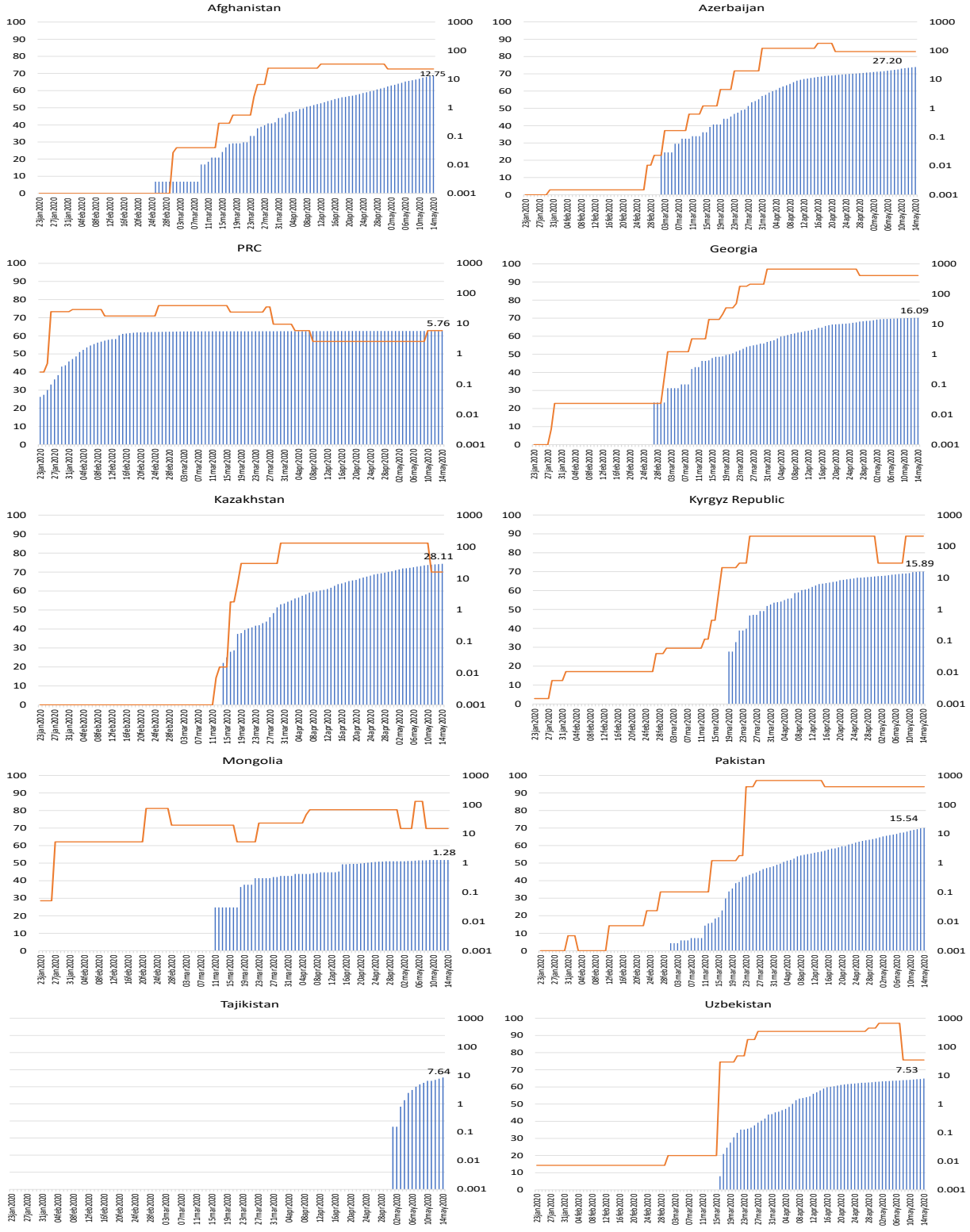
[16] https://www.ctvnews.ca/world/putin-lifts-russia-s-stay-at-home-orders-as-cases-soar-1.4934067

services is crucial, such as in protective gear for medical personnel, masks, ventilators, etc. (in the case of Covid-19). This must go along with the setup of appropriate early warning systems and adequate responses by the authorities. The recapitalization of health services must also include re-prioritization of expenditures so that health systems can withstand future pandemics.

- Cooperation to strengthen regional health security, experience sharing , early information sharing and mutual support among the CAREC countries is paramount to be better prepared in case of a resurgence of the pandemic (see also the ADB blog contribution on this topic under the headline "Central Asian countries are moving forward together to beat COVID-19" [17]).
- Moreover, restrictions on trade in Covid-19 related equipment also needs to be continuously reviewed to avoid situations of equipment / production capacity oversupply and shortages happening concurrently in the region as well as globally. Failure of one health system can potentially trigger another wave in the region and beyond.
- If the pandemic lasts longer than expected, concerns about the economy will intensify, as is already the case in many countries now. Governments will have to carefully balance between controlling the pandemic and aggravating the economic situation.
- Prospects for V-shaped economic recoveries beginning in late 2020 are still intact, but strongly depend on continued careful monitoring of the pandemic and timely and decisive reactions in case of its resurgence, while retaining the macro-economic indicators and key economic enablers stable enough to kickstart growth once pandemic recedes.

[17] https://blogs.adb.org/blog/central-asian-countries-are-moving-forward-together-beat-covid-19

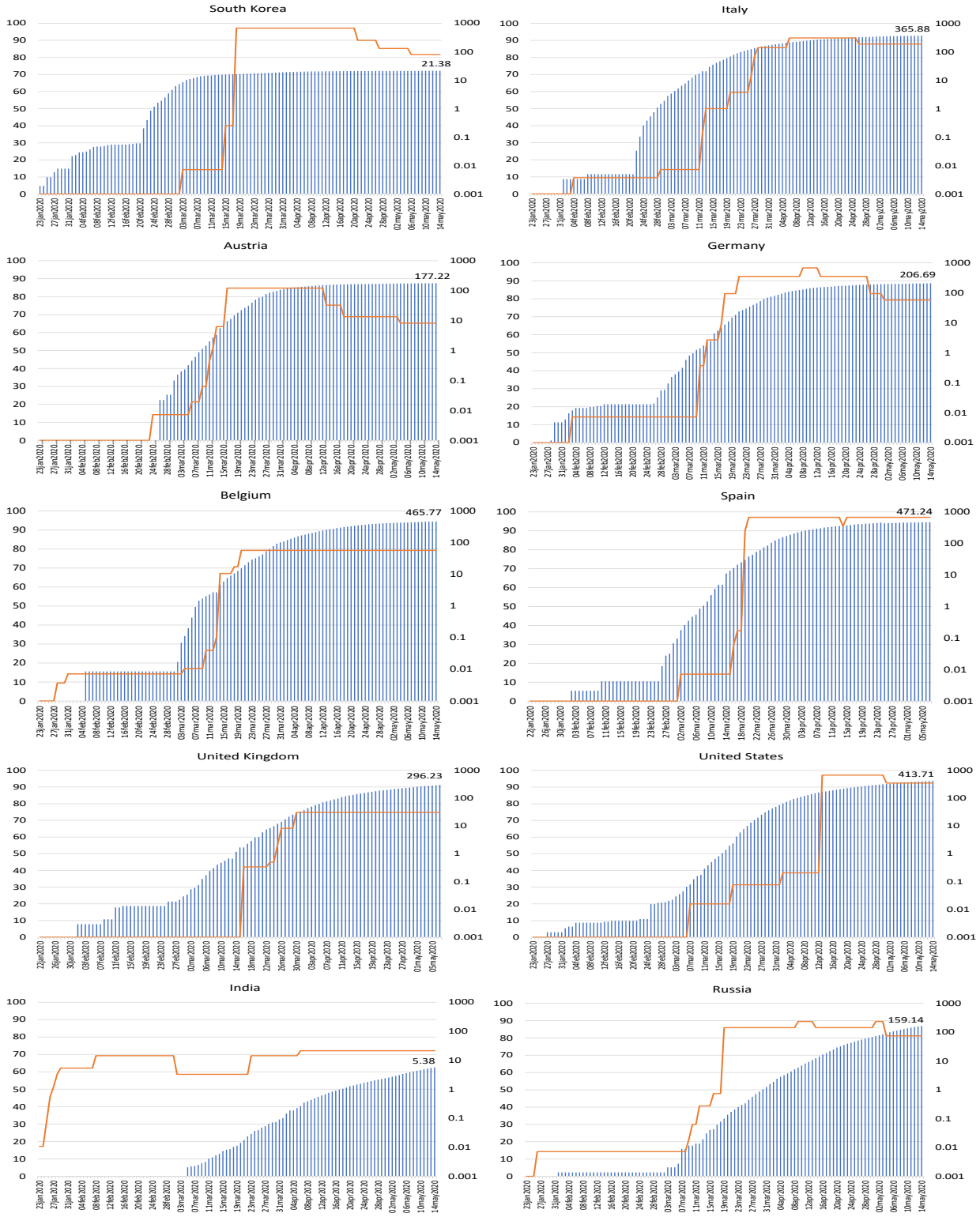
Annex 1



Blue bars: number of confirmed infected per 100,000 persons.

Orange lines: stringency of containment measures (GRSI, see text for explanation)

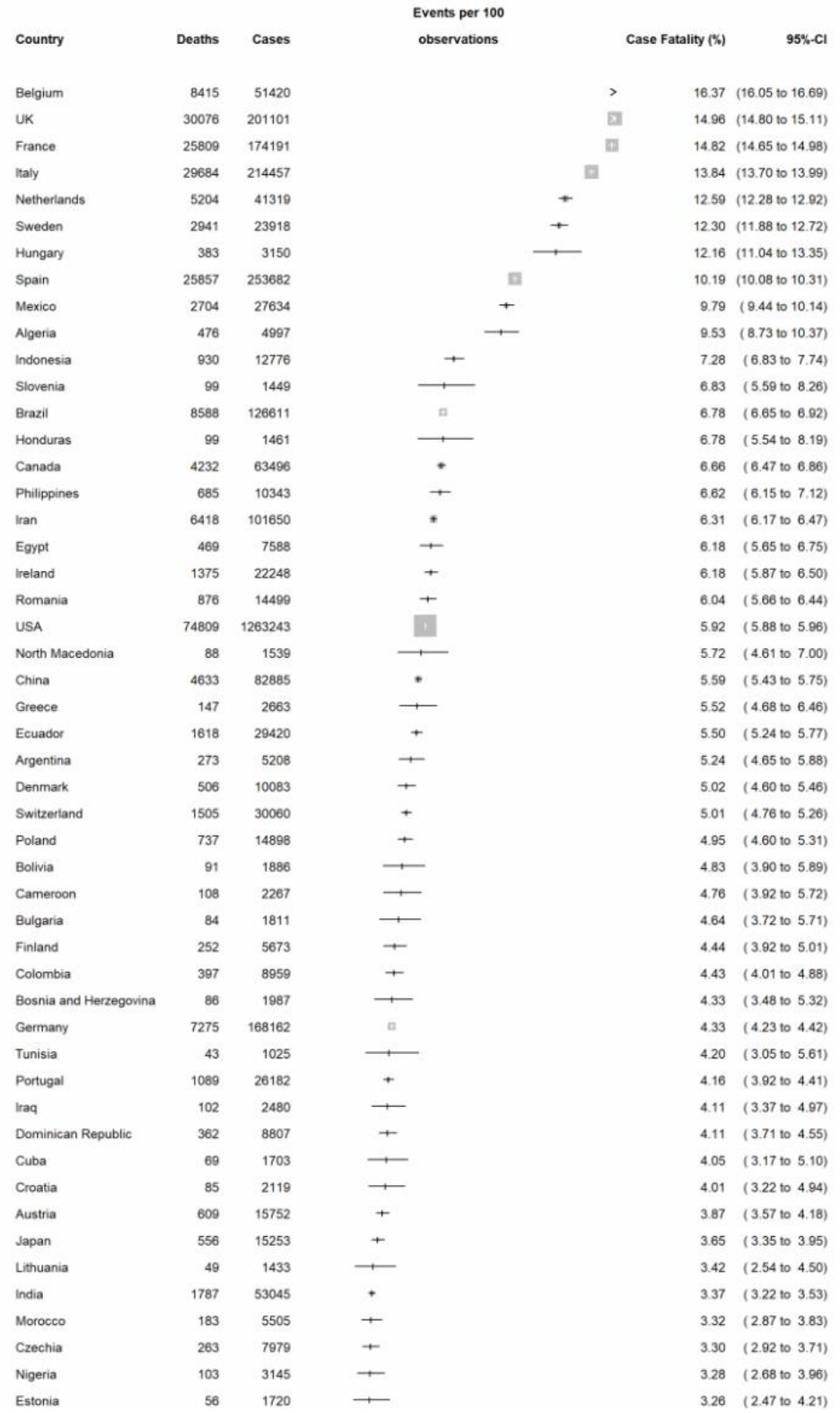
Annex 1 (continued)



Blue bars: number of confirmed infected per 100,000 persons.

Orange lines: stringency of containment measures (GRSI, see text for explanation)

Annex 2



Country	Deaths	Cases	Case Fatality (%)	95%-CI
Belgium	8415	51420	16.37	(16.05 to 16.69)
UK	30076	201101	14.96	(14.80 to 15.11)
France	25809	174191	14.82	(14.65 to 14.98)
Italy	29684	214457	13.84	(13.70 to 13.99)
Netherlands	5204	41319	12.59	(12.28 to 12.92)
Sweden	2941	23918	12.30	(11.88 to 12.72)
Hungary	383	3150	12.16	(11.04 to 13.35)
Spain	25857	253682	10.19	(10.08 to 10.31)
Mexico	2704	27634	9.79	(9.44 to 10.14)
Algeria	476	4997	9.53	(8.73 to 10.37)
Indonesia	930	12776	7.28	(6.83 to 7.74)
Slovenia	99	1449	6.83	(5.59 to 8.26)
Brazil	8588	126611	6.78	(6.65 to 6.92)
Honduras	99	1461	6.78	(5.54 to 8.19)
Canada	4232	63496	6.66	(6.47 to 6.86)
Philippines	685	10343	6.62	(6.15 to 7.12)
Iran	6418	101650	6.31	(6.17 to 6.47)
Egypt	469	7588	6.18	(5.65 to 6.75)
Ireland	1375	22248	6.18	(5.87 to 6.50)
Romania	876	14499	6.04	(5.66 to 6.44)
USA	74809	1263243	5.92	(5.88 to 5.96)
North Macedonia	88	1539	5.72	(4.61 to 7.00)
China	4633	82885	5.59	(5.43 to 5.75)
Greece	147	2663	5.52	(4.68 to 6.46)
Ecuador	1618	29420	5.50	(5.24 to 5.77)
Argentina	273	5208	5.24	(4.65 to 5.88)
Denmark	506	10083	5.02	(4.60 to 5.46)
Switzerland	1505	30060	5.01	(4.76 to 5.26)
Poland	737	14898	4.95	(4.60 to 5.31)
Bolivia	91	1886	4.83	(3.90 to 5.89)
Cameroon	108	2267	4.76	(3.92 to 5.72)
Bulgaria	84	1811	4.64	(3.72 to 5.71)
Finland	252	5673	4.44	(3.92 to 5.01)
Colombia	397	8959	4.43	(4.01 to 4.88)
Bosnia and Herzegovina	86	1987	4.33	(3.48 to 5.32)
Germany	7275	168162	4.33	(4.23 to 4.42)
Tunisia	43	1025	4.20	(3.05 to 5.61)
Portugal	1089	26182	4.16	(3.92 to 4.41)
Iraq	102	2480	4.11	(3.37 to 4.97)
Dominican Republic	362	8807	4.11	(3.71 to 4.55)
Cuba	69	1703	4.05	(3.17 to 5.10)
Croatia	85	2119	4.01	(3.22 to 4.94)
Austria	609	15752	3.87	(3.57 to 4.18)
Japan	556	15253	3.65	(3.35 to 3.95)
Lithuania	49	1433	3.42	(2.54 to 4.50)
India	1787	53045	3.37	(3.22 to 3.53)
Morocco	183	5505	3.32	(2.87 to 3.83)
Czechia	263	7979	3.30	(2.92 to 3.71)
Nigeria	103	3145	3.28	(2.68 to 3.96)
Estonia	56	1720	3.26	(2.47 to 4.21)

Source: https://www.cebm.net/wp-content/uploads/2020/03/CFR_analysis2020-05-07part1.png