

AUGUST 2020



上海國際問題研究院  
SHANGHAI INSTITUTES FOR INTERNATIONAL STUDIES

# The Tragedy of *More Missed* Opportunities

COVID-19 Human Costs and Economic Damage  
in Emerging and Developing Economies

DAN STEINBOCK

A large, semi-circular graphic of a clock face is positioned at the bottom of the cover. The clock face is light blue and features tick marks around its perimeter. The hands of the clock are also light blue, with the hour hand pointing towards the 12 o'clock position and the minute hand pointing towards the 10 o'clock position.

## **The Tragedy of More Missed Opportunities: COVID-19 Human Costs and Economic Damage in Emerging and Developing Economies**

*“Let me be blunt, too many countries are headed in the wrong direction, the virus remains public enemy number one.”*

WHO Director-General Tedros Adhanom Ghebreyesus, July 13, 2020

*An earlier than expected discovery of a vaccine or a therapy would allow faster removal of social distancing measures and swifter recovery. Yet, that may not be likely until 2021. Meanwhile, efforts to reduce economic scarring could result in worse deterioration. Premature exits could have huge human, economic and political costs.*

*Indeed, there will be no return to past normality until broad access to effective vaccination, therapies, or both. Even in the best scenario, a gradual return to normality will be accompanied by a long-term need to monitor, identify, isolate and contain any possible new virus clusters; and by increasing preparedness for longer-term economic scarring, including a series of potential debt crises.*

Dan Steinbock. The Tragedy of Missed Opportunities. (April 2020)

## **This report is authored by**

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## EXECUTIVE SUMMARY

The report at hand is the sequel of *The Tragedy of Missed Opportunities: COVID-19 Human Costs and Economic Damage* (April, 2020). It focuses on the net effects of the belated responses by the major advanced economies: that is, the past containment failures and failed crisis management, premature exits, continued policy mistakes and the consequent collateral damage in all major income groups and economies – including advanced economies (high-income economies), emerging and developing economies (upper- and lower middle-income economies) and least developed countries (low-income economies).

**Legacies of failed containment, poor crisis management, premature exits.** As the epicenters of the global pandemic are transitioning to poorer countries, the latter will have to face pandemic challenges – including the recent virus accelerations in a number of advanced economies - with poorer economies, lower living standards and weaker health systems. Consequently, the world is entering a “new and dangerous phase.” That, in turn, is likely to result in further threats when the major advanced economies finally normalize, economies gradually reopen, schools begin, travel and tourism pick up and so on – because that’s when the new virus waves and imported infections could accelerate.

**Toward tens of millions of cases and over million deaths.** By August, confirmed cases exceeded 17 million worldwide, while deaths were close to 700,000. Worse, the pandemic continued to accelerate with 200,000-250,000 new cases daily, coupled with 5,000-6,000 new deaths daily. At this rate, the accumulated confirmed cases could exceed 25 million by September. In the absence of deceleration, these cases could soar to 50 million and deaths to 1.3 to 1.5 million by the year-end. More importantly, due to limited testing and inadequate data, a great number of cases and deaths continue to go undetected, particularly in the poorer economies. As a result, all official estimates are highly conservative, effectively downplaying the true pandemic impact.

**US states dominate the most affected economies worldwide.** With the accelerated pandemic impact, the associated economic collateral damage continues to deepen. Due to late mobilization and ineffective responses, *defective* herd immunity has been fostered in major advanced economies, as evidenced by the initial containment failures in the UK, and the COVID-19 resurgences in the US and the Americas. Consider this: If US states were sovereign entities, then by August they accounted for 23 of the top-25 most virus-affected economies worldwide, as measured by confirmed cases per capita. Worse, the Trump administration’s planned exit from the WHO is likely to compound new pandemic risks over time.

**Worst regional crisis in Americas, others to follow.** The global pandemic exhibits significant regional differentiation, which is shaped by the anchor economies. In East, South and Southeast Asia, China’s relative containment success defused the early spread of the virus in the region. In contrast, failures of containment in Western Europe fostered the spread of the pandemic in Central and Eastern Europe, and worldwide. In the Americas, US failure of containment, poor crisis management and premature exits, coupled with poorer economies and weaker health systems have

resulted in the worst regional crisis worldwide. Yet, Canada's track record relative to the US suggests that appropriate precautions can work, despite elevated risks in the regional neighborhood.

**With normalization, new accelerations, waves and virulent strains loom ahead.** The assumption of COVID-19 immunity with fast-tracked vaccines could prove elusive. In March, a new G variation of the virus began to predominate at the expense of the original D. In the coming months, poorer economies in South America, Asia, Africa and elsewhere may have to cope with the rapidly-rising risk of imported infections, new accelerations and virus waves and possibly more virulent strains that the quarantines, lockdowns and travel restrictions in the West have so far kept in check.

**Unwarranted, unrecorded, undervalued suffering in poorer economies.** Without effective vaccine and therapies (and due to inadequate testing and weak data in poorer economies), critical risk groups - the elderly, those with chronic pulmonary conditions, hypertension, diabetes and asthma patients, and those without adequate access to affordable healthcare - could be condemned into unwarranted suffering, even premature death. Due to pandemic accelerations in advanced economies, young age cohorts are no longer immune to mass infections either. In poorer economies, the fall of significant populations, which may go unwarranted, unrecorded and undervalued, could be attributed to Malthusian "war, plague, and famine" rather than COVID-19. Nevertheless, such excessive human costs should not be mistaken with "natural" causes.

**Multiple indicators needed to assess COVID-19 evolution.** In the report at hand, the progressive course of the COVID-19 in all income groups worldwide was assessed in terms of the timing of the official first cases, accelerated spread, effective reproductive number ( $R_t$ ) in three time periods, transmission classification, flattening of the curve, new accelerations (typically as the net effect of premature exits, residual clusters etc.), and potential susceptibility to new waves.

**In a 2-phase progression, pandemic spread intensified in late spring.** The evidence suggests that while the original virus was first officially recorded in China, it was largely contained in the mainland and multiple other economies in January-February. The pandemic spread in most income groups was fueled by importations from Western Europe, containment failures in North America and major advanced economies, which fostered early but initially undetected local transmissions. In particular, premature exits and continued policy failures resulted in multiple virus accelerations in the summer and will compound susceptibility to new accelerations, new waves, more virulent strains and imported infections in the future.

**Baseline scenarios still underestimate collateral economic damage.** As the analysis of the economic collateral damage in the major income groups indicates, the IMF/WEO update of June 2020 remains too optimistic. It downplays the impact of the prior grim global economic landscape; It underestimates the adverse impact of the secondary virus waves, which were initially anticipated only toward late fall 2020 but materialized already around May/June. And it largely suspends the likely negative impact of the escalating US Cold War against China and several other countries and groups of countries. Since the US is the largest advanced economy

and China the largest emerging economy, such escalation is likely to further undermine prospects for global recovery.

**Largest economies face greater collateral damage and lost years.** The impact has been relatively worst in those major economies that were coping with challenges already before the coronavirus contraction. Among high-income economies, most may face 5-7 years of lost progress (as measured by losses in per capita incomes), whereas in outliers prior challenges are contributing to far greater declines (e.g., Italy, Japan). Among upper middle-income economies, China and possibly Indonesia may navigate through the crisis without negative contraction. But most countries have already lost 5-7 years of progress and in some economies, typically Brazil and Argentina, the lost years may prove twice as many as among their peers. Among lower middle-income economies, even the best performers have already lost 3-4 years (India, Kenya, Philippines, and Vietnam), while others may lose a decade (Nigeria). Among low-income economies, the best performers have lost 5-7 years of progress (Ethiopia, Mozambique). Some have had losses of up to 20 years (Madagascar), or over 25 years (Yemen); they suffered from falling living standards long before the pandemic, due to political instability, civil war and foreign invasions. Due to minimal testing and undervalued COVID-19 case counts, devastation in poorer economies could prove significantly higher than currently acknowledged.

**Failed multilateralism and misguided unipolarity account for historical losses.** What further aggravates the human costs and economic damage is the failure of the major advanced economies to implement the WHO's multilateral preparedness plan, which should be scaled up to preempt future pandemics. The WHO's updated fund-raising target represents barely 0.01% of the world's (current) cumulative output loss. Strong multilateral global action would be vastly preferable to (and only a fraction of the cost of) these unipolar actions, which compound pandemic damage. Setting aside the huge costs of monetary easing and other relevant measures, the fiscal packages alone, which are used to cushion the pandemic collateral damage, amounted to \$11 trillion in the first half of 2020. The final costs of these packages are likely to result in a series of future debt crises in major economies. Worse, efforts to couple the trade wars with technology wars and financial wars could destabilize the long-term prospects of global recovery, particularly in the poorest economies, and undermine the promise of the "Asian Century." After decades, even centuries, of colonial legacies, Cold War and new "forever wars."

**Science-based policies work against pandemics, not politicized agendas.** What is desperately needed to overcome COVID-19 and the coronavirus contraction is multilateral cooperation among all major economies and across political differences. In turn, this cooperation must rely on science-based policies rather than politicized agendas, or efforts to overwhelm public agendas with private interests. Global pandemics are not overcome by political ploys or efforts at private gains. Only evidence-based decision-making that relies on modern science can provide the basis for successful policies against the pandemics.

Tragically, what is most needed to overcome COVID-19 and the associated economic contraction seems unlikely to happen in the near future. With the Spanish flu, it was not the first wave that proved fatal, but the second. If such painful lessons have not been learned by now, they will be learned over a major crisis that is likely to be compounded by a more protracted pandemic and a multiyear global depression.

## Old and New Missed Opportunities

Even as the epicenter of the global pandemic moved to Western Europe and the United States in March, there was still widespread hope that COVID-19 cases and deaths would be decelerating by the summer. Those dreams are now gone, due to failures in containment, ineffective crisis management and premature exits. By August, confirmed cases exceeded 17 million worldwide, while deaths were nearly 700,000. The pandemic continued to accelerate with 200,000-250,000 new cases and 5,000-6,000 new deaths daily. In the absence of deceleration, these cases could soar to 50 million and deaths to 1.3 to 1.5 million by the year-end.<sup>1</sup> As WHO chief Dr Tedros has warned, “the world is in a new and dangerous phase.”<sup>2</sup>

**Current pandemic rate could result in more 60 million cases by year-end.** If the international community continues to fail in its efforts to contain the global pandemic and if the current rate of new cases would prevail until the year-end, the total confirmed cases could exceed 60 million and total confirmed deaths 1.6 million. However, since uncertainty overrides all projections and a great number of cases and deaths continue to go undetected, particularly in poorer economies, these estimates remain very conservative: the poorer the economy, the greater is the discrepancy between *confirmed* cases and deaths, and *effective* cases and deaths.

**The pandemic effects have only begun.** Most current data on the collateral economic damage in 2020 and its aftermath, as proxied by the World Economic Outlook of the International Monetary Fund (IMF) is likely to be further downgraded. In the absence of effective vaccine and therapies, the pandemic and its economic impact are likely to prove significantly more protracted than currently presumed. “The pandemic effects “will be felt for decades to come,” as WHO has confirmed.<sup>3</sup>

In addition to the set of missed opportunities identified in the original report, *The Tragedy of Missed Opportunities: COVID-19 Human Costs and Economic Damage* (April, 2020), more opportunities have been missed since then and they are the focus of the report at hand; it is the sequel of the original report.

### Old Missed Opportunities

**Failed containment, ineffective crisis management, and premature exits.** The world has entered “a new and dangerous phase,”<sup>4</sup> because of the failed and belated containment by major advanced economies in the 1<sup>st</sup> quarter of 2020 and because of ineffective enforcement and premature exits in the 2<sup>nd</sup> quarter. After eventual normalization, the lockdowns will be exited in the United States, Western Europe and elsewhere; and the missed opportunities in the West in the first half of the year could spread via exported infections to emerging and developing economies.

**Emerging and developing economies face a ‘triple whammy.’** Emerging and developing economies will soon have to cope with the net effects of the advanced



West's containment failures, ineffective crisis management and premature exits; i.e., a 'triple-whammy.' Yet, these countries will have to face such challenges with poorer economies, lower living standards and weaker health care systems. That's the focus of the report at hand.

**Multiple delays in effective mobilization.** Today's challenges originate from the missed opportunities in the first half of the year:<sup>5</sup>

1. The WHO and relevant countries were informed about the potential virus on January 3, 2020, when the US CDC also alerted the White House, and the European CDC was informed about the new virus. In the US and Europe, the first confirmed cases surfaced already in late January. Despite much international debate, speculation and disinformation about the timeline, the official timeline has largely prevailed, setting aside unsubstantiated "reports" and presumably "classified evidence" (that remains undisclosed for reasons of "national security").
2. Between the first official case in Wuhan (Dec 30, 2019), and the WHO's announcement of the international emergency (Jan 30, 2020), the epicenter of the outbreak was centered in Wuhan, Hubei, and proximate Chinese provinces.
3. Yet, it was only after the WHO (Mar 10) declared the virus a pandemic that mobilization began in the US and Western Europe; that is, almost 2 months after WHO's first international alert and nearly 3 months after the first Chinese alerts.

**Series of delays and failures in the pandemic mobilization.** These failures included, but were not limited to

- Widespread failures of information sharing by the member countries with the WHO (since early Jan), which undermined effective early international response;
- faulty test kits and testing delays in the critical early phases of the pandemic;
- shortages of personal protective equipment (PPE), which contributed to high degree of infections and deaths among the frontline healthcare workers;
- additional shortages in the US, due to the tariff wars, which prevented PPE imports coming from China while supporting PPE exports by US companies, thereby leaving ordinary Americans and frontline workers unprotected;
- failed responses to COVID-19 and elevated health risks among the population;
- media misinformation, occasionally even by reputable media, which contributed to the consequent 'infodemic,' as the WHO defined it;
- efforts by some incumbent political leaders in the major affected countries to misplace responsibility on the WHO and its chief executives and other countries, including China which had used social distancing to flatten the epidemic curve since January resulting in relatively successful containment by late February.<sup>6</sup>

## **New Missed Opportunities**

**Anticipated 'secondary waves' began months earlier than expected.** In addition to the old missed opportunities, new complications ensued in the West in late

spring/early summer, when several major economies began premature exits, despite belated responses and ineffective crisis management. Initially, secondary virus waves had been expected, but mainly toward the fall after full reopening of economies, schools, and so on. But due to the containment failures and premature exits, the effective secondary waves started already in June, especially in the US.

**The pandemic impact is still accelerating.** The accelerated rate of the global pandemic suggests that the worst is not yet behind, but still ahead. Not only is the pandemic still accelerating in many emerging and developing economies but the resurgence of COVID-19 in several major advanced economies indicates that the failures of crisis management in the first half of the year still prevail.

**Complacency is costly even in relatively successful countries.** The rising imported infections and new virus clusters in several Asian economies, which had been relatively successful in the early phases of the pandemic (e.g., Hong Kong, Singapore, South Korea), suggests that, in the absence of effective vaccines and therapies, any complacency in crisis enforcement is likely to lead to new collateral damage in public health and economic impact.

**The economic impact is still deepening and broadening.** In early spring, most observers in the West were still touting the idea of a V-shaped recovery. During the 2<sup>nd</sup> quarter, the confirmed coronavirus cases around the world increased almost 15-fold, while international projections of the economic outlook of the major economies were significantly downgraded. These revisions will continue because the current economic forecasts remain too optimistic.

**Fattening the epidemic curve has fostered defective herd immunity.** Due to late mobilization and belated responses, *defective* herd immunity<sup>7</sup> has been fostered in major advanced economies, as evidenced by initial containment failures in the UK, and the COVID-19 resurgences in the US and the Americas. Instead of *flattening* the epidemic curve, many advanced economies initially *fattened* that curve for weeks. That will prolong the global pandemic, as evidenced by the imported cases in Asia, across the US-Mexican border and elsewhere.

**A series of resurgencies in major advanced economies.** Hindsight is seldom helpful. Yet, adequate evidence exists now for the following: If the first alerts in January and the pandemic warning in March had resulted in preemptive mobilization and effective containment in major advanced economies, the second half of 2020 could have witnessed progressive deceleration of new cases and a start of a V-shaped economic recovery in many nations. Now, the outcomes will be the reverse.

**US exit from the WHO will compound longer-term risks.** In the past few years, President Trump has sought to reduce US multilateral international cooperation.<sup>8</sup> While Trump's decision to exit the US from the WHO is consistent with his broader "America First" agenda, it will drastically compound future public-health risks in the US and worldwide (see last section on "Economic Scenarios").

**The hope for fast COVID-19 immunity has proved elusive.** Current projections rely on the development of COVID-19 vaccine, effective therapies, or both. But what if these efforts prove more challenging than anticipated and/or the outcomes prove

inadequate? Some studies suggest that, of the Wuhan patients who were exposed to infected patients at early stage of outbreak, only 4% of 23,000 have antibodies, while an estimated 25% could have contracted the disease.<sup>9</sup> Even in the best scenario, vaccines will be available in late 2020 or early 2021. Yet, affordability, availability and inoculation periods are likely to prolong the realization of mass immunity.

**Prior containment failures could foster adverse mutations.** The more the pandemic spreads, the greater will be the likelihood of new mutations. While most of these will likely be inconsequential, some won't. Some early evidence suggests that, when the epicenter of the virus migrated to Western Europe and the United States, which failed to contain the pandemic, an inflection point for a more virulent virus strain may have been reached (see "Potential for New Virus Escalations").

## From Resurgencies in US States to Spillovers in Americas

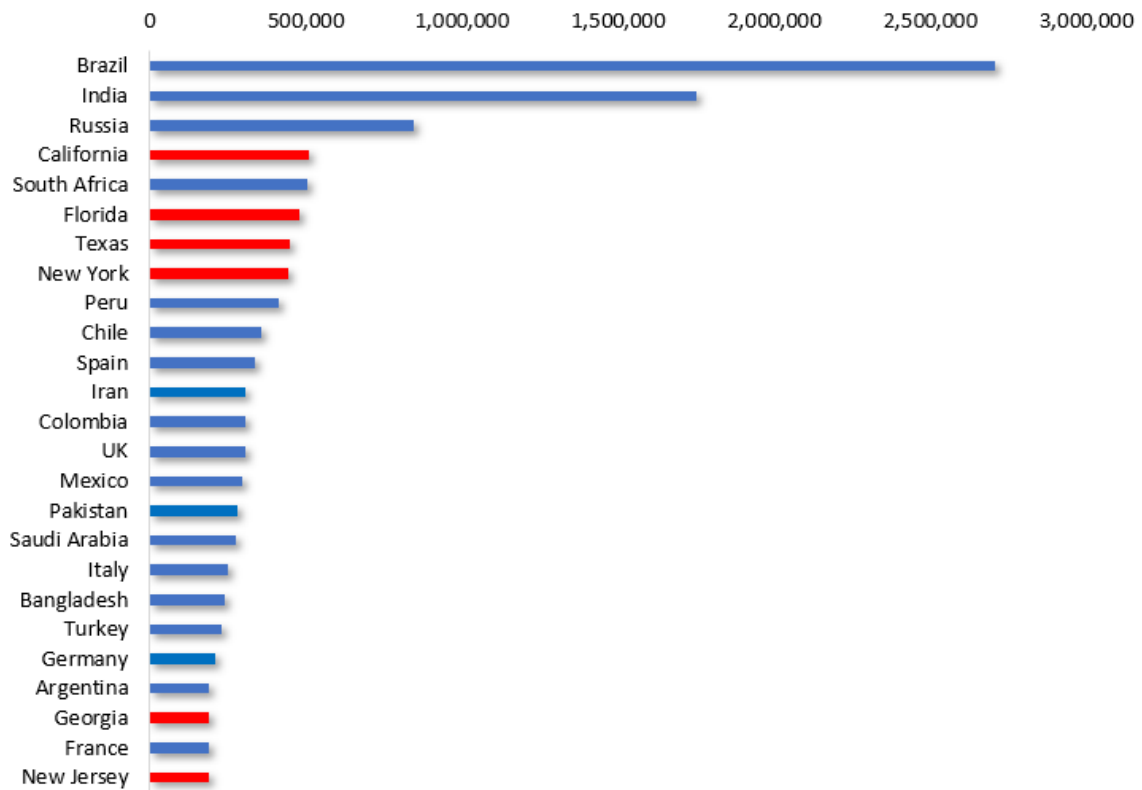
Through the pandemic, an uneasy coexistence has prevailed in the United States between the science-based health guidance of the nation's top experts and the politicized agenda of the Trump administration, as illustrated by the recent debate about President Trump's reliance on doctors believing in "alien DNA, and sex with demons."<sup>10</sup> In a deeper sense, the pandemic failures began already in January 2017, when President Trump eliminated the National Security Council's global health unit, which had been created precisely to respond to global pandemics.<sup>11</sup> On July 4<sup>th</sup>, when the administration sought for a "return to normal" with a celebration at Mount Rushmore, White House coronavirus advisor Dr. Anthony Fauci said the US was seeing a surge in new Covid-19 infections because the country never shut down entirely.<sup>12</sup> By August, confirmed virus cases amounted to 4.5 million, with over 50,000 deaths, while new cases averaged over 65,000 daily. In the 2<sup>nd</sup> quarter, US GDP growth suffered a -5% contraction in the 1<sup>st</sup> quarter, followed by a historical, worst-ever -33% plunge.<sup>13</sup>

The COVID-19 surge across America was to be expected in light of the catastrophic mishandling of the pandemic by the White House, as projected by *The Tragedy of Missed Opportunities* already in April. The consequent collateral damage in terms of public health and economic impact is likely to prove more protracted than currently expected. And due to the central role of the US in the global economy, that impact will have a negative 'multiplier effect' on the world economy in the coming months.

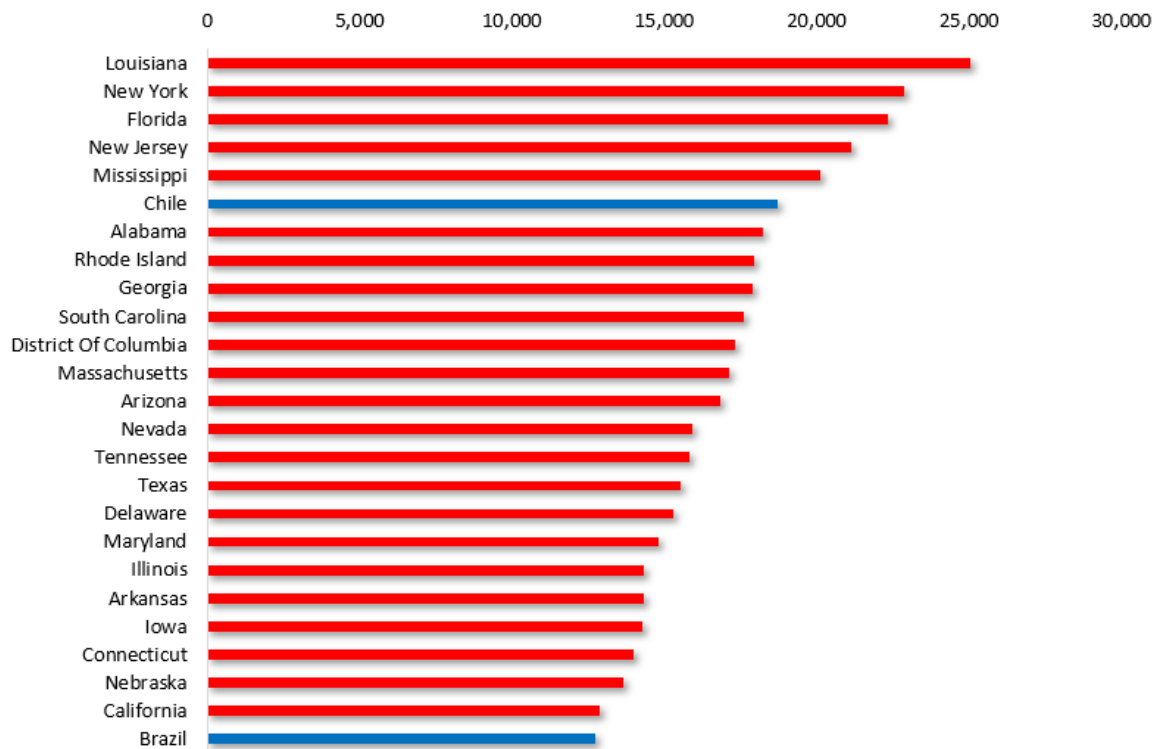
To understand the full magnitude of the adverse US spillovers, let's think of US states as independent economies. By August, almost a fourth of the 25 most affected economies were in the US, with California, Florida, Texas and New York in the top-10, right after the entire economies of Brazil, India and Russia, even South Africa (**Figure 1a**). However, adjusted to the size of population, US states accounted for a whopping 23 of the 25 most-virus affected major economies worldwide with Louisiana, New York, Florida, New Jersey and Mississippi leading the entire world, followed by Chile. Even the populous Brazil (213 million people), which had the greatest number of confirmed cases after America, fell behind US states, such as Iowa (3.2 million) and Connecticut (3.6 million) (**Figure 1b**).

**Figure 1 COVID-19, World Economies and US States (Aug 1, 2020)**

**(a) Total Confirmed Cases**



**(b) Total Confirmed Cases / 1 Million People**



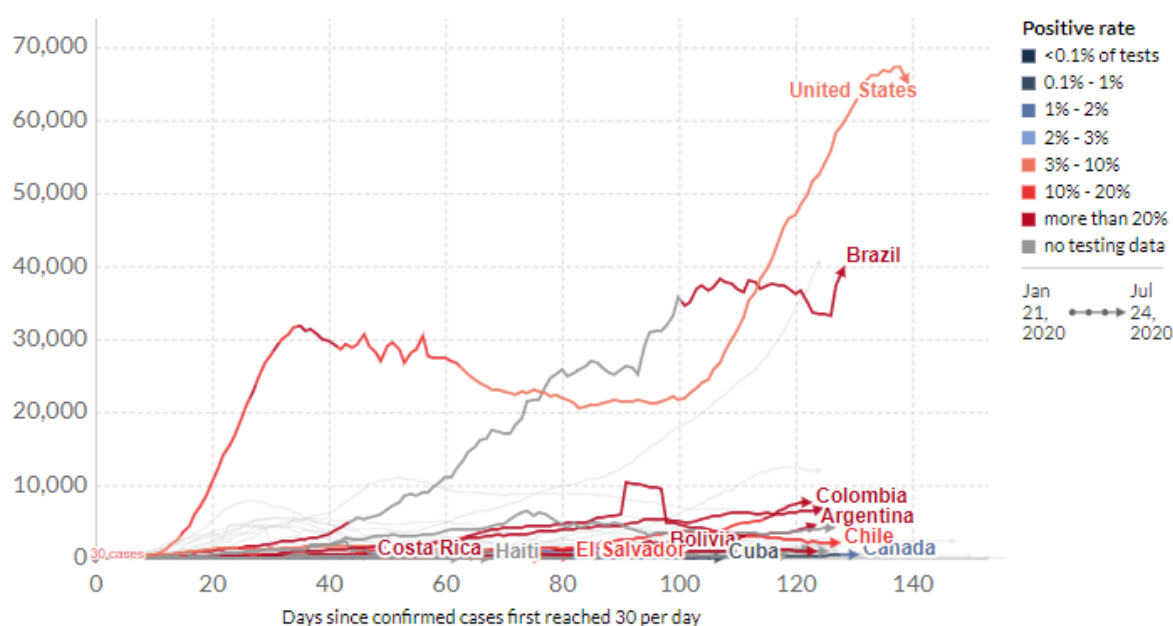
Sources: Worldometer; Difference Group

When the US eventually normalizes, associated resurgences of COVID-19 could prove likely in countries with close ties with the US. While similar concerns also prevail in the Europe, Brussels has mobilized more effectively against the pandemic after March. And unlike the US, most European economies also have stronger health systems and/or universal healthcare which provides something a better cushion against the adverse public-health and economic collateral damage.

In Canada, the first confirmed case – a male with travel history in Wuhan and Guangzhou - was identified and isolated already in late January.<sup>14</sup> New cases surfaced in March and accelerated later in the month. Unlike the US, Canada began to mobilize against the pandemic in January and has fared more like Western European economies. Nevertheless, the country had 116,000 cases by August.

With weaker health care systems, the Americas offers a distressing demonstration effect. By late July, the geographic distribution of new cases – nearly half from the Americas – suggest the global pandemic had spread to the Americas, while adverse feedback effects were spilling over into the region (**Figure 2**).

**Figure 2 COVID-19 Impact: Americas\***



\* Daily confirmed COVID-19 cases (linear), Jan 26 – Jul 24, 2020 (linear)

Source: European WHO, WEO/IMF database, Difference Group.

Brazil identified its first virus case – a student returning from Wuhan - already in January.<sup>15</sup> Yet, cases remained low until February, when new cases were linked with Lombardy, the epicenter of Italy’s pandemic. By March, the number of infected members of the cabinet overtook Iran.<sup>16</sup> The Bolsonaro government initially ignored science-based evidence, shunned early mobilization and public-health imperatives. While most state governors did impose quarantines against the pandemic, by August

Brazil had the second-highest number of confirmed COVID-19 cases in the world – over 2.6 million with nearly 70,000 new cases daily.

In the pandemic second-tier of Latin America, the key countries – Mexico, Peru, Chile, and Colombia – had each about 290,000 (Colombia) to over 415,000 (Mexico) cases by August. In Peru, the pandemic began with a young male returning from travels in Southern and Central Europe in early March.<sup>17</sup> Afterwards, President Martin Vizcarra declared one of the earliest lockdowns in Latin America. Yet, prior to summer and despite a population of 32 million, Peru had only 1,000 intensive care unit (ICU) beds available May (with 29 million people, Texas had 11,200 ICU beds).

Adjusted to population, Chile's pandemic has been one of the worst worldwide. The first cases were a young male who returned from honeymoon in Southeast Asia through Europe and a middle-aged woman who'd traveled in Italy and other European countries.<sup>18</sup> Despite fewer than 20 million people (relative to 130 million in Mexico) and a high-income economy, Chile had over 355,000 cases by August.

Like Canada, Mexico has deep ties with the US. The first cases were identified after February in the cruise ship *Grand Princess*, later quarantined in San Francisco. In Mexico the first cases surfaced in late February with travel histories in Italy.<sup>19</sup> On March 20, US Secretary of State Mike Pompeo declared restrictions on travel across the Mexico-US border. As local transmissions exceeded imported infections, pandemic accelerated. Despite restrictions in Mexico to limit the inbound land-border crossings from the U.S., enforcement has been far more lenient. Meanwhile, the pandemic cases soared to nearly 420,000 with 46,000 deaths by August. Since early July, state governors in Northern Mexico have urged the central government to make it tougher for Americans to enter the country for non-essential reasons.<sup>20</sup>

The challenges in the Americas will not go away anytime soon and in the US they could get worse, according to US CDC.<sup>21</sup> In the world economy, the pandemic exhibits significant regional differentiation, shaped by the anchor economies. In East, South and Southeast Asia, China's relative containment success prevented the early spread of the virus within the region. In Western Europe, failures of containment fostered the spread of the pandemic in Central and Eastern Europe, and regional proximity. In the Americas, US failures of containment and crisis management, coupled with poorer economies and weaker health systems in Latin America resulted in the worst regional crisis worldwide. Yet, Canada's track record relative to the US suggests precautions can work, despite elevated risks in the regional neighborhood.

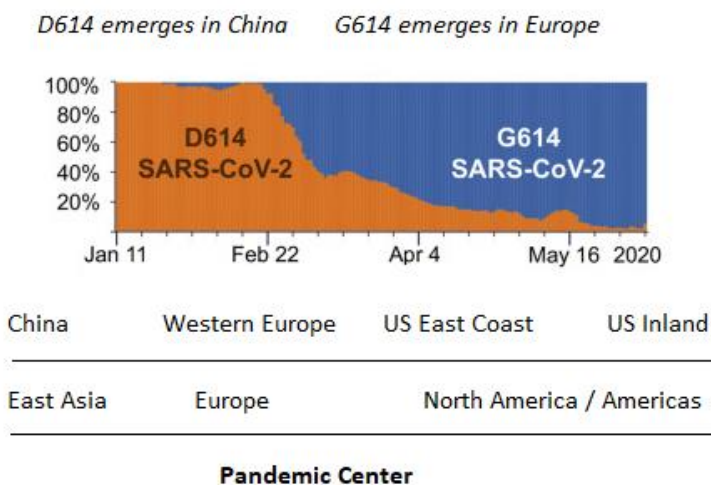
## **Potential for New Virus Accelerations**

As long as the virus can take advantage of new hosts, due to complacency in major economies, the outcomes may feature surges of mortality rates, which are not attributed to the pandemic. Without effective vaccine and therapies, risk groups — including the elderly, those with chronic pulmonary conditions, hypertension, diabetes and asthma, and those without adequate access to affordable healthcare — could be condemned into unwarranted suffering, even premature death.

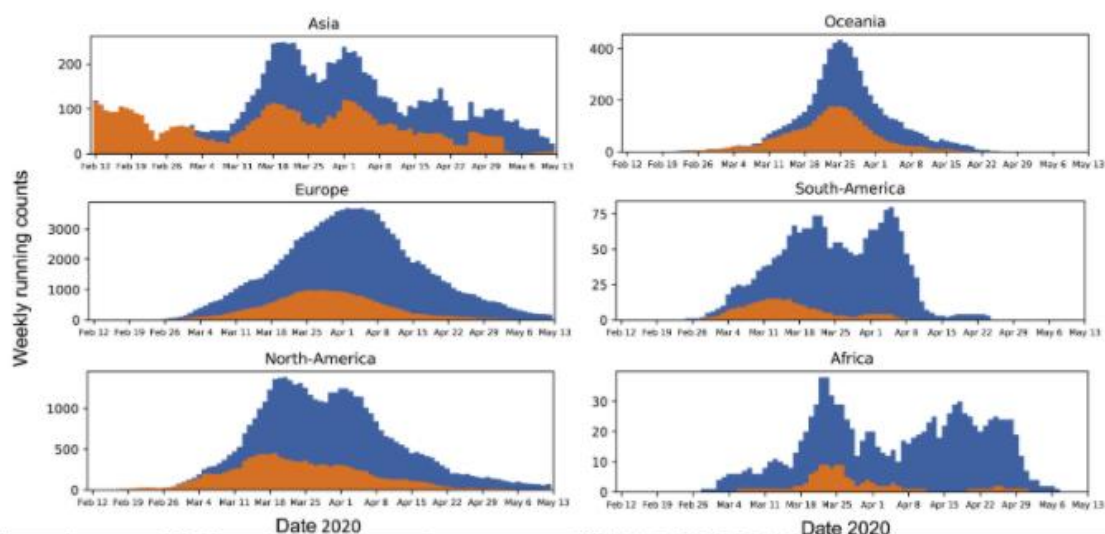
Recently, a mutation was discovered in the protein that permits SARS-CoV-2 to enter cells possibly making it easier for the virus to spread. Original samples of the novel coronavirus out of Wuhan, China, were a variation that scientists call the "D" clade. Before March 1, over 90% of viral samples taken from patients were from D variation. In March, a new variation (the "G" variation) began to predominate (**Figure 3a**).<sup>22</sup> Although results are not conclusive, current evidence suggests there has been a global transition from the D to the G variation; and the latter appears to increase the infectivity of the COVID-19. In Asia and Oceania, the less-infective D was more dominant until recently, whereas in Europe and North America the G grew dominant in March. Due to proximity and regional spillovers from the US, the G has been dominant in South America since March-April. For similar reasons – proximity with Europe - it has also dominated infectivity in Africa (**Figure 3b**).

**Figure 3 Potential Transition of the Dominant Pandemic Form**

**(a) Global Transition**



**(b) Regional Transition**



Source: Korber, Bette et al. 2020. "Tracking Changes in SARS-CoV-2 Spike: Evidence that D614G Increases Infectivity of the COVID-19 Virus." *Cell*, July 3; Difference Group

If, as the researchers hypothesize, the G variation accelerated in Europe, it benefited from the global transportation hubs migrating across the Atlantic to New York City, which then seeded many of the outbreaks in the rest of the US, including locations where it is now running unchecked. This narrative of the computational biologists is reinforced by that of the investigative journalists who discovered in April that “travel from Europe was a key facilitator of the virus’s spread in the U.S.”<sup>23</sup>

There is a distressing implication associated with the presumed global transition from D to G variation. It could make the pandemic burden of emerging and developing economies more challenging than currently anticipated, particularly after normalization in the US and Europe, when quarantines, lockdowns and travel restrictions are phased out in the West. That could result in elevated risks of imported infections in emerging South America, Africa and Asia/Oceania,

Historical precedents are instructive. Between 1918 and 1920, the Spanish flu, in four successive waves, is estimated to have infected 500 million people; every third person in the world at the time, while the death toll has been estimated at 17 to 50 million. However, it was the *second* wave that proved far more deadly than the first. Facilitated by troop movements and logistical hubs, it spread over to North America, then Central and South America, and eventually to Africa Russia and Asia.<sup>24</sup> Today, the precedent of the Spanish flu should underscore the importance of proactive vigilance until effective vaccines, therapies or both are widely available.

## **Integrity of Data: Testing and Other Vital Indicators**

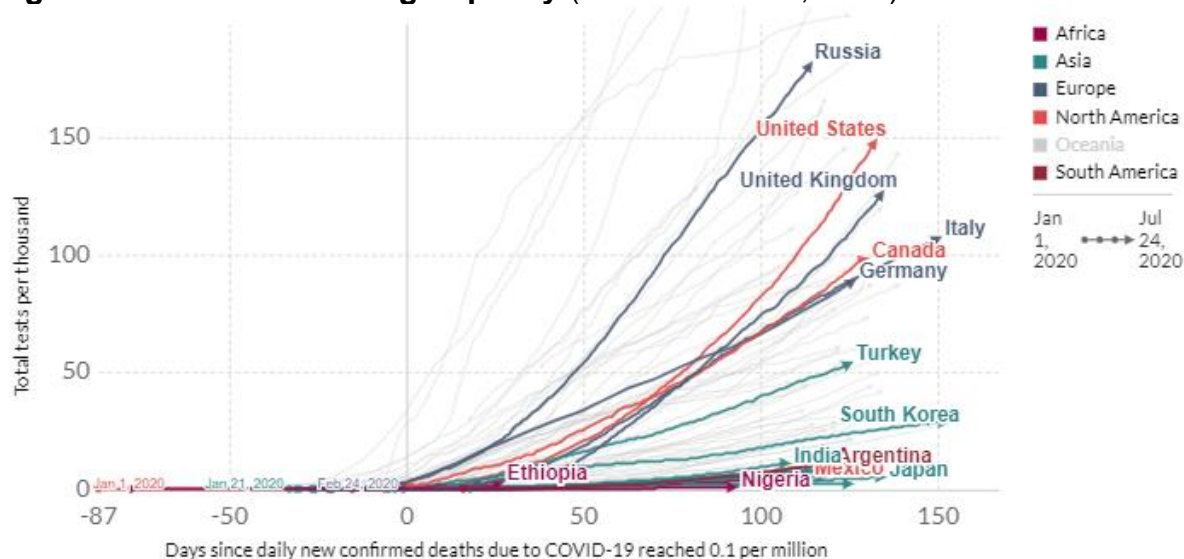
By now, most countries have learned – the hard way – that without appropriate geographical identification of positive cases, it is challenging for public health authorities to estimate the true extent of the COVID-19 cases (whether defined by test, case or incidence reports), not to mention virus clusters and secondary waves. Success requires thorough contact tracing, tracking, and isolation. The integrity of the data is critical, particularly testing, and other vital indicators, including the effective reproductive number ( $R_t$ ), positivity rate, hospitalizations, ICU beds, etc.

Effective R illustrates the average number of people who will contract a contagious disease from 1 person with that disease: while  $R_t < 1$  indicates the curve is flattening,  $R_t > 1$  suggests the curve is still increasing. Early through mid-January, the epidemic in Wuhan had an  $R_t$  of 3 to 4; that is, each case spread to an average of 3 to 4 others.<sup>25</sup> The positivity rate is the percentage of COVID-19 tests that are positive; it indicates the extent of community transmission in a population. In turn, the hospitalization rate reveals the change in COVID-19 bed occupancy in a geographic region. Both increase when the pandemic is spreading through a local community. Both indicators have significant implications. To maintain control of the pandemic, the WHO urges countries to reduce their positivity rates to below 5%. For example, the positivity rate remained excessively high in the Americas in mid-summer (compare **Figure 2**).



In the report at hand, testing - as adjusted to the population size - plays a vital role, due to the global scope and the amount of consequent data. However, other indicators have been explored to assess whether the epidemic curve is flattening or still accelerating. Countries that test relatively less are more likely to see new virus waves and residual clusters in the future. Due to potentially greater-than-expected vulnerability, they may also face new challenges as the economy begins to ease lockdown measures and travel and tourism picks up. Since income groups reflect different per capita incomes associated with different levels of public-health capacity, it would be prudent to expect testing capacity to be relatively high in high-income groups, relatively low in low-income groups and somewhere in between in upper and lower middle-income countries. Consequently, anomalies - that is, countries that are testing significantly more/less than their income group on average - could reflect greater/poorer pandemic performance, respectively (**Figure 4**).<sup>26</sup>

**Figure 4 Rise of Testing Capacity (Feb 20 – Jul 24, 2020)\***



\* Daily tests per thousand people. The 7-day rolling average of the daily number of tests for COVID-19 per thousand people of the country's population. Given in terms of the number of days since the total confirmed cases reached 1 per million. Since European CDC does not include data on all income-group countries, those that are missing have been assessed on the basis of Worldometer's COVID-19 data.

Source: European CDC, World in Data, Difference Group

**High-Income Economies.** In most high-income economies, the number of tests in late July varied around 46,000 (France) - 215,000 (UK), measured by tests per 1 million population. Despite its severe pandemic challenge, US tests were still behind those in Russia. Both the UK and US scaled up their testing capacity only belatedly, which significantly distorted their early data. Oddly, Japan remains a laggard among all advanced economies (5,600 tests). In relative terms, the country had tested less than 3% relative to the UK. Until mid-July, Japanese testing stayed behind that of the low-income Uganda.

**Upper Middle-Income Economies.** In late July Russia was still testing significantly more (182,000) than the US, while testing in China (63,000) and Turkey (54,000) remained higher relative to France. With their testing capacity, Brazil, Thailand, and Argentina are among weaker players. Mexico is barely ahead Bangladesh and Indonesia (5,000) the laggard.

**Lower Middle-Income Economies.** Among developing countries, Philippines and India (12,000), after a slow start, are current leaders in testing, followed by Pakistan (8,000), and Bangladesh (7,000). In Philippines and India, testing intensity is 4-8 times higher than in Vietnam (3,000), Egypt and Nigeria (below 1,500), respectively.

**Low-Income Economies.** Among these countries, Uganda (5,600) is the leading tester, followed by Ethiopia (3,200), Afghanistan (2,200), Madagascar (1,300), whereas in Sudan, Yemen and Congo DR testing has been minimal to non-existent.

## PANDEMIC DAMAGE ON INCOME GROUPS

In the following, the COVID-19 impact has been analyzed in all major income groups and largest associated economies; that is, high-income, upper middle-income, lower middle-income and low-income economies (**Table 2**). The focus is on the human costs and economic damage of the pandemic; the timing of its spread in major economies; the status of the epidemic curve and the economy's likely vulnerability to secondary waves. In late January, President Trump congratulated President Xi Jinping for China's success in the virus containment. As the administration's policy mistakes multiplied and Trump's re-election campaign was endangered, that stance was reversed. Setting aside the obvious political considerations, when and how did the pandemic spread into major economies? After all, China adopted stringent quarantines after mid-January, whereas the pandemics took off mainly in late March.

**Table 2 Pandemic Costs and Damage: Income Groups**

<b>Advanced</b>	<b>Emerging</b>	<b>Developing</b>	<b>Least Developed</b>
<b>High-Income (\$12,536 or more)</b>	<b>Upper Middle-Income (\$4,046-\$12,535)</b>	<b>Lower Middle-Income (\$1,036-\$4,045)</b>	<b>Low-Income (1,035 or less)</b>
Canada France Germany Italy Japan South Korea UK US	Argentina Brazil China Indonesia Mexico Russia Thailand Turkey	Bangladesh Egypt India Kenya Nigeria Pakistan Philippines Vietnam	Afghanistan Congo DR Ethiopia Madagascar Mozambique Sudan Uganda Yemen

Source: World Bank

Interestingly, while the outbreaks began in Wuhan, China, the origins of the pandemic are more complicated (**see Box 1**). In the high-income group, the reported first cases have been associated with China in late January, but the confirmed spread has been linked with travelers from Western Europe and local transmissions, and to a lesser degree with travelers from US, Asia, the Middle East and China. In the upper- and lower middle-income economies, half of the first cases have been linked with China and half from Western Europe, and to a lesser degree from Japan, the Middle East and the US. In these countries, the confirmed spread has been associated with Western Europe and local transmissions, and to a lesser degree with the US, Middle East and Japan. In the low-income economies, most of the first cases have been linked with Western Europe, and to a lesser degree with the Middle East, Japan and local transmissions, whereas the confirmed spread has been associated with local transmissions.

### **Box 1      Alternative Timelines in Advanced Economies**

In the United States, the first COVID-19 case – a man returning from China - was identified in January, with local transmissions later in the month.<sup>27</sup> Yet, the spread accelerated by the turn of March. With retesting, there is also some evidence of different timelines. In early May, Santa Clara County health officials reclassified nine deaths which occurred before February 6 as being due to COVID-19.<sup>28</sup> Belleville Mayor Michael Melham says he caught the virus in a NJ conference in late November 2019. In April 2020, his blood was tested for COVID-19 antibodies and the finding was positive.<sup>29</sup> In turn, investigative journalists have shown that “travel from Europe [not from China] was a key facilitator of the virus’s spread in the US.”<sup>30</sup>

While the first official cases in Europe were linked with Wuhan, there is evidence of local sources as well. Some medical evidence suggests a COVID-19 infection already in early December: one case near Paris, another near German border. While both tested negative at the time, retests in May proved positive.<sup>31</sup> In Germany, the first official case in Munich, Bavaria, in late January was linked with China, but the actual spread intensified only a month later when multiple cases related to the Italian were detected in Baden-Württemberg.<sup>32</sup> The February outbreak in Lombardy, Italy, reportedly stems from the first European local transmission in Munich, Germany, already on January 1, 2020. In the UK, the first case – a male returning from Wuhan - was identified in late January. Yet, the early spread in February involved another male who had returned from Singapore and France.<sup>33</sup> COVID-19-like symptoms have also been linked with a British choir in Wuhan after mid-December and with an Austrian ski-resort in late January, while the origins of the pandemic has been linked with Spain, France and Italy.<sup>34</sup> In Japan, genome research suggests the first COVID-19 wave in January was linked with China, but the second has been associated with France, Italy, Sweden and the UK.<sup>35</sup> In South Korea, the first case was from China in January, but the spread began with local transmissions by a religious cult super-spreader in February.<sup>36</sup>

Setting aside informed speculation, disinformation campaigns and conspiracy theorists, evidence on the ultimate origin of the COVID-19 remains inconclusive.<sup>37</sup>

## To Flatten or to Fatten? – That’s the Question

In epidemiology, the notion of “flattening the curve” refers to the projected number of new cases over a period of time. To avoid a steep rise of infections, countries and governments have tried to achieve a more gradual uptick of cases. Eventually a number of people are expected to get infected, but without overwhelming the health-care system. So, the objective of *flattening* the curve is to stagger the number of new cases over a longer period, to ensure better and continued access to care. When this goal fails or is achieved only partially, the curve will be *fattened*. As the infection rate accelerates and a disruptive uptick of cases ensues, the health-care system is overburdened and appropriate care is no longer viable.

The ultimate function of the WHO’s international alert in late January and pandemic alert in early March was precisely to encourage member states to begin phased preparations. However, belated responses, coupled with failed containment and crisis management – as documented in the original report *The Tragedy of Missed Opportunities* – plus premature exits and the continuation of early policy mistakes – as documented in the report at hand – undermined the alerts. Instead, effective response ensued only in late March/early April. The curve was not flattened early; it was fattened for quite a long time.

Here, the focus has been on all major economies, as represented by the four major income groups: high-income (“advanced”), upper middle-income (“emerging”), lower middle-income (“developing”) and low-income (“least developed economies”). The COVID-19 evolution in these groups has been assessed in terms of the timing of the official first cases, accelerated spread, effective reproductive number ( $R_t$ ) in three time periods, the nature of the transmission, flattening of the curve or continued accelerating, new accelerations (typically as the net effect of premature exits, the spread of residual clusters etc.), and potential susceptibility to new waves (**Table 3**).

Taken with appropriate caveats, these indicators can offer interesting insights, however. Despite its current status as a success story, Vietnam’s  $R_t$  is 2.6; currently one of the highest worldwide, which could mean that low testing may have distorted the true spread of the pandemic in the country. The same goes for high-income economies that have shunned intensive testing, including France (1.30) and particularly Japan (1.40). Among developing economies, the Philippines (1.69) has a high the  $R_t$  value. But since it is one of the leading testers in Southeast Asia and among developing economies, the value may reflect the true spread of the pandemic in the lower middle-income group. The same applies to Uganda (1.26) among low-income economies, it has a high the  $R_t$  but since it is the leading tester in the group, the value could reflect the effective realities in poorer economies, where the  $R_t$  may be significantly higher than currently acknowledged.

The evidence suggests that, in high-income economies, most countries began to flatten the curve toward late spring (in South Korea even earlier, thanks to more stringent and effective measures), including Europe. In contrast, the curve has been fattened in the US, whereas in Japan limited testing has distorted the likely spread.

As a result, susceptibility to new waves remains elevated in the US, uncertain or significant in Japan and moderate in Western Europe – but only (and only) as long as premature exits are avoided, clusters of new cases are not permitted to spread further, potential imported infections can be minimized when the economies are gradually reopened, and so on. Since these goals were not achieved in many major advanced economies in spring, most countries have coped with new accelerations in the summer and could remain vulnerable in the future.

**Table 3 Income Groups and COVID-19 Spread**

Income Groups	First Cases (Official)	Accelerated Spread	Effective Reprod. Number ( $R_t$ )			Transm.	Flattening / Accelerating	New Acceler.	Susceptibility to New Waves
			14/3	1/6	27/7				
<b>High</b>									
<i>Canada</i>	Jan: CHI	Mar: LOC US	2.5	0.8	0.9	LOC	Late Apr	Early Jul	Moderate
<i>France</i>	Jan: CHI	Feb: ASIA EUR	2.1	0.5	1.3	Clusters	Early Apr	Early Jul	Significant
<i>Germany</i>	Jan: CHI	Feb: CHI EUR MENA	2.5	0.8	1.2	Clusters	Early Apr	-	Moderate
<i>Italy</i>	Jan: CHI	Feb: LOC EUR	1.6	0.7	1.1	Clusters	Late Mar	-	Moderate
<i>Japan</i>	Jan: CHI	Mar: EUR	1.0	0.9	1.4	Clusters	Mid-Apr	Early Jul	Uncertain
<i>South Korea</i>	Jan: CHI	Feb: LOC	0.6	1.2	0.7	Clusters	Early Mar	-	Low
<i>UK</i>	Jan: CHI	Feb: LOC EUR	1.9	0.8	1.1	LOC	Early May	Early Jul	Significant
<i>US</i>	Jan: CHI	Mar: LOC	3.4	1.0	1.0	LOC	Early Apr	Early Jun	Significant
<b>Middle</b>									
<b>Upper-</b>									
<i>Argentina</i>	Mar: EUR	Apr: LOC	2.2	1.2	1.1	LOC	Accelerating		High
<i>Brazil</i>	Jan: CHI	Feb/Mar: EUR	3.2	1.1	1.0	LOC	Accelerating		High
<i>China</i>	Jan	Jan/Feb	0.7	na	1.3	Clusters	Early Feb	-	Low
<i>Indonesia</i>	Mar: JAP	Mar: LOC	2.7	1.1	1.0	LOC	Accelerating		High
<i>Mexico</i>	Feb: EUR	Mar: LOC US	2.7	1.2	1.1	LOC	Accelerating		High
<i>Russia</i>	Jan: CHI	Mar: LOC EUR	2.7	1.0	1.0	Clusters	Early May	-	Moderate
<i>Thailand</i>	Jan: CHI	Mar: LOC	2.6	na	na	Clusters	Early Apr	-	Low
<i>Turkey</i>	Mar: EUR	Apr: LOC	6.2	0.9	1.0	LOC	Mid-Apr	-	Low
<b>Lower-</b>									
<i>Bangladesh</i>	Mar: EUR	Apr: LOC	na	1.2	1.0	LOC	Early Jul	-	Significant
<i>Egypt</i>	Feb: CHI	Mar: LOC MENA	2.1	1.2	0.7	LOC	Late Jun	-	Uncertain
<i>India</i>	Jan: CHI	Mar: EUR	1.8	1.2	1.1	Clusters	Accelerating		High
<i>Kenya</i>	Mar: US EUR	Apr: LOC	na	1.1	1.2	LOC	Accelerating		High
<i>Nigeria</i>	Feb: EUR	Apr: LOC	na	1.0	0.9	LOC	Early Jul	-	Significant
<i>Pakistan</i>	Feb: MENA	Apr: LOC	2.6	1.4	0.6	Clusters	Late Jun	-	Significant
<i>Philippines</i>	Jan: CHI	Mar: LOC JAP	1.6	1.1	1.7	LOC	Accelerating		High
<i>Vietnam</i>	Jan: CHI	Mar: EUR	na	na	2.6	Clusters	Late Mar	Late Jul	Uncertain
<b>Low</b>									
<i>Afghanistan</i>	Mar: MENA	Apr: LOC	na	1.1	0.9	Clusters	Late Jun	-	High
<i>Congo DR</i>	Mar: EUR	Apr: LOC	na	1.0	0.5	LOC	Early Aug	-	High
<i>Ethiopia</i>	Mar: JAP	May: LOC	na	1.4	1.2	LOC	Accelerating		High
<i>Madagascar</i>	Mar: EUR, SA	Apr: LOC	na	1.0	1.1	LOC	Early Aug	-	High
<i>Mozambique</i>	Mar: EUR	May: LOC	na	1.9	1.3	LOC	Accelerating		High
<i>Sudan</i>	Mar: MENA	May: LOC	na	1.0	0.9	LOC	Late Jul	-	High
<i>Uganda</i>	Mar: MENA	Apr: LOC	na	0.9	1.3	Clusters	Early Jun	-	High
<i>Yemen</i>	Apr: LOC	May: LOC	na	1.2	na	LOC	Mid July	-	High

Abbreviations:

LOC: Local Community Transmissions. CHI: China. EUR: Western Europe. JAP: Japan. MENA: Middle East. SA: South Asia. US: United States.

Data:

First cases: Official reports. Acceleration: Media.  $R_t$ : Harvard T.H. Chan School of Public Health. Transmission: WHO. Flattening/Accelerating: Difference Group. New accelerations: WHO. Susceptibility: Difference Group.

It's a harsh lesson of lost lives and further economic damage. As long as major advanced economies build their pandemic response on *science-based policies*, collateral damage can be reduced (not nullified); but if they opt for *politicized agendas*, the net effects will dramatically deteriorate. Demonstration effects abound.

In upper middle-income economies, more successful performers - China, followed by Thailand and later Turkey and Russia – began to flatten the curve in early to late spring, whereas the less successful ones – particularly Argentina, Brazil and Mexico - are still coping with major accelerations. In Indonesia limited testing distorted the data in the spring.

In poorer countries – lower middle-income and low-income economies – the integrity of data tends to be significantly lower than relatively wealthier nations. Those countries that test more aggressively (e.g., India, Philippines) obviously generate higher case counts than their peer economies; but the latter may have significantly higher effective case counts, which are missed due to limited testing. Similarly, lack of appropriate transparency may keep the numbers down in the short-term, but will backfire over time in both public health and economic damage.

In lower-middle income economies, some economies have been able to begin the flattening – Bangladesh, Nigeria, Pakistan and Vietnam – whereas cases continue to accelerate in others, such as India, Kenya and the Philippines. In low-income economies, on the other hand, the pandemic is still accelerating in several countries – Ethiopia, Mozambique – whereas in others limited testing likely contributes to statistical illusions of deceleration or minimal impact. If official data is taken at face value, one would have to believe that Yemen, which has been penalized by years of wars and epidemics, and Congo DR, which perhaps has suffered from the legacies of colonialism almost a century and a half, have successfully contained COVID-19.

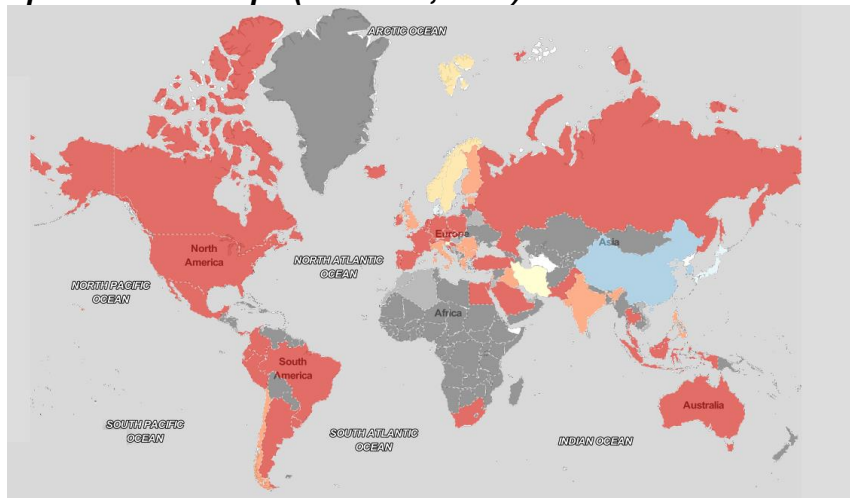
Several caveats are warranted, however. No single indicator is adequate. Quantitative precision is no guarantee of accuracy, due to complex underlying assumptions and especially when data lacks integrity. Typically, countries that test more have relatively higher case counts, which may penalize their perceived success in the short term, but will foster their actual success over time. Conversely, countries that do not test adequately (or like many advanced economies, scaled up testing only belatedly) will suffer from data distortion, which can compound policy mistakes.

When the epicenter of COVID-19 was in China in January and February, it was reflected by relatively high  $R_t$  values, particularly in Wuhan, Hubei, the neighboring provinces and the key transportation hubs. When the epicenter moved to Western Europe in February and March, so did the high  $R_t$  values. And when that epicenter transitioned first to the US in April-May, so did the high reproductive numbers. Today, a similar process is playing out in multiple emerging and developing economies; most recently in Brazil, India and South Africa. And even as the  $R_t$  is more subdued in the US, the great numbers of COVID-19 cases virtually ensure a protracted pandemic in the Americas. Lower  $R_t$  values and infectivity does not help if the virus infections are accelerating and the cases are many (compare **Figure 5**).

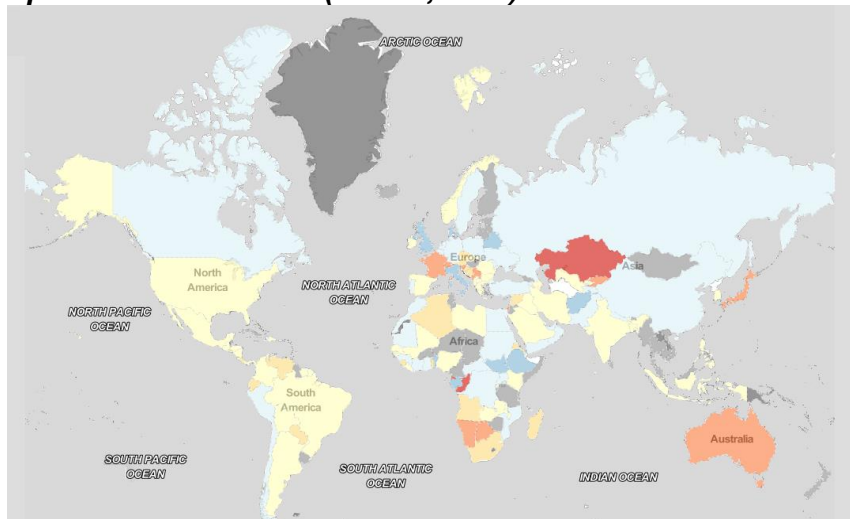
Let's take a closer look at the progress of COVID-19 within the income groups and individual economies.

**Figure 5 COVID-19's Effective Reproductive Number (Rt)**

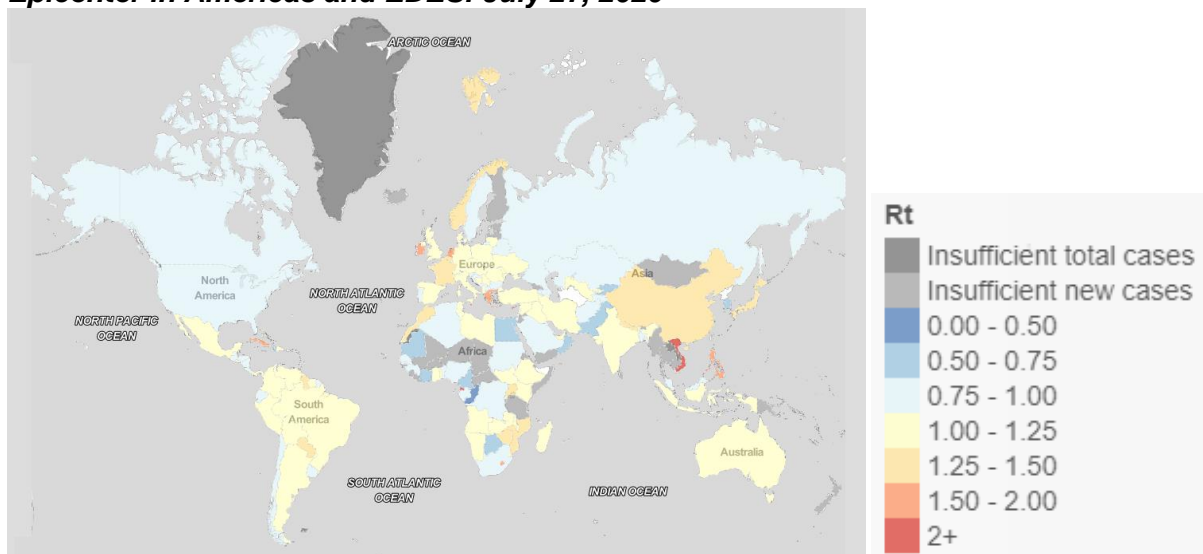
***Epicenter in Europe (March 14, 2020)***



***Epicenter in Americas (June 1, 2020)***



***Epicenter in Americas and EDES: July 27, 2020***



EDES: Emerging and developing Economies

Source: Harvard T.H. Chan School of Public Health.

## **Major Advanced Economies**

### **High-Income Economies**

In most of North America (US, Canada) and Western Europe (UK, France, Italy, Germany), *effective* mobilization began almost 6-8 weeks after the WHO issued its first international alert (Feb 4, 2020); and nearly 3 months after the WHO and major economies were alerted about the new coronavirus in Wuhan, China (Dec 30, 2019). In addition to the long delay in mobilization, ineffective crisis management and premature exits penalized responses virus. In the US, divided leadership (federal, state and municipal), coupled with premature exits, compounded the challenges leading to a in most states by early summer.

Major economies that mobilized more effectively, like Germany, or eventually used more effective measures, such as Italy, followed by Canada, began to flatten the curve earlier. In the UK, early complacency proved costly, while in France limited testing has penalized progress. At the end of the 1<sup>st</sup> quarter, US performance was similar to that of the UK, but broad failures in mobilization, weak enforcement and poor crisis leadership have resulted in dramatic surges since early summer. As an early mobilizer, South Korea was the first to bend the curve in early spring, but since then a series of setbacks have slowed down its progress. In Japan, effective measures to defuse the crisis began very late. While the true spread of the virus was disguised until April, mainly due to the effort to stick to the prior Olympic schedule, Japan's testing remains limited and may not reflect the true spread (**Figure 6a**).

## **Large Emerging and Developing Economies**

### **Upper Middle-Income Economies**

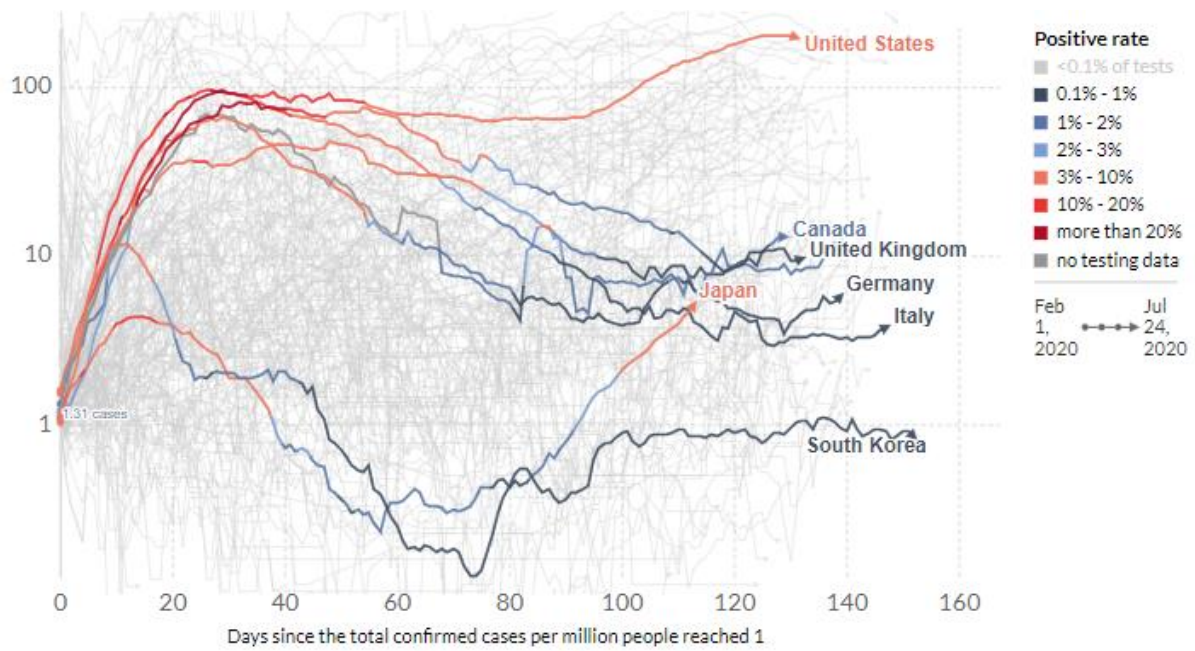
Among this group of countries, the cases were still accelerating by August particularly in Latin America, including Argentina, Brazil, and Mexico.<sup>38</sup> Yet, the epidemic curves seemed to be steady in Russia and Turkey, though slowly. In Asia, cases continued to accelerate in Indonesia (**Figure 6b**).

Having pioneered the standard-setting measures against COVID-19 since late January, China became the first to flatten the curve; and Thailand followed in the footprints in early spring. But as China began to re-open the economy and Thailand followed, a new fight began against imported infections and new clusters. By August, China had some 88,000 cases.<sup>39</sup> In Thailand, the first imported case (China) and local transmission was confirmed already in January.<sup>40</sup> Due to several transmission clusters – the largest followed a Muay Thai fight at a boxing stadium - the spread increased after mid-spring resulting in a state of emergency and a curfew, followed by the suspension of international flights in April. As tens of thousands rushed to their hometowns, risks of further spread grew elevated, while the disruption of tourism led to one of the worst contractions in the region. By August, official cases remained around 3,300 but limited testing constrains the integrity of the data.

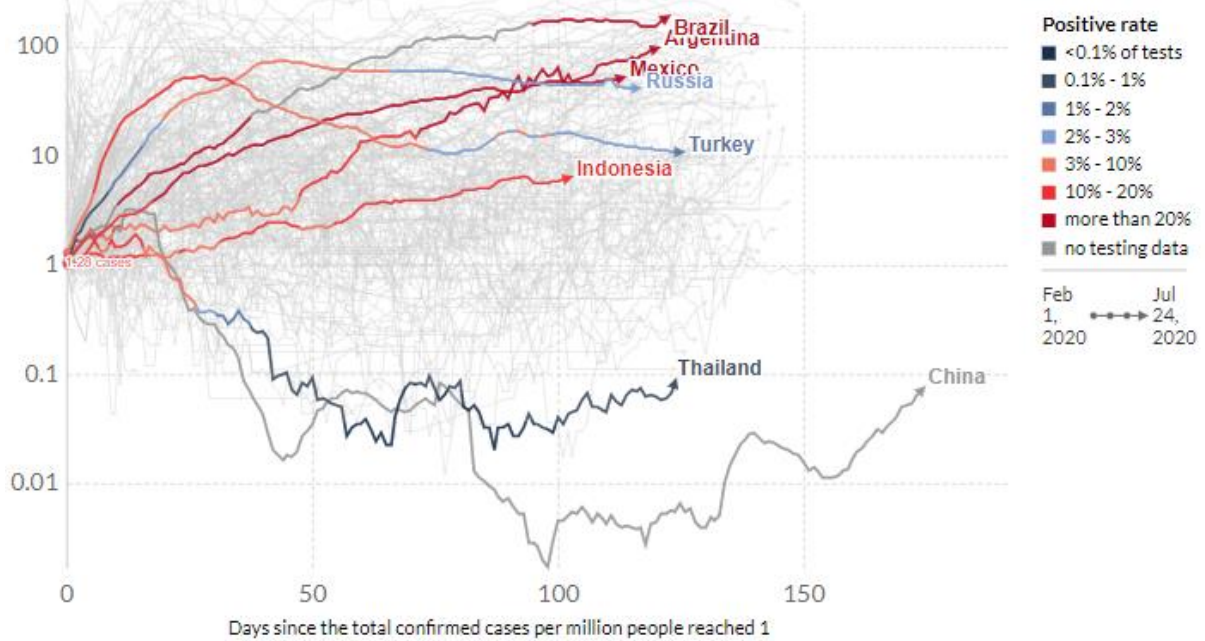


**Figure 6 Flattening the Curve\***

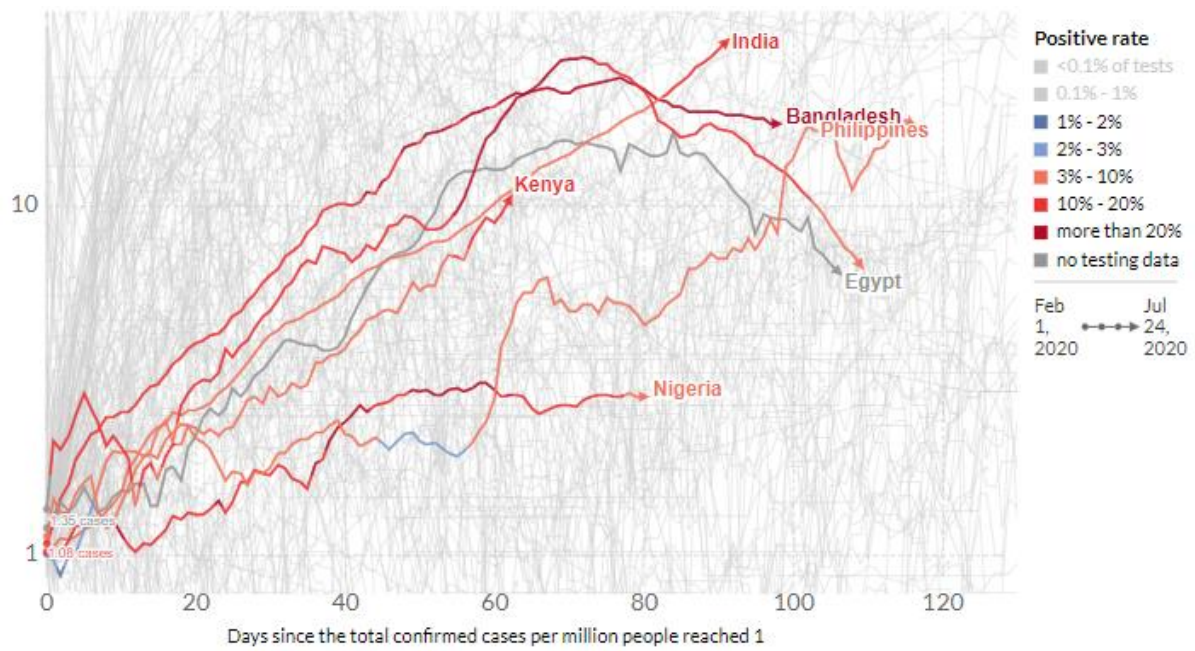
**(a) High-Income Economies**



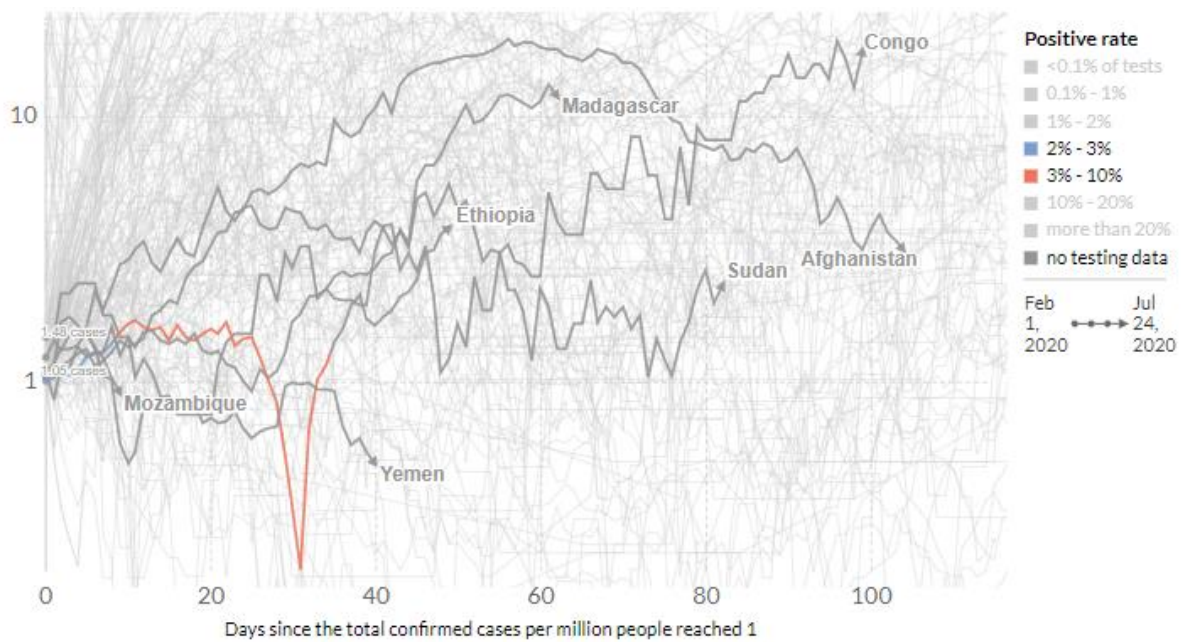
**(b) Upper Middle-Income Economies**



**(c) Lower Middle-Income Economies**



**(d) Low Income Economies**



\* Daily Confirmed COVID-19 Cases Per Million (log), Jan 26 – Jul 24, 2020 (log)

Source: European WHO, Difference Group.

Confirmed cases in Indonesia seemed few until the spread began in early March, when two people were infected by a Japanese national.<sup>41</sup> In a month, the pandemic spread to all provinces with 79,000 cases by August; the highest in Southeast Asia. Yet, limited testing disguised the full extent of cases, particularly deaths. By August, the official case count exceeded 108,000 with some 5,100 deaths. But these figures are constrained by limited testing.

In Russia, two Chinese citizens tested positive for the virus already in January.<sup>42</sup> Yet, early prevention measures, particularly extensive testing and border restrictions with China, supported containment. The spread of the pandemic picked up in early March with travelers from Italy, when a series of additional restrictions and lockdown measures followed. Yet, the pandemic was spreading in all federal regions, including Moscow. By August, confirmed cases were about 845,000 with almost 14,000 deaths. In Turkey, the pandemic was confirmed by mid-March, starting with a man who had returned from Europe.<sup>43</sup> In early April, it had spread across the country. In mid-April confirmed cases surpassed those of Iran; and by August, they exceeded 230,000 with some 5,700 deaths.

## Lower Middle-Income Economies

If, in the high-income and upper middle-income economies, the pandemic surged in the course of the 1<sup>st</sup> quarter, in the lower middle-income economies it has intensified since the 2<sup>nd</sup> quarter (**Figure 6c**). In India, the first confirmed case originated from students returning from Wuhan in late January. No major rise in transmissions was recorded in February, but in mid-March an old man returning from Saudi Arabia became the first COVID-19 fatality.<sup>44</sup> Religious mass events contributed to the rapid spread of the pandemic.<sup>45</sup> After a short but ineffective voluntary public curfew, PM Narendra Modi implemented mandatory lockdowns in virus hotspots and major cities and by late March a nationwide lockdown, which was extended until June. Economic fallout was substantial because nationwide measures ensued belatedly. By August, India ranked third worldwide with 1.7 million cases and some 37,000 deaths. Worse, new confirmed cases increased by over 57,000 daily; almost as fast as in the U.S.

In Pakistan, the first confirmed cases - with travels in Iran - ensued in late February. In a week, new cases followed with travel histories in Iran, Syria and the UK. By mid-March, the outbreak accelerated in multiple provinces and a month later cases were registered across the populous nation, based on local transmissions and religious mass events.<sup>46</sup> Government launched lockdowns, which were later extended. By August, confirmed cases exceeded 278,000, though based on limited testing. In Bangladesh, a densely-populated nation, which also houses a million Rohingya refugees in camps, the first case - a Bangladeshi citizen returning from Italy - was reported in early March, followed by a lockdown until the end of May. Yet, infections rose fast in April. By early May, the pandemic had spread.<sup>47</sup> And by August, official cases had increased to some 238,000, despite limited testing.

In Egypt, the first case, a Chinese national, was identified at Cairo International Airport in mid-February. By the turn of March, multiple foreign cases associated with

travel to Egypt were reported in the US, Tunisia, France, Canada, and Taiwan.<sup>48</sup> While Egyptian cabinet denied cover-up stories, NGOs claimed that 20 confirmed cases were held in military hospitals. After multiple new cases, all airports were closed and air travel was suspended. By August, official cases amounted to 94,000; a significant under-estimation according to observers.<sup>49</sup>

In this income group, the great outlier is Vietnam where the first case – an older Chinese traveler - was confirmed in January.<sup>50</sup> Yet, acceleration began with the second wave in March, when a female returned from travels in Italy, France and UK. In mid-July, Vietnam had fewer than 430 officially recorded cases and no deaths. It is portrayed as a success story, which is attributed to rigorous testing, young population, contact tracing and isolation.<sup>51</sup> Yet, testing in Vietnam has not been rigorous, but at par with Bangladesh and Mexico. Nor is its population exceptionally young. Median age in Vietnam (31) is slightly higher than in Indonesia (30) and far higher than in Philippines (24). That leaves contact tracing and isolation, which critics have described “repressive.” What may really have helped initially was the suspended entry of all foreigners in late March. The real test of resiliency will ensue with the reopening of the economy and tourism, however. By August, official cases began to increase from a low base amounting to 560 with the first two deaths.<sup>52</sup> By then, Vietnamese officials were forced to evacuate 80,000 mainly local tourists from Da Nang after three residents contracted COVID-19.<sup>53</sup>

In the Philippines, the first virus cases - two Chinese nationals - were confirmed at the turn of February. In early March, new cases multiplied quickly, starting with a middle-age Filipino returning from Japan and an elderly man who had visited a Muslim prayer hall in Metro Manila; the first recorded local transmission.<sup>54</sup> The government restricted entry from affected Asian countries, but as cases continued to climb, lockdowns were expanded in mid-March into a quarantine across the entire Luzon, including Metro Manila. While the re-opening of the economy began in early summer, restrictions prevailed until August when official cases exceeded 93,000, due to gradual exit and more testing relative to peer economies. Due to new surges, Manila faced still another quarantine in August, however.

In early spring, the WHO listed over a dozen African countries, including Kenya and Nigeria, as high-risk for the pandemic spread. As the region’s most populous and largest economy, Nigeria has suffered from the plunge of the energy prices, Boko Haram’s terrorism and prior legacy of corruption. To preempt the virus, the Buhari government strengthened surveillance at five international airports relatively early. The first confirmed cases were recorded in late February, when an Italian citizen in Lagos tested positive, and in early March when Nigerians who had had contact with Europeans tested positive. Local transmissions accelerated in March.<sup>55</sup> By August, there were some 43,000 cases, with many in the commercial capital Lagos (where testing was more prevalent). In Kenya, the first cases - a young woman who traveled from the US via London and two people who had sat next to her in transit from the US - were confirmed in mid-March. Local transmissions accelerated in April.<sup>56</sup> Afterwards, President Uhuru Kenyatta directed a series of measures to curb the pandemic, including a ban against all social gatherings. As cases still to climb, the nationwide “dusk to dawn” curfew was extended until July, while a slate of measures was unveiled to buffer Kenyans against economic hardships. By August, almost 21,000 official cases had been confirmed.

## Low-Income Economies

While large low-income economies tend to be most vulnerable to pandemic risks, limited or barely existent testing downplays dramatically COVID-19 realities, which are rapidly accelerating (**Figure 6d**). In Afghanistan, the pandemic began in late February, when several citizens returned from Qom, Iran. In March, another 150,000 Afghans returned from Iran where the pandemic was accelerating. As the number of cases in Herat Province surged, lockdown measures were initiated, including in the capital Kabul.<sup>57</sup> By late May, the lockdown in Kabul was eased. Yet, the outbreak re-intensified in late June. By August, official cases exceeded 37,000. In Madagascar, an island country of 27 million people, the first cases - citizens returning from France and Mauritius - were identified after mid-March in the capital Antananarivo.<sup>58</sup> By August, official count approached 11,000.

In sub-Saharan Africa, the high-risk economies included the populous Ethiopia, Congo DR and Sudan. In Ethiopia, a nation of 110 million people, the first cases - a Japanese and British citizen and Ethiopians with travel histories in affected countries - were identified in mid-March.<sup>59</sup> While Prime Minister Abiy Ahmed declared a 5-month state of emergency, economic activities continued amid the crisis. In June, the first cases were recorded in one of the four refugee camps in the north, holding 100,000 Eritreans. By August, there were only some 17,500 official cases, however. In Congo DR, one of the poorest nations with 85 million people, the first cases in mid-March featured a Congolese citizen and a Cameroonian who both had returned from France.<sup>60</sup> So, flight suspensions and a state of emergency were instituted. By June, the country was squeezed by the COVID-19, a new Ebola outbreak and the world's largest measles outbreak, which the Red Cross called a "perfect storm."<sup>61</sup> Yet, by August, the official cases were still below 9,100.

In Sudan, too, the first case was identified in mid-March in Khartoum; a man who had visited the UAE died.<sup>62</sup> Despite travel restrictions, by May a surge of deaths in North Darfur sparked fears of a severe regional outbreak.<sup>63</sup> Yet, even by August, the official cases were still below 12,000. In Mozambique, the first case - an old man returning from the UK - was confirmed in March. Pandemic acceleration ensued in April-May.<sup>64</sup> Yet, confirmed cases were still below 1,900 by August. Similarly, in Uganda, the first case - a male returning from Dubai - was recorded in March.<sup>65</sup> While acceleration ensued in April, by August official cases remained below 1,750.

Of all the low-income economies, Yemen, with its almost 30 million people, exemplifies the extraordinary discrepancy between official case data and actual realities. Before the pandemic, it was widely seen as one of the riskiest countries worldwide and highly vulnerable, due to the Civil War, which was exacerbated by famine, cholera outbreaks, and a military blockade by Saudi Arabia and its major ally, the US. The Yemeni health system had been all but decimated by the war. The first virus case was confirmed in mid-April in Hadhramaut, the country's southern oil-producing region and largest governate. New cases and deaths followed in the port city of Aden.<sup>66</sup> By the end of June, the UN humanitarian chief warned that without donations Yemen would "fall off the cliff." The pandemic was spreading rapidly across the country and a quarter of the confirmed cases had already died, while many more

would perish, due to the pandemic, starvation or cholera. Yet, even by August, official cases in Yemen were presumably below 1,700.

In brief, while the pandemic arrived in low-income nations later than in high- and medium-income economies, official case counts vastly understate the true realities of the COVID-19 in the low-income countries. In Yemen and other fragile peer economies, neither the warring parties nor their allies rule. To paraphrase Malthus, it is the “ministers of depopulation” – war, plague and famine – that reign. Nevertheless, some poorer economies have proved more resilient. They are exceptions that confirm the rule. Not every low-income economy is Rwanda (**Box 2**).

## **Box 2 Rwanda’s Early Pandemic Success**

Consider the following: Both the high-income Belgium and the low-income Rwanda have about 12 million people. The former is a high-income economy with population density below 400 per square kilometer. The latter is a low-income economy with density more than 500. Living standards in Belgium are 20 times higher than those in Rwanda, which is still coping with the legacy of the 1994 genocide.

And yet, in Belgium, total confirmed cases soared to nearly 70,000 and total deaths to almost 9,800 by August, whereas in Rwanda, the corresponding figures were about 2,000 with 5 deaths. While many factors account for the results, Rwanda began to mobilize against the pandemic relatively early, deployed a more stringent lockdown than most African countries; pushed for social distancing, face masks, washing hands and staying home; engaged in aggressive testing – relative to Japan it is still testing over three times more - in which scarce resources were effectively pooled; and relied on healthcare workers, police and students for extensive contact tracing.

Unlike many countries, even the United States, Rwanda also has a universal health care system, one of the highest-quality system in Africa.

## **ECONOMIC SCENARIOS**

### **Baseline Scenarios Still Too Optimistic**

As noted in the original report, the IMF baseline scenario (World Economic Outlook, April 2020) was not adequately realistic because it ignored the fragile economic landscape that *preceded* the pandemic. As the original *Tragedy of Missed Opportunities* put it:

In the past decade or so, the world economy has coped with the global financial crisis, the European sovereign debt crisis, and a decade of secular stagnation. There was a brief historical moment around 2017/18, when world trade, investment and migration showed a promise of mild recovery. But that moment was missed, thanks

to new protectionism and tariff wars. These trade wars and technology conflicts occur against the backdrop of a huge accumulation of global debt, which climbed to an all-time high of 230% of world GDP already in 2018. With the global pandemic, all major economies will take far more debt to deter the damage. Ironically, the protection they will achieve in the short-term will make them highly vulnerable to debt crises in the longer-term.

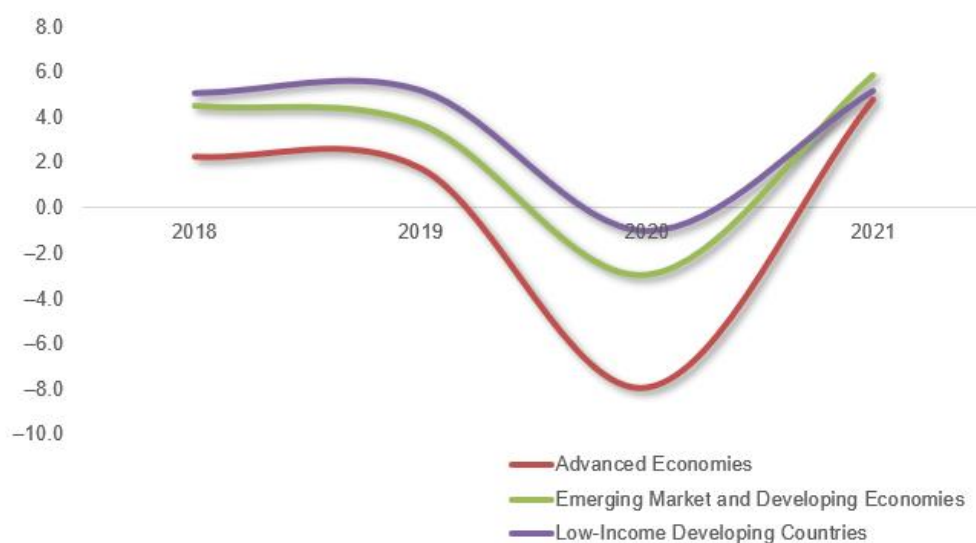
Even the IMF/WEO update of June 2020 remains too ambitious. It still downplays the impact of the prior grim global economic landscape. Second, it underestimates the adverse impact of the secondary virus waves, which were initially anticipated only toward late fall 2020, yet materialized already around May/June, particularly in the US and the Americas. Third, it largely suspends the likely negative impact of the escalating US Cold War against China (and several other economies, such as Russia, Iran, Venezuela etc.), including the demise of the ‘Phase 2’ trade accord; and the efforts to decouple China from US bilateral economic engagements and from those between other major G7 powers and China. Potential attempts to extend the trade war to technology and financial wars would ensure an adverse outcome.

In light of these constraints, there are three more realistic potential generic scenarios (see **Appendix I**):

- A “mumbling through” *Baseline* trajectory in which the pandemic could eventually fade, while the worst excesses of trade wars could be avoided. But this scenario is highly unlikely in the Trump era, though possible with a Biden administration. However, trade and tech friction would prevail along with geopolitics and weaker economic prospects, given two alternative pathways.
- The *Great Power Conflicts* scenario presumes progressive deterioration of pandemic and economic costs. It features three alternatives, with a longer virus spread in 2020, milder outbreak in 2021, or both in 2020-21.
- In the *Great Power Cooperation* scenario, pandemic and economic costs would be significantly reduced, although the extent of the moderation would depend on which pandemic conditions would materialize.

Even in the baseline case, world GDP output is currently expected to plunge -4.9%, while a V-shaped recovery of 5.4% is anticipated to ensue in 2021. The previous projections were too optimistic. The same goes for projections about aggregated country groups. In the IMF baseline, the current expectation is that high-income economies will take a Great Depression-like hit of -8.0% in 2020, followed by a V-shaped recovery in 2021. But this is based on assumptions – including fast global recovery - that are highly unlikely in the current status quo. In turn, upper- and lower middle-income economies are likely to suffer a plunge of -3.0% in 2020 followed by a V-shaped recovery of 5.9% in 2021. With low-income economies, the same figures are -1.0% for 2020 and 5.2% in 2021, respectively (**Figure 7**).<sup>67</sup>

Some of these economies may enjoy a V-shaped recovery (e.g., China, Vietnam, etc), but not all will. Countries that depend on export- and/or commodity-led growth, and/or have rudimentary health systems are unlikely to recover as fast as others.

**Figure 7 The Great Coronavirus Contraction: Revised Baseline Scenario**

Source: WEO/IMF database; Difference Group

## More Economic Damage and Lost Years Ahead

On a country basis, the medium- to longer-term economic scarring is already discernible in several major economies. Worse, the disastrous 2<sup>nd</sup> quarter results, which were projected in the original *The Tragedy of Missed Opportunities*, indicate that even the current country-based estimates remain too optimistic (see **Appendix II**). Measured by GDP per capita (purchasing power parity, PPP), the adverse impact has been drastic and translates to several lost years; as defined by years of lack of progress in per capita income (**Figure 8**). Obviously, that adverse impact has been relatively worst in those economies that were coping with significant challenges already before contraction, including high-income economies.

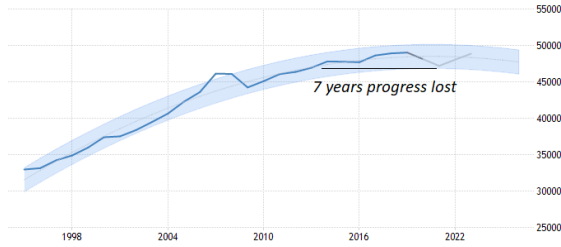
**High-Income Economies.** Despite lingering global recovery and trade wars, the US-Sino trade truce in late 2019 did foster hopes for a more promising turn. But those prospects were undermined by belated COVID-19 mobilization, ineffective crisis management and premature exits. Instead of 1-2% growth in most of these countries, they now suffer from the worst recession since the Great Depression. Instead of moderate growth, each will have a severe contraction in 2020; from -6% (US) to -9.1% (Italy), according to current IMF data. However, the contractions are likely to prove worse than anticipated and will not result in the initially-hoped V-shaped recovery. Among rich-income economies, most countries already face 5-7 years of lost progress, whereas in outliers years of prior challenges contribute to greater decline (e.g., Italy's two lost decades in terms of per capita income growth).



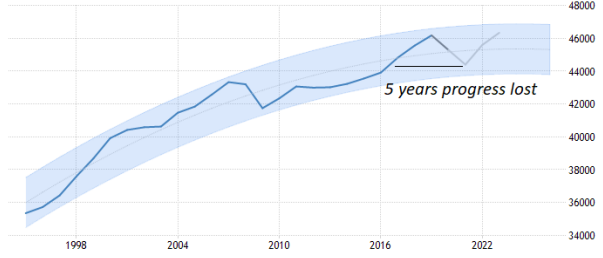
**Figure 8 Rich and Poor Economies: Years of Progress Lost**  
 GDP Per Capita PPP (Purchasing Power Parity, PPP), 25-Year Perspective

HIGH-INCOME ECONOMIES

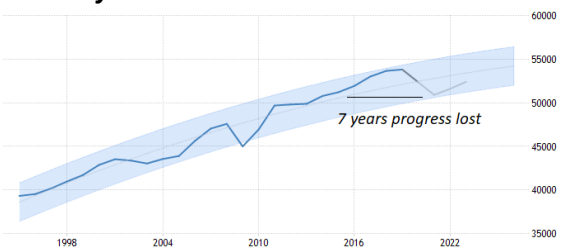
**Canada**



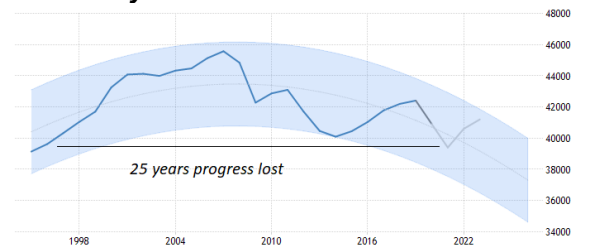
**France**



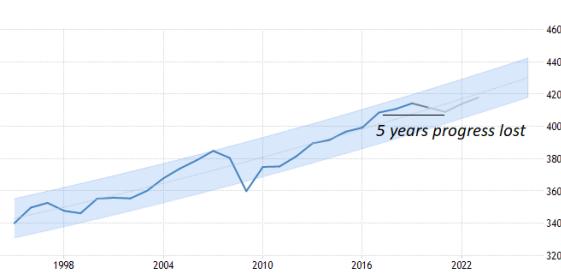
**Germany**



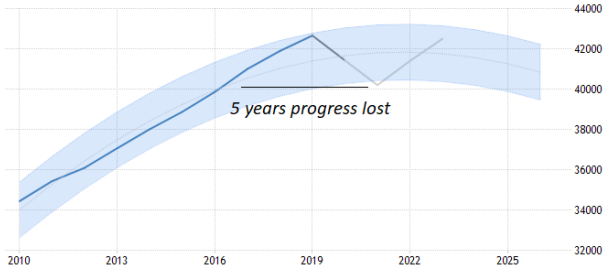
**Italy**



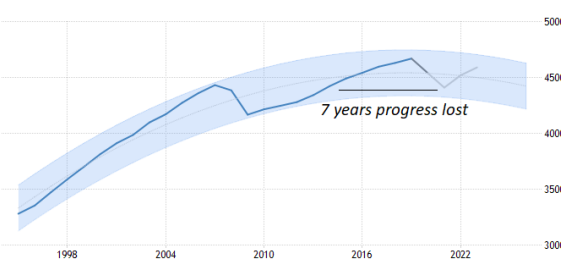
**Japan**



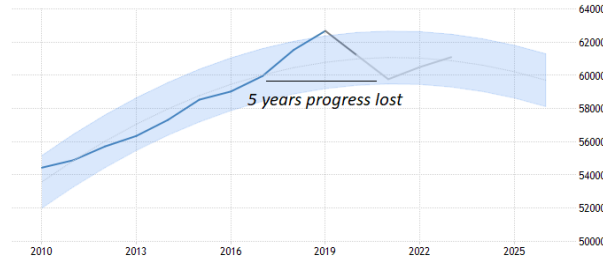
**South Korea**



**UK**

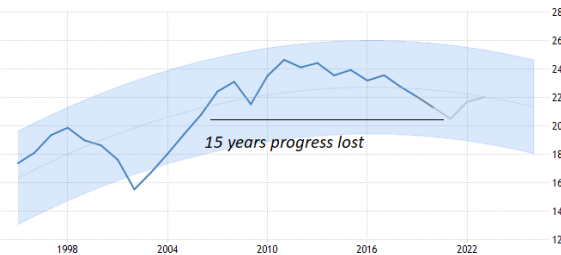


**US**

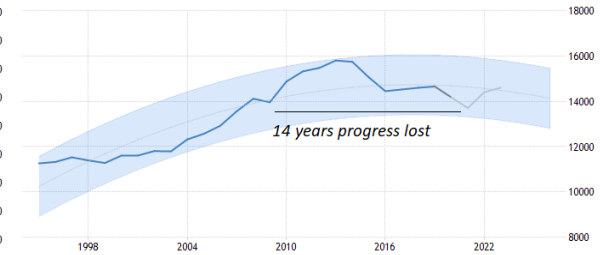


UPPER MIDDLE-INCOME ECONOMIES

**Argentina**

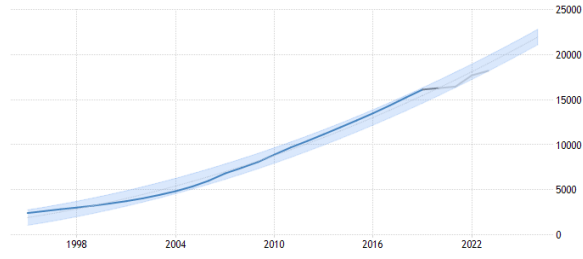


**Brazil**

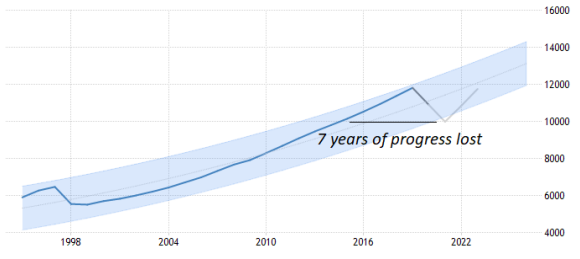


# COVID-19 Human Costs and Economic Damage in Emerging and Developing Economies

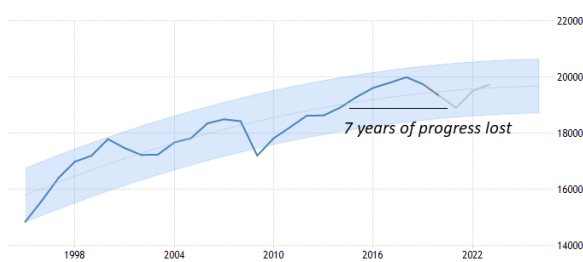
**China**



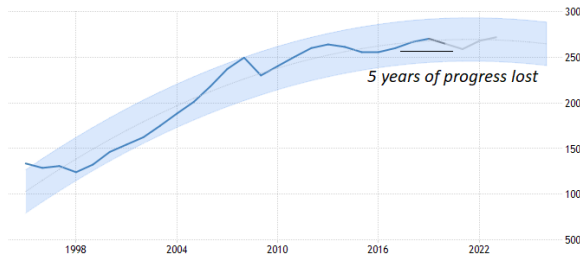
**Indonesia**



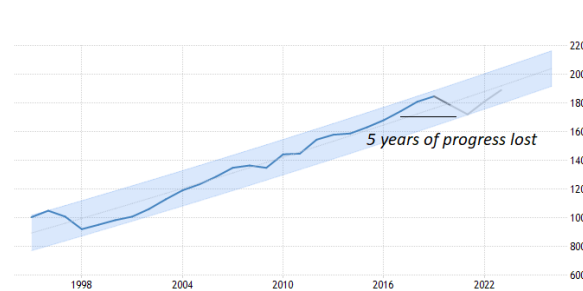
**Mexico**



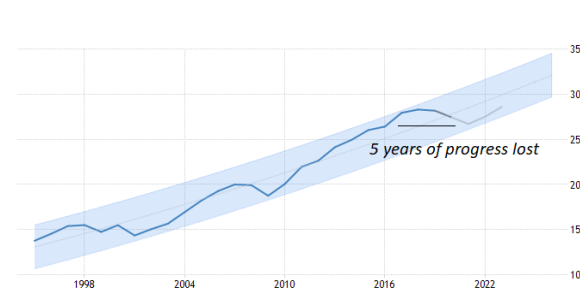
**Russia**



**Thailand**

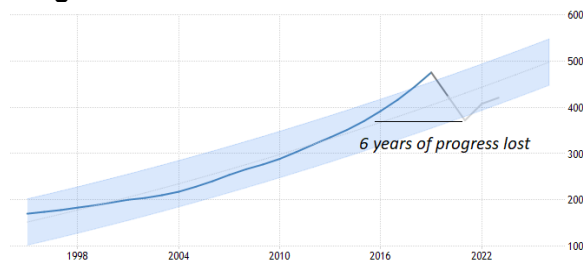


**Turkey**

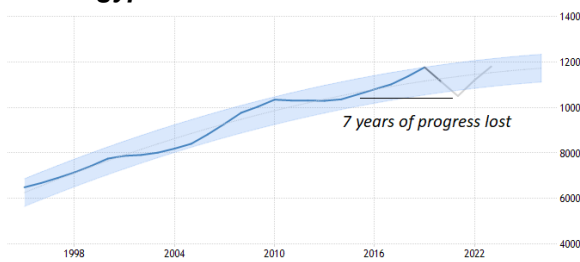


## LOWER MIDDLE-INCOME ECONOMIES

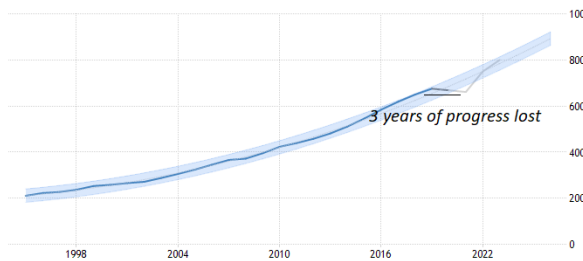
**Bangladesh**



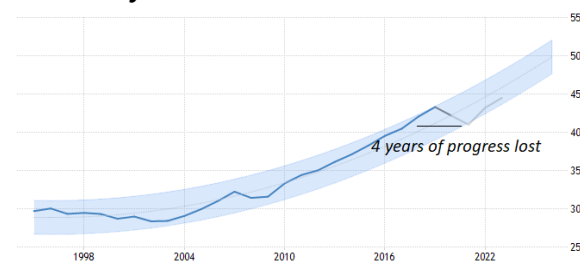
**Egypt**



**India**

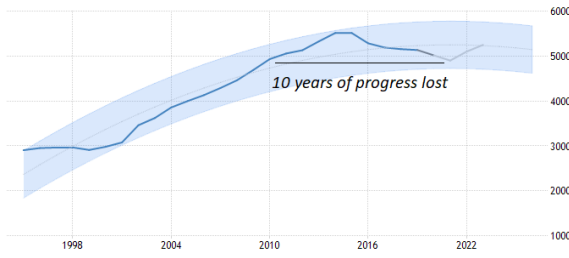


**Kenya**

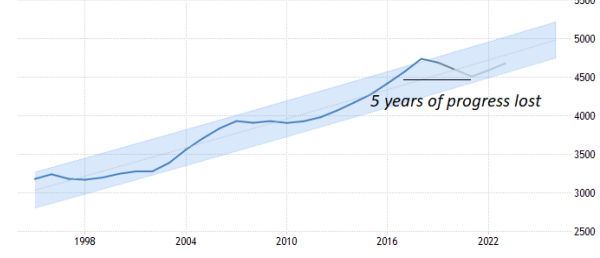


COVID-19 Human Costs and Economic Damage in Emerging and Developing Economies

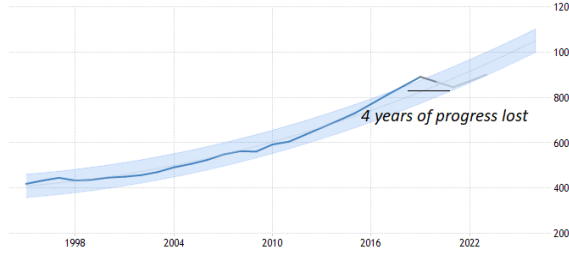
**Nigeria**



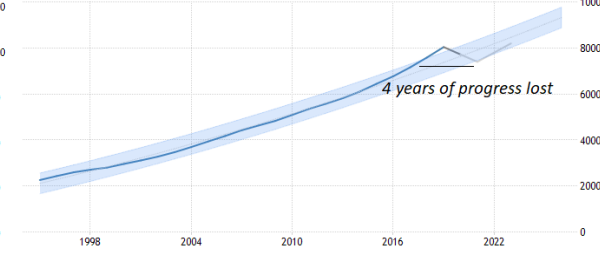
**Pakistan**



**Philippines**

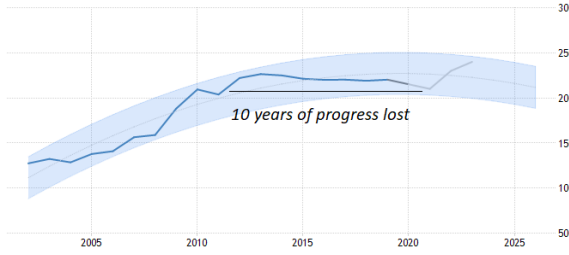


**Vietnam**

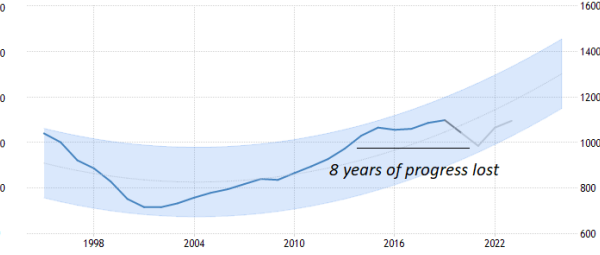


LOW-INCOME ECONOMIES

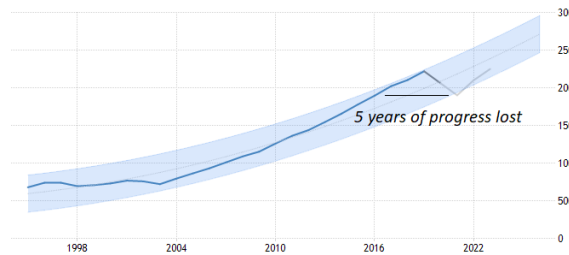
**Afghanistan**



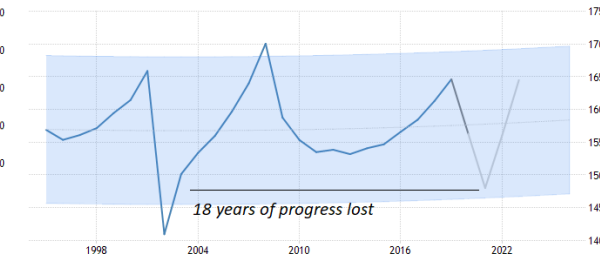
**Congo DR**



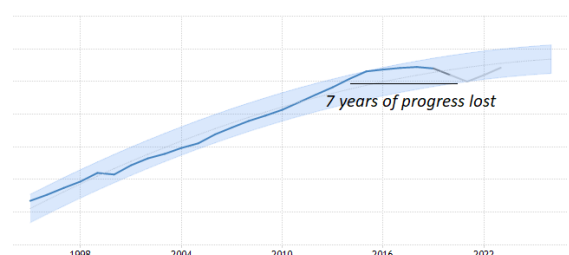
**Ethiopia**



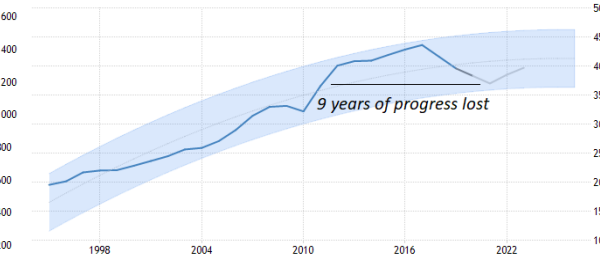
**Madagascar**

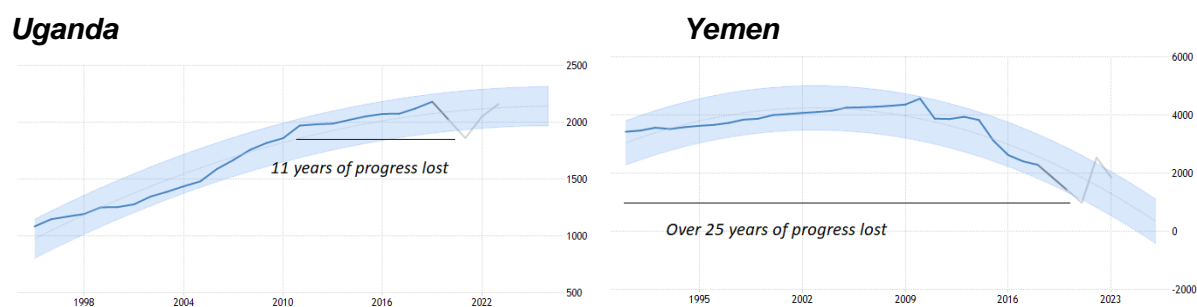


**Mozambique**



**Sudan**





Sources: World Bank Indicators; Difference Group

**Upper Middle-Income Economies.** Among these economies, China and possibly Indonesia may navigate through the crisis without negative contraction. Nevertheless, China’s annualized growth rate could fall below 2%, while expansion in Indonesia would shrink from 5.15% to less than 0.5% in 2020. Prior to COVID-19, other large emerging economies were expecting growth to be around 1% (Mexico) to 3% (Thailand, Turkey, Russia). In reality, most will now suffer a drastic contraction of -5% (Turkey) to almost -7% (Mexico, Thailand). Most countries in this group have already lost 5-7 years of progress. Prior to COVID-19, Argentina had been struggling with neoliberal legacies since the 2010s, while in Brazil the soft coup against the Lula-Rousseff administrations has penalized living standards since the mid-2010s. In these two countries, the lost years are twice as many as among their peers.

The only exception in this group - in fact, in all these groups - is China, which may avoid lost years, even if the growth rate of per capita incomes will decelerate in the short-term. And yet, when China struggled amid the coronavirus crisis, many predicted the mainland to “collapse,” while Beijing’s stringent quarantines were widely condemned as “repression.” In retrospect, it was because of those standard-setting measures and effective enforcement that China became the first economy to rebound. Moreover, those countries that have drawn from some Chinese experiences or opted for a more stringent initial approach tailored into their own conditions - in Asia, Hong Kong and Singapore, South Korea, Thailand and Vietnam; in Oceania, New Zealand; in Western Europe, Italy; in Africa, Rwanda; and so on – were more successful in the initial pandemic containment than their peer economies.

**Lower Middle-Income Economies.** Due to structural growth potential, these economies expected growth rates to vary around 2.5% (Nigeria, Pakistan) to more than 7% (Bangladesh, India). Yet, the global pandemic will heavily penalized such rates in 2020, in some cases severely. Yet, there is great variety. Though the best performers have lost 3-4 years (India, Kenya, Philippines, and Vietnam), the worst ones may have lost a decade (Nigeria). While Nigeria has significant secular growth potential, its struggle with legacies of corruption, the fall of the oil prices and security threats has penalized living standards since the mid-decade. Despite challenges, some economies that have enjoyed a longer period of growth could move ahead faster (.e.g, Bangladesh, Pakistan). In contrast, countries that initially downplayed the true extent of the pandemic crisis (e.g., Egypt) may find the effort to restore their pre-COVID-19 growth levels more challenging.

**Low-Income Economies.** Among these countries, the best economic performers initially expected growth rates of 6-7% in 2020 (Ethiopia, Mozambique, Uganda). After the devastation of the global pandemic, they are more likely to see their growth prospects halve during the ongoing year. The weaker performers were hoping growth rates of 2% to 3.5% (Yemen, Afghanistan), but will instead experience a negative contraction (-3%) or worse. Yet, there is significant variety among the countries. Afghanistan, Congo DR and Yemen continue to cope with civil wars, foreign invasions and legacies of corruption. Other countries, including Madagascar since the 2009 Malagasy political crisis, have suffered years of domestic political instability, often stirred by foreign interventions. While the best crisis performers may have lost 5-7 years of progress (Ethiopia, Mozambique), some may catch up the pre-COVID-19 growth rates faster. Conversely, those economies that have already suffered per capita income losses of almost 20 years (Madagascar), even more than 25 years (Yemen), suffered from plunging living standards long before the pandemic.

As too many times before, the innocent will pay a heavy price. While coronavirus threatens to push millions of children into malnutrition, international multilateral organizations (incl. WFP, UNICEF, FAO, and WHO) have already issued an urgent call to action to governments, donors, private sector and partners to prioritize nutrition in COVID-19 responses.

Despite the lost years in all income groups, it does not necessarily follow that the losses would have to prove permanent. The key question is how quickly these countries can restore their pre-coronavirus rate of growth in per capita incomes. And that is affected by their ability to effectively contain the pandemic. Yet, current baseline scenarios of real GDP growth are too optimistic. Overall, major economies are likely to see a more protracted contraction than is currently acknowledged.

Due to recent fiscal stimulus packages and aggressive monetary easing, the world's largest advanced economies - the United States, the Euro area and Japan - continue exorbitant debt-taking, which has been precipitated by multiple debt crises, including Japan's secular stagnation since the mid-90s, Euro area's sovereign debt crisis since 2010 and US debt-ceiling crises since 2011. The coronavirus contraction is likely to trigger a new series of debt crises in major advanced economies. In the US, the national debt is rising at record pace and now amounts to \$27 trillion; that is, 133% of the GDP. In Japan, public debt to GDP is currently estimated at 283%; in France and Italy 116% and 159%, respectively; even in Germany, it exceeds 82%.<sup>68</sup> And these figures do not yet include the full impact of the new stimulus packages and monetary easing; nor do they include economic collateral damage that is likely to ensue from new virus clusters and potential secondary waves in the near future.

From the standpoint of the emerging and developing economies, such challenges in the major advanced economies signal new trials. As global growth prospects are likely to remain subdued, that will further penalize especially energy- and commodity-exporters, from Nigeria to Mozambique. The same goes for remittances, which remain critical to many emerging and developing nations, from India, the Philippines and Mexico to Nigeria, Pakistan and Egypt. In 2020, remittance flows to low- and middle-income countries are expected to drop by around 20% to \$445 billion from 2019. And yet, amidst of this sharp decline, the relative importance of remittance

flows as a source of external financing for low- and middle-income countries is expected to rise.<sup>69</sup>

Furthermore, dire secular prospects in rich economies translate to reduced willingness for foreign aid, foreign investment, and anti-migrant sentiments, while US tariff wars will keep export-led growth suppressed. Fueled by new protectionism and trade wars, de-globalization will further undermine prospects for global recovery, particularly if the reported US plans to extend the trade war to technology and finance will materialize.<sup>70</sup> Coupled with several domestic policy mistakes, the Trump administration seems to accelerate the path to a multiyear global depression scenario and a dollar crisis, as this report, other analysts (e.g., Nouriel Roubini) and leading hedge funders (Ray Dalio) have repeatedly warned in the United States.<sup>71</sup>

## Exorbitant Costs of Unilateralism

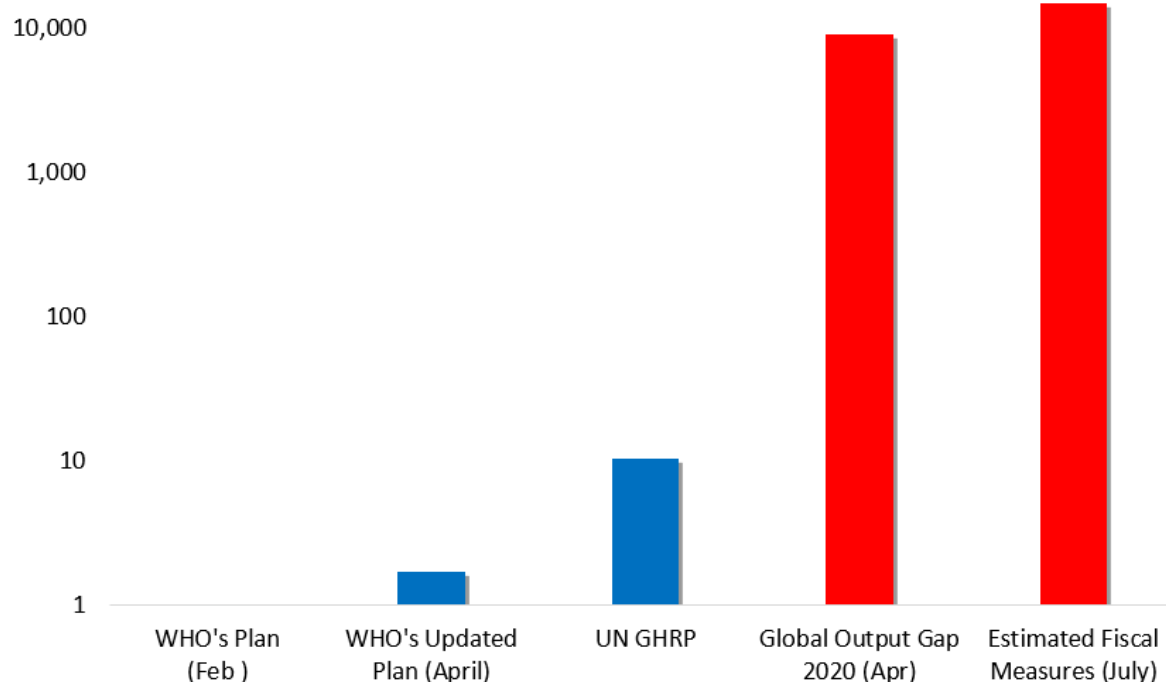
What will further aggravate the public-health costs and economic damage is the failure of the major advanced economies to implement the WHO's multilateral preparedness plan and the Trump's administration's unilateral exit of the US from the WHO, which, if it will materialize, will significantly compound already-elevated economic losses and public-health costs.

**Failure to implement WHO's multilateral preparedness plan.** On January 30, the WHO called for \$675 million to implement priority public health measures, to support countries to prepare for and respond to the pandemic spread. The WHO issued an updated COVID-19 plan in April, and in May estimated that it would need \$1.7 billion to respond to COVID-19 through December 2020. As of June 9, donors had provided \$670 million, including \$30 million by the United States.<sup>72</sup> As the scale and scope of the global pandemic expanded, the UN released its third update of the Global Humanitarian Response Plan (GHRP) on July 17 with funding requirements of \$10.3 billion. The GHRP was less than 20% funded as of July 27. In fact, a comparison of these measures can only be depicted with a logarithmic scale. In a linear scale, the plans of the WHO and the UN would simply not be visible because they represent a fractions relative to the exorbitant costs of the global output gap and the estimated fiscal measures, both of which continue to increase rapidly (**Figure 9**).<sup>73</sup>

**US unilateral exit from the WHO.** On May 29, President Trump announced that the US "will be terminating its relationship with the World Health Organization," even as some of his Cabinet secretaries were blindsided.<sup>74</sup> Trump's decision could have profound adverse repercussions, globally and in US public health. It could for the first time cut US government out of the development of the seasonal influenza vaccine for the Southern Hemisphere; it could impede access to an eventual COVID-19 vaccine if it is created overseas; it could also blind the U.S. to health threats in remote foreign locales that have the potential to make their way to the US.<sup>75</sup>

**Consequent exorbitant economic losses.** In view of the baseline scenario, the expected cumulative global output loss soared to \$9 trillion already in April and will climb higher in the early 2020s. Moreover, the fiscal measures to support economies against the coronavirus contraction are now estimated at close to \$15 trillion globally, up from \$8 trillion estimated in the April 2020 *Fiscal Monitor*.

**Figure 9 Exorbitant Costs of Unilateralism\***



\* Log Sources: WHO; World Economic Outlook and Fiscal Monitor (IMF); Difference Group

Even the WHO's updated fund-raising target represents barely 0.01% of the currently-estimated losses and fiscal measures to offset those losses, both of which will continue to increase rapidly, particularly in North America, Western Europe and Japan. Strong multilateral global action would be vastly preferable to these unipolar actions, which continue to compound the public health costs and the economic damage associated with the global pandemic.

What is needed to overcome the great coronavirus contraction, which could morph into a multiyear global depression, is multilateral cooperation among all major economies and across political differences, as the original report urged. And yet, what is most urgently needed to overcome the great coronavirus contraction is what seems to be least likely to happen in the foreseeable future.

## APPENDIX I: Baseline, Conflict and Cooperation Scenarios

<b>Pandemic Conditions</b>	<b>Great Power Conflict</b>	<b>Great Power Cooperation</b>
Baseline: Coronavirus contraction	Fading pandemic, significant friction in trade and geopolitics, weak economic prospects	Fading pandemic, less friction in trade and geopolitics, moderate economic recovery
<i>I. Longer virus spread (2020)</i>	Protracted pandemic, trade friction, geopolitical threats, economic deterioration	Protracted pandemic, prolonged trade truce, geopolitical risks, economic recovery
<i>II. Milder outbreak (2021)</i>	Renewed social distancing measures, elevated contraction risks, greater trade friction, deeper economic scarring	Renewed social distancing, moderate contraction risks, prolonged trade truce, subsequent economic recovery
<i>III. Lingering pandemic (2020-21)</i>	Lingering pandemic risks, intense trade and technology wars, “hot” geopolitical conflicts, renewed and a long global depression	Lingering pandemic risks, deals in trade and technology, subdued geopolitical friction, eventual return to economic recovery

Source: Steinbock, D. 2020. *The Tragedy of Missed Opportunities: COVID-19 Human Costs and Economic Damage*. Shanghai Institutes for International Studies, April 30.



**APPENDIX II: COVID-19 Economic Damage\***

		2018	2019	2020	2021	
<b>High- Income Economies</b>	Canada	1.9 <i>2.0</i>	1.5 <i>1.6</i>	1.8 <i>-6.2</i>	1.8 <i>4.2</i>	
	France	1.7 <i>1.7</i>	1.2 <i>1.3</i>	1.3 <i>-7.2</i>	1.3 <i>4.5</i>	
	Germany	1.5 <i>1.5</i>	0.5 <i>0.6</i>	1.2 <i>-7.0</i>	1.4 <i>5.2</i>	
	Italy	0.9 <i>0.8</i>	0.0 <i>0.3</i>	0.5 <i>-9.1</i>	0.8 <i>4.8</i>	
	Japan	0.8 <i>0.3</i>	0.9 <i>0.7</i>	0.5 <i>-5.2</i>	0.5 <i>3.0</i>	
	Korea	2.7 <i>2.7</i>	2.0 <i>2.0</i>	2.2 <i>-1.2</i>	2.7 <i>3.4</i>	
	UK	1.4 <i>1.34</i>	1.2 <i>1.4</i>	1.4 <i>-6.5</i>	1.5 <i>4.0</i>	
	US	2.9 <i>2.9</i>	2.4 <i>2.3</i>	2.1 <i>-5.9</i>	1.7 <i>4.7</i>	
	<b>Upper Middle- Income Economies</b>	Argentina	-2.5 <i>-2.5</i>	-3.0 <i>-2.2</i>	-1.3 <i>-5.7</i>	1.4 <i>4.4</i>
		Brazil	1.1 <i>1.3</i>	0.9 <i>1.1</i>	2.0 <i>-5.3</i>	2.4 <i>2.9</i>
China		6.6 <i>6.8</i>	6.1 <i>6.1</i>	5.8 <i>1.2</i>	5.9 <i>9.2</i>	
Indonesia		5.2 <i>5.2</i>	5.0 <i>5.3</i>	5.1 <i>0.5</i>	5.2 <i>8.2</i>	
Mexico		2.0 <i>2.1</i>	0.4 <i>-0.1</i>	1.3 <i>-6.6</i>	1.9 <i>3.0</i>	
Russia		2.3 <i>2.5</i>	1.1 <i>1.3</i>	1.9 <i>-5.5</i>	2.0 <i>3.5</i>	
Thailand		4.1 <i>4.2</i>	2.9 <i>2.4</i>	3.0 <i>-6.7</i>	3.5 <i>6.1</i>	
Turkey		2.8 <i>2.8</i>	0.2 <i>0.9</i>	3.0 <i>-5.0</i>	3.0 <i>5.0</i>	
<b>Lower Middle- Income Economies</b>		Bangladesh	7.9 <i>8.0</i>	7.8 <i>7.9</i>	7.4 <i>2.0</i>	7.3 <i>9.5</i>
	Egypt	5.3 <i>5.3</i>	5.5 <i>5.6</i>	5.9 <i>2.0</i>	6.0 <i>2.8</i>	
	India	6.8 <i>6.1</i>	6.1 <i>4.2</i>	7.0 <i>1.9</i>	7.4 <i>7.4</i>	
	Kenya	6.3 <i>6.3</i>	5.6 <i>5.6</i>	6.0 <i>1.0</i>	5.8 <i>6.1</i>	
	Nigeria	1.9 <i>1.9</i>	2.3 <i>2.2</i>	2.5 <i>-3.4</i>	2.5 <i>2.4</i>	
	Pakistan	5.5 <i>5.5</i>	3.3 <i>3.3</i>	2.4 <i>-1.5</i>	3.0 <i>2.0</i>	
	Philippines	6.2 <i>6.2</i>	5.7 <i>5.9</i>	6.2 <i>0.6</i>	6.4 <i>7.6</i>	
	Vietnam	7.1 <i>7.1</i>	6.5 <i>7.0</i>	6.5 <i>2.7</i>	6.5 <i>7</i>	

## COVID-19 Human Costs and Economic Damage in Emerging and Developing Economies

<b>Low- Income Economies</b>	Afghanistan	2.7 2.7	3 3.0	3.5 -3.0	4 4.5
	Congo Dr	5.8 5.8	4.3 4.4	3.9 -2.2	3.4 3.5
	Ethiopia	7.7 7.7	7.4 9.0	7.2 3.2	7.1 4.3
	Madagascar	5.2 4.6	5.2 4.8	5.3 0.4	5.1 5.0
	Mozambique	3.3 3.4	1.8 2.2	6.0 2.2	4.0 4.7
	Sudan	-2.2 -2.3	-2.6 -2.5	-1.5 -7.2	-1.1 -3.0
	Uganda	6.1 6.3	6.2 4.9	6.2 3.5	6.1 4.3
	Yemen	0.8 0.8	2.1 2.1	2.0 -3	13.6 6.1

\* Black color: WEO/IMF April database; Red Color: WEO/IMF July update.

Source: European WHO, WEO/IMF database, Difference Group.

## NOTES

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<sup>1</sup> In this report, most data, unless otherwise stated, is based on WHO's COVID-19 situation reports in 2020 (daily since Jan 2020). On the economic data, see *World Economic Outlook: A Crisis Like No Other, An Uncertain Recovery*. IMF, Jun 2020.

<sup>2</sup> "COVID-19: UN health agency warns of 'new and dangerous phase' as cases mount." UN News, Jun 19, 2020.

<sup>3</sup> "COVID-19 Emergency Committee highlights need for response efforts over long term." WHO News Release, August 1, 2020.

<sup>4</sup> "COVID-19: UN health agency warns of 'new and dangerous phase' as cases mount." UN News, Jun 19, 2020.

<sup>5</sup> The following draws from Steinbock, Dan. 2020. *Tragedy of Missed Opportunities: COVID-19 Human Costs and Economic Damage*. Shanghai Institutes for International Studies, Apr. See esp. the sections on the first, second and third missed opportunity.

<sup>6</sup> For more detail, see the chapter on "The Second Missed Opportunity" in *The Tragedy of Missed Opportunities*.

<sup>7</sup> Herd immunity is usually defined as a form of indirect protection from infectious disease that occurs when a large percentage of a population has become immune to an infection, whether through vaccination or previous infections, thereby providing a measure of protection for individuals who are not immune. But with COVID-19, such vaccination does not exist yet and no population has proved immune to the infection. The net effect is defective herd immunity. See Steinbock, D. 2020. "Europe's Pandemic Dilemma: The Tragedy of Missed COVID-19 Opportunities." *The European Financial Review*, May 20.

<sup>8</sup> The general pattern includes the Trump administration's decisions to reject previous multilateral accords, exit the US from the Paris Climate Accord, reject and renegotiate several trade deals (e.g., Trans-Pacific Partnership, the North American Free Trade Agreement, etc), the ongoing threats to leave the World Trade Organization and so on.

<sup>9</sup> Liu, Tao et al. 2020. Prevalence of IgG antibodies to SARS-CoV-2 in Wuhan – implications for the ability to produce long-lasting protective antibodies against SARS-CoV-2. *medRxiv preprint* (not certified by peer review), Jun 13.

<sup>10</sup> "Doctor retweeted by Trump has warned of alien DNA, sex with demons." The Hill, July 28, 2020.

<sup>11</sup> Strickler, Laura and Dilanian, Ken. 2020. "Trump cuts to national security staff may hurt coronavirus response, former officials say." NBC News, Feb 27.

<sup>12</sup> "We did not shut down entirely," Fauci, director of the National Institute of Allergy and Infectious Diseases, said. "We need to draw back a few yards and say, 'OK, we can't stay shut down forever.' ...You've got to shut down but then you've got to gradually open." See "Dr. Anthony Fauci says U.S. coronavirus cases are surging because nation didn't totally shut down." CNBC, Jul 13, 2020.

<sup>13</sup> "Second-quarter GDP plunged by worst-ever 32.9% amid virus-induced shutdown." CNBC, Jul 30, 2020.

<sup>14</sup> "First presumptive case of coronavirus confirmed in B.C." *Global News*. Jan 28, 2020.

<sup>15</sup> "Ministério da Saúde confirma 3 casos suspeitos de coronavírus no Brasil". *Exame*. Jan 2020.

<sup>16</sup> "Brasil confirma primeiro caso do novo coronavírus". *Folha de S. Paulo*. Feb 25, 2020.

<sup>17</sup> "Peru records first confirmed case of coronavirus, President Vizcarra says". Reuters. Mar 6, 2020

<sup>18</sup> "Chile confirms first case of COVID-19." Xinhuanet, Apr 3, 2020.

<sup>19</sup> "Van 3 casos confirmados de coronavirus en México". *El Financiero*. Feb 29, 2020.

<sup>20</sup> "Mexican governors want tighter border controls to keep Americans from bringing coronavirus south." *Washington Post*, Jul 3, 2020.

<sup>21</sup> In mid-July, CDC Director Robert Redfield sounded the alarm about the coming fall and winter seasons. The confluence of flu season and the coronavirus pandemic was expected to make things challenging across America. "I am worried," Redfield said. "I do think the fall and the winter of 2020 and 2021 are going to be the, probably, one of the most difficult times that we've experienced in American public health." See "Live Q&A: @CDCDirector Robert Redfield discusses the ongoing #COVID19 pandemic and @CDCgov's latest

#coronavirus recommendations.” The JAMA Network, a collection of 12 international peer-reviewed medical journals, Jul 14, 2020.

<sup>22</sup> See Korber, Bette et al. 2020. “Tracking Changes in SARS-CoV-2 Spike: Evidence that D614G Increases Infectivity of the COVID-19 Virus.” *Cell*, July 3. For a critical assessment, see also Grubaugh, Nathan D. 2020. “Making Sense of Mutation: What D614G Means for the COVID-19 Pandemic Remains Unclear.” *Cell*, Jul 3.

<sup>23</sup> “A large amount of the first Covid-19 cases in the U.S. can be traced to Europe. While the China restrictions operated as an attempt to close the front door to infections from the nation where the pandemic started, the back door — travel from Europe, where the virus took hold particularly fiercely in Italy — remained wide open until the middle of March and can be connected to a surge of cases in the U.S., especially in the New York area See Penney, Joe. 2020. “U.S. Got More ‘Index Cases’ of Coronavirus from Europe than from China.” *The Intercept*, Apr 13.

<sup>24</sup> For historical and epidemiological accounts, see Barry J.M. 2004. *The Great Influenza: The Epic Story of the Greatest Plague in History*. New York: Viking Penguin; and Taubenberger J.K., Morens D. M. 2006. “1918 Influenza: the mother of all pandemics.” *Emerging Infectious Diseases*. 12 (1): 15–22.

<sup>25</sup> In contrast, a typical influenza has an Rt of 1.4 to 1.7 for seasonal influenza, which tends to spread widely around the world annually. Couple that with the fact that each new generation of SARS-CoV-2 cases occurs every 5 days, and it is easy to understand how an epidemic can spread out of control and turn into a pandemic. See Inglesby, Thomas V. 2020. “Public Health Measures and the Reproduction Number of SARS-CoV-2.” *JAMA Insights, JAMA*. 2020;323(21):2186-2187. For a popular exposition, see Adam, David. 2020. “A guide to R – the pandemic’s misunderstood metric.” *Nature*, July 3.

<sup>26</sup> Testing per 1 million people illustrates testing intensity in a given country. The higher the number of tests per population, the greater will be the certainty and thus the integrity of the data; and vice versa.

<sup>27</sup> Holshue, Michelle L et al. (March 5, 2020). “First Case of 2019 Novel Coronavirus in the United States”. *New England Journal of Medicine*. 382 (10): 929–936; Ghinai, Isaac et al. (2020). “First known person-to-person transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the USA”. *Lancet*. 395 (10230): 1137-1144.

<sup>28</sup> Melinek, Judy (May 1, 2020). “When Did COVID-19 Arrive and Could We Have Spotted It Earlier?”. *MedPage Today*.

<sup>29</sup> “Belleville Mayor Has Coronavirus Antibodies.” *Patch, Belleville-Nutley, NJ*, May 5, 2020.

<sup>30</sup> Penney, Joe. 2020. “US Got More Confirmed ‘Index Cases’ of coronavirus from Europe than from China.” *The Intercept* April 13.

<sup>31</sup> On Dec 2, a man had been admitted to Hôpital Albert Schweitzer, whose director claimed in early May that the male had been positive for COVID-19. On Dec 27, another man was admitted to Avicenne Hospital, but his test came back as negative. In early May, a retest came back positive. Yet, the first official case – a French citizen from China – ensued only in late Jan. See “Coronavirus : un premier cas de Covid-19 remontant au 2 décembre confirmé en Alsace”. *Franceinfo*. May 7, 2020. “After retesting samples, French hospital discovers COVID-19 case from December”. *Reuters*, May 4.

<sup>32</sup> “Erster Fall des Coronavirus in Deutschland bestätigt.” Jan 28, 2020.; Hamburg, *Hamburger Abendblatt*. 2020. “Coronavirus: Zwei Tote in Deutschland - Italien sperrt das ganze Land”. *Abendblatt*, Mar 9.

<sup>33</sup> See “Wuhan novel coronavirus and avian flu: advice for travel to China”. Government of the United Kingdom. January 23, 2020; Spiteri, Gianfranco et al. 2020. “First cases of coronavirus disease 2019 (COVID-19) in the WHO European Region, 24 January to 21 February 2020”. *Eurosurveill*. 25 (9), Mar 5.

<sup>34</sup> “Coronavirus doctor's diary: the strange case of the choir that coughed in January”. *BBC News*. May 10, 2020; “Did Britain's 'patient zero' contract coronavirus at an Austrian ski resort?”. *The Independent*. March 26, 2020; Gallagher, James. 2020. “Coronavirus came to UK 'at least 1,300 times'”. *BBC News*, Jun 10.

<sup>35</sup> See “WHO | Novel Coronavirus - Japan (ex-China)”. WHO. January 16, 2020; “Virus strain in Japan possibly spread via Europe, U.S. since March”. *Japan News*. April 20, 2020.

<sup>36</sup> 신종 코로나바이러스 한국인 첫환자 확인. MK (in Korean). 서진우. January 24, 2020; “Coronavirus: South Korea cluster drives huge rise in cases”. *The Guardian*, Feb 22, 2020.

<sup>37</sup> While the WHO is carrying ongoing research on the origins of the COVID-19, the only thing that is certain is that in Western Europe, North America and East Asia, the earliest official cases have been linked with China, the actual spread occurred mainly after local transmissions; and there is some medical evidence of possible pandemic origins in US and Western Europe as well.

<sup>38</sup> For more, see the section on “From Resurgencies in US States to Spillovers in Americas.”

<sup>39</sup> For the full analysis of the pandemic in China, see Steinbock, D. 2020. *Tragedy of Missed Opportunities*.

<sup>40</sup> "Thailand confirms first case of Wuhan virus outside China". *South China Morning Post*, Jan 13, 2020; "MOPH announces taxi driver infected with coronavirus; first Thai case with no records of travelling to China.". Thairath Online. January 31, 2020.

<sup>41</sup> "Indonesia confirms first cases of coronavirus". Reuters. Mar 2, 2020.

<sup>42</sup> "В России выявили первые два случая заражения коронавирусом". TASS. Jan 31, 2020.

<sup>43</sup> "Turkey confirms first coronavirus patient, recently returned from Europe." *Daily Sabah*. Mar 11, 2020.

<sup>44</sup> A Sikh preacher with travel history to Italy and Germany became a super-spreader in a festival."COVID-19 | 6 members of Delhi patient's family test positive for coronavirus". *The Hindu*, Mar 4, 2020; "Septuagenarian Sikh priest infected 27 of total 38 coronavirus cases in Punjab." *India Today*. Mar 28, 2020.

<sup>45</sup> Sikh preacher with travel history to Italy and Germany became a super-spreader in a festival."COVID-19 | 6 members of Delhi patient's family test positive for coronavirus". *The Hindu*, Mar 4, 2020; "Septuagenarian Sikh priest infected 27 of total 38 coronavirus cases in Punjab." *India Today*. Mar 28, 2020. By the summer, six major megacities accounted for half of all reported cases in the country, perhaps because testing was more active in cities. In June, recoveries first exceeded active cases, yet the pandemic continues to spread rapidly .

<sup>46</sup> Abid K, Bari YA, et al. 2020. A. Progress of COVID-19 Epidemic in Pakistan [published online ahead of print,]. *Asia Pac J Public Health*. May 19.

<sup>47</sup> "IEDCR asks returnees from virus-affected countries to avoid public transport". *The Daily Star*. Mar 8, 2020; "20-fold rise in Covid-19 cases in Bangladesh since April 1," *Dhaka Tribune*, Apr 14, 2020.

<sup>48</sup> "Egypt announces first Coronavirus infection." *Egypt Today*. February 2020; "Coronavirus: More than 20 cases in Egypt despite government insistence there are only 2". *Middle East Monitor*. Mar 2, 2020

<sup>49</sup> The actual number of COVID-19 cases may have been up to 5,200 already in late March; seven times higher than the recorded number, while in late May, even government officials suggested the true number was at least 71,000. See Hassany, Mohamed et al. 2020. "Estimation of COVID-19 burden in Egypt". *The Lancet Infectious Diseases*, April; "Coronavirus cases in Egypt could be over 71,000: Minister". *Ahram Online*, May 2.

<sup>50</sup> "Hai ca dương tính nCoV đang điều trị tại BV Chợ Rẫy." Ministry of Health (Vietnam). Jan 23, 2020; "Vietnam confirms 17th Covid-19 patient." *VnExpress*. Mar 7, 2020; "Vietnam confirms 17th Covid-19 patient." *VnExpress*. Mar 7, 2020.

<sup>51</sup> "COVID-19 Pandemic Situation in Vietnam". Vietnam Centers for Disease Control (in Vietnamese). Ap 14, 2020; "How has Vietnam, a developing nation in South-East Asia, done so well to combat coronavirus?". ABC News (Australia), May 13.

<sup>52</sup> See Steinbock, D. 2020. "Worse-than-expected coronavirus contraction in ASEAN-4." *The Manila Times*, Jun 15.

<sup>53</sup> See "Vietnam to evacuate 80,000 tourists from Da Nang after three residents contract Covid-19." CNN, July 27, 2020.

<sup>54</sup> "Greenhills Mall implements 'precautionary measures' vs coronavirus". ABS-CBN News. Mar 6, 2020; Alipio M. April 2020. "Do Socio-Economic Indicators Associate with COVID-2019 Cases? Findings from a Philippine Study." SSRN, Apr.

<sup>55</sup> "First Case of Corona Virus Disease Confirmed in Nigeria." Nigeria Centre for Disease Control. Feb 28 2020.

<sup>56</sup> "Kenya confirms first coronavirus case - VIDEO". *Daily Nation*. Mar 13, 2020.

<sup>57</sup> "Coronavirus: Herat emerges as Afghanistan's epicentre." Aljazeera News. Mar 25, 2020.

<sup>58</sup> "Officiel trois premiers cas de Coronavirus à Madagascar." *Orange Madagascar*. Mar 20, 2020.

<sup>59</sup> "Ethiopia confirms first coronavirus case: Live updates." Aljazeera News, March 13, 2020.

- <sup>60</sup> "DRC health minister announces fourth case of coronavirus." *Daily Monitor*. Mar 22, 2020.
- <sup>61</sup> "DRC facing 'race against the clock' to contain latest Ebola outbreak amid Covid-19 pandemic". *The Independent*. June 4, 2020. In late June, deputy health minister accused cabinet members of embezzling funds from the government and its aid partners.
- <sup>62</sup> "Sudan reports first coronavirus case." Agence France Presse. Mar 13, 2020.
- <sup>63</sup> "Surge in deaths in North Darfur raises fears of disastrous Covid-19 outbreak." *The Guardian*. May 29, 2020.
- <sup>64</sup> "Mozambique confirms first coronavirus case". *National Post*. Mar 22, 2020.
- <sup>65</sup> Ministry of Health - Uganda [@MinofHealthUG]. Mar 21, 2020; "Uganda confirms 1st case of COVID-19" (Tweet).
- <sup>66</sup> "War-ravaged Yemen confirms first coronavirus case, braces for more." Reuters. April 10, 2020.
- <sup>67</sup> The overt optimism of the projections is reflected by the fact that, though significantly downgraded, the difference for advanced economies between the April and June projections is -1.9% for 2020 and 0.3% in 2021; for emerging and developing economies are -2.0% for 2020 and -0.7% for 2021; and for low-income economies -1.4% in 2020 and -0.4% in 2021. In April the projections were far too optimistic for both advanced and emerging/developing economies. Today, they remain too optimistic for advanced economies in 2021
- <sup>68</sup> Data from US Treasury; Eurostat; Ministry of Finance, Japan; IMF.
- <sup>69</sup> See COVID-19 Crisis Through a Migration Lens. *Migration and Development Brief 32*, World Bank, April 2020.
- <sup>70</sup> On the postwar globalization, the 2010s secular stagnation and the consequent scenarios, see Steinbock, D. 2017. "The Great Shift of Globalization: From the Transatlantic Axis towards China and Emerging Asia." *China Quarterly of International Strategic Studies*, Vol. 03, No. 02, pp. 193-226. On the US-China trade wars, see Steinbock, D. 2018. "U.S.-China Trade War and Its Global Impacts." *China Quarterly of International Strategic Studies* Vol. 04, No. 04, pp. 515-542.
- <sup>71</sup> Roubini's projection of the underlying conditions of a US-led "Greater Depression" is similar to the one outlined in the report at hand and its precursor. See Roubini, Nouriel. 2020. "Here are the biggest economic challenges we face over the next 10 years." The Project Syndicate, May 1; Steinbock, D. 2020. *The Tragedy of Missed Opportunities*, see last esp. chapter, "Conclusions: The Costs of Complacency." And Steinbock, D. 2020. "Washington is biggest threat to the dollar." *China Daily*, July 29. On Ray Dalio's warnings about the possibility of a dollar crisis, see "Ray Dalio predicts a coronavirus depression: 'This is bigger than what happened in 2008'." CNBC, Apr 9, 2020.
- <sup>72</sup> See WHO data; for more on the original initiatives, see Steinbock, D. 2020. *The Tragedy of Missed Opportunities*, particularly "The Conclusions."
- <sup>73</sup> "Global Humanitarian Response Plan: July update." WHO. Retrieved on Aug 3, 2020: <https://www.who.int/health-cluster/news-and-events/news/GHRP-revision-july-2020/en/> See also "OCHA and COVID-19." United Nations Office for the Coordination of Humanitarian Affairs. Retrieved on Aug 3, 2020: <https://www.unocha.org/covid19>
- <sup>74</sup> According to WHO data, the US is the largest government contributor accounting for about 22% of the organization's core budget (an estimated \$112.6 million for FY2020). The United States also provides voluntary funding to WHO, with amounts varying per year depending on U.S. priorities and global health needs. In the past half a decade, these contributions have averaged around \$250 million per year. WHO's total proposed program budget for 2020-2021 is \$4.8 billion. Voluntary contributions represent more than 80% of the budget. In addition to the US, top contributors in 2020-2021 feature China (12%), and Japan (8.5%). Governments providing the largest voluntary contributions in 2019 were the US, UK, and Germany.
- <sup>75</sup> See Rotella, Sebastian et al. 2020. "Inside the Trump Administration's Decision to Leave the World Health Organization." *ProPublica*, June 20.

