**Coronavirus and the Global Economic Stimulus**

Introduction

On March 11, 2020, the World Health Organization labelled the coronavirus outbreak a pandemic, as the number of confirmed cases reached 118,000 in 114 countries, with 4,291 deaths. Amid the worst pandemic since the 1918 Spanish flu, Dr. Tedros Adhanom Ghebreyesus, WHO director-general, cited poor communication and a lack of co-ordination between states and between national, provincial and local authorities as one of many areas where governments were falling short.

Over the next three weeks, the challenges of international co-ordination and the threats to the lives of citizens worldwide were laid bare as the number of cases surpassed 750,000 and the death toll exceeded 35,000. Some states have sent foreign aid. For instance, China has sent ventilators, surgical masks, and doctors to countries in Asia, Africa, Europe and the Americas, after having received tons of personal protective equipment, including from neighbors with a record of antagonistic relations, when the epicenter of the pandemic was in Hubei province. In contrast, other states have announced and reversed policies on border closures, troop deployment, or bans on entry to foreign nationals. For example, the United States announced and later cancelled plans to deploy over ten thousand troops to its border with Canada, while relations between Japan and South Korea soured after Japan unilaterally imposed a two-week quarantine on all visitors from South Korea amid its viral outbreak and South Korea retaliated by ending visa-free entry for only Japanese citizens out of 102 countries that blocked entry to its own citizens. In general, evacuations of nationals in foreign countries, withdrawing from military engagements overseas, postponing diplomatic visits abroad, protecting domestic firms from foreign acquisition, pressuring neighbors to toughen lockdowns, condemning foreign media for smearing national image, denouncing foreign suppliers of defective equipment, attributing the origin of the virus to a foreign government, and timetables filled with video conference meetings have all become marked features of diplomacy and international relations during the 2020 coronavirus pandemic.

Nevertheless, one element of the crisis that has been largely overlooked is the international dimension of economic responses to the shocks from the virus, the measures to monitor and contain it, and the policies to sustain demand and supply during prolonged shutdowns. One reason for this is that decisions to take stimulus measures have largely lagged behind the continued spread of the virus. As a result, most major stimulus efforts were taken in the last two weeks of March, as the coronavirus, its case numbers, subsequent deaths, and the estimations of the length and depth of economic damage reached virtually every country and territory around the world.

This essay examines the global economic response to the 2019-20 coronavirus pandemic. I first examine the economic shocks of the coronavirus and the ensuing government policies to monitor and contain it. Next, I consider the shifts in economic policy in different contexts, with a focus on China, the Eurozone, and the United States. Finally, I conclude with an outlook to possible implications and to open questions about the future that the 2020 coronavirus crisis has raised.

1. The Shocks

In this pandemic, economic shocks come from individuals adapting to the virus and from the measures which governments take to try to monitor and contain it. These include drastic measures to stop people from being physically close and from socially interacting. For instance, China has succeeded in halting the spread of the virus through the most severe and extensive containment efforts in history, in particular in its lockdown of 60 million people in Hubei province, alongside other measures. The lockdown strategy adopted by China, Singapore and South Korea were later recommended by scientists at Imperial College London,[[1]](#footnote-1) and appears to have become a new norm, with many pointing to the effectiveness of drastic suppression over moderate mitigation at saving lives. Nevertheless, such measures have shut down vast segments of the economy at great costs. For instance, data on economic consequences of China's prolonged lockdown have been significantly worse than most forecasts. Retail sales that were expected to decrease by 4 percent have fallen 20 percent. Fixed asset investment has fallen by 24 percent, multiples of any expected figure. In Europe, the fall in economic activity is worse than in the 2008 crisis on many indicators, such as the Purchasing managers’ index. The downturn is therefore expected to be at least as large as the 2008 financial crisis. While the coronavirus is already difficult to deal with as a public health crisis, it is likely to be even more costly to handle once the economics are considered.

Economic shocks can affect supply, demand or, most likely, both. A major channel for shocks is through finance. Interruptions to the flow of capital and labor limit the process of capital accumulation through reductions in expected profits and through subsequent devaluations. When devaluations become sufficiently severe and widespread, they tend to cause crises. The deep and far-reaching devaluations of this global pandemic and the lockdowns to fight it have signaled the non-linear trajectory of a financial crisis. Initially, news of the outbreak in Wuhan was followed by an immediate downturn in global financial markets. Corporations such as Apple and Starbucks began announcing production shortfalls and store closures in China. Yet, financial markets steadily recovered to new highs as many believed the epidemic would not spread beyond Asian countries that had taken immediate and drastic efforts at suppression. Eventually, the violent market reaction to the explosion of coronavirus cases in Italy triggered a financial crash, with approximately US$ 23 trillion erased in the value of shares worldwide since mid-February 2020. This has amounted to a net devaluation of 30 percent on global stock markets in one month.[[2]](#footnote-2) Other asset markets have also sunk despite unprecedented capital injections by central banks and governments.

The coronavirus has affected virtually all industries and commodities. The breakdown in OPEC-Russia negotiations on March 6 and the subsequent signals that Russians and Saudis would let the oil price collapse was a pivotal contributor to the global financial crash. Amid overwhelming supply and a collapse in demand, crude oil prices have fallen to US$20, the lowest since 2002, compared to a roughly average cost of producing a barrel of crude oil at US$50. Falls in commodity prices tend to have mixed effects on consumption. However, with airlines grounded, roads deserted, and much of industry suspended, any potential for cheaper oil to increase demand is likely to be overwhelmed by the fall in spending from oil-producing countries, with a host of destabilizing ramifications from Algeria and Angola to Nigeria and Venezuela. Many of these emerging markets are key zones of geopolitical competition, so the diplomatic and international security consequences could be dire.

Amid the pandemic and economic crisis, developing countries, with populations more likely to live in dense settlements with inadequate sanitation, healthcare, and social distancing possibilities, will be hit particularly hard. Those reliant on commodity exports or tourism will be further impoverished by the collapse in commodity prices and incoming flights, as are those that have already witnessed devaluing currencies, mounting debts, and overburdened healthcare systems. Central banks in developing countries such as Bangladesh, Bolivia, Colombia, the Philippines, South Africa, and Thailand as well as in high-income countries such as Australia, Chile, and Israel, have all responded by taking unprecedented measures to scale up purchases of government and private sector bonds on secondary markets, as G7 central banks have done since 2008. Similarly, central banks in Brazil and the Czech Republic have requested legislative changes that will make it possible for them to match the virtually worldwide expansion in the balance sheets of central banks.[[3]](#footnote-3)

Among different industries, airlines, notorious for operating around-the-clock at vast scale on miniscule margins, are grounded and therefore most at risk of bankruptcies. On March 24, Alexandre de Juniac, the director general and CEO, of the airline trade body IATA, said that estimates of passenger revenue lost due to the coronavirus outbreak had doubled from US$113 billion on March 5 to $252 billion, amounting to 30% of previously forecast total revenue in 2020.[[4]](#footnote-4) Similarly, the Centre for Aviation, an aviation consultancy, has warned that “By the end of May 2020, most airlines in the world will be bankrupt.”[[5]](#footnote-5) Critically, industries that produce non-tradeable goods and services which cannot be sold at a different point in space or time, such as hotels, cinemas, and restaurants, are most severely affected. Others, which produce tangible or intangible goods that can postpone sales into the future, such as automobile manufacturers, will be less drastically affected despite production cuts if spending on such goods are expected to quickly rebound after the crisis.

Meanwhile, demand has surged for medical equipment, such as ventilators, whose largest manufacturers have seen their share prices rise 40 to 80 percent. However, this sudden demand is outpacing supply despite production ramping up at least fourfold. This is because supply chain interruptions remain a critical threat to the ability of manufacturers such as Drägerwerk to produce around 500 ventilators a week. In addition, supplies of components will have to be scaled up to maintain the expanded pace of production. Demand has also increased for Internet-based companies such as Netflix and YouTube. Within the first month of governments announcing lockdowns, widespread and sustained peak internet usage led the European Commissioner for the Internal Market, Thierry Breton, to call on “streaming platforms, telecom operators and users […] to take steps to ensure the smooth functioning of the internet during the battle against the virus propagation.”[[6]](#footnote-6) Similarly, the U.S. Federal Communications Commission asked over 100 broadband and mobile providers to secure Americans' connection to the internet through May.[[7]](#footnote-7) In response, companies such as Facebook and Netflix announced plans to adjust streaming quality and download speeds to the bandwidth available in the local area to manage the unprecedented surge in online activity.

The next section examines the government and central bank responses to many of the shocks, shortfalls and constraints described in this chapter.

1. The Shifts

**A. Governments and Central Banks**

In response to the shocks, shortfalls and constraints, policymakers have taken actions to try to minimize the economic damage through both monetary and fiscal policy instruments.

**Governments**

Governments have decided to implement unprecedented budget deficits. At no point in the past, peace or war, have governments put the economy in the debt-fueled equivalent of an Intensive Care Unit during a deliberate shutdown to tackle a public health crisis. For instance, the French President Emmanuel Macron has said that no company in France, regardless of its size, will be subject to the risk of bankruptcy, and that no French citizen will be left without resources. Overall, a fiscal response is constituted by the fiscal stimulus itself, which includes household and corporate tax cuts, handouts, and direct spending on healthcare and public services, together with the maintenance of safety nets that include tax deferrals and loan bridging programs. In particular in this crisis, governments have undertaken two further fiscal policies to mitigate economic damage. First, governments have decided to subsidize wages, going beyond existing automatic stabilizers that are triggered without explicit government intervention, such as unemployment benefits. Most governments, particularly European, have announced that they will subsidize workers’ wages to prevent the short-term shock of the coronavirus from causing mass layoffs and bankruptcies that would impair the economic recovery when governments decide to end restrictions on movement and social interaction. However, this has failed to prevent many workers in the gig economy and informal employment from losing their jobs, particularly on digital platforms which do not recognize workers as employees.

Second, governments will increase government debt; they will bear unprecedented costs to implement proposed measures in the face of rising debts. Nevertheless, this is difficult, as many governments have large existing public debt burdens from the 2008 crisis and its aftermath and will therefore struggle to borrow. However, central banks are purchasing government bonds through Quantitative Easing and asset purchase programs to lower the costs of government borrowing. Usually, governments have three ways to finance a fiscal stimulus. First, they can sell short-term government debt to the public, a typical response when budget deficits rise. Second, they can sell more long-term government debt to the public. Third, central banks can increase purchases of government debt from the public, monetizing the deficit as the central bank’s balance sheet expands. This has contributed to rising public debts on the balance sheets of central banks, which are likely to hold these public debts for the foreseeable future. In effect, this is a form of ‘helicopter money’. Central bank asset purchase programs help to keep the long-term interests low and allow governments to borrow as much as they need to do what they deem necessary to protect the economy. For instance, after the European Central Bank announced a €750bn expansion of its bond-buying program on March 18, 2020,[[8]](#footnote-8) the 10-year government bond yields on Italian and German government debts narrowed by almost one percentage point, reflecting the lower costs for the Italian, as well as many other Eurozone governments, to borrow to finance deficit spending.

**Central Banks**

In contrast to governments, major central banks have undertaken three main monetary policies to mitigate economic damage, drawing in particular on lessons learned since the 2008 financial crisis. First, they have reduced interest rates to lower the cost of borrowing. For instance, the Federal Reserve and the Bank of England have undertaken fast and deep interest cuts, while the European Central Bank moved rates further into negative territory. Second, central banks have injected money into financial markets and loosened regulations to facilitate bank lending to the non-financial economy. Third, central banks have purchased assets, such as government bonds and corporate bonds, in vast amounts, to facilitate borrowing and financing through the crisis. Consequently, central bank balance sheets, already burdened by the 2008 crisis, have now expanded further. For instance, the balance sheets of the Federal Reserve and the Bank of England have increased from less than 8 percent of GDP in 2008 to around 20 percent in 2020, while that of the European Central Bank has risen from below 13 percent in 2008 to over 40 percent since 2018.

Together with fiscal expansion, monetary measures could induce large multiplier effects on aggregate demand. However, monetary stimulus extends an economy’s lifeline by increasingly relying on financial capital, as opposed to real economic activity, and through huge expansions in the money supply and debt creation. If effective demand is lacking, this presents a challenge in realizing the values of goods produced by the non-financial economy through actual consumer purchases.

**B. China**

Following the 2008 financial crisis, China launched the largest stimulus in world history and became the first major economy to recover from the crisis. China’s economy experienced a brief, sharp downturn in 2008, and then recovered and grew by 8.7% in 2009 and 10.4% in 2010. As Christine Wong argues, China’s 4 trillion yuan ($586 bn)[[9]](#footnote-9) fiscal stimulus amounted to 12.5% of the country’s GDP in 2008, spread over 27 months, equal to three times the size of the 2008 U.S. stimulus in relative terms, at 5% of U.S. GDP spent over two years.[[10]](#footnote-10) Alongside the U.S. and European stimulus packages, the Chinese effort effectively bailed out both China’s economy and global capitalism.

In the 2020 coronavirus pandemic, China has sent masks, ventilators, and doctors to help with humanitarian crises in other countries. Notwithstanding this, many foreign governments have wondered whether China will be able and willing to repeat the stimulus that rescued the world economy from the last global recession.

China’s ability to repeat an unprecedented stimulus depends on two factors. First, on the timing of China’s own economic recovery from the Coronavirus downturn in the first quarter of 2020. As of March 29, the Financial Times China Economic Activity Index shows that the Chinese recovery is incomplete, with overall economic activity still at less than 65 percent of the nationwide level on January 1, 2020.[[11]](#footnote-11) Recoveries differ by sector. As of March 29, real estate floor space sales were at 62 percent, power plant coal consumption at 75 percent, and traffic congestion at 92 percent of January 1 levels, with all showing an upward trend. In contrast, cinema tickets sold are at 0 percent, container freight shipped at 67 percent, and air pollution at 69 percent of January 1 levels, with none exhibiting an upward trend.[[12]](#footnote-12) China’s recovery could accelerate with a growth rebound in the next quarter of 2020. Such a recoil could generate demand for the rest of the world. This is particularly important as China has accounted for roughly one third of global growth in the past decade and its economy is roughly three times larger than in 2008 and roughly 8.5 times larger than in 2003 when the coronavirus SARS hit, so a stimulus package like that of 2008-09 would amplify the pace and scale of a global economic recovery.

The second factor is the extent to which China is able to mount an unprecedented stimulus to rescue the world economy in 2020. China may be neither able nor willing to pursue a great stimulus. Partly due to the 2008-09 stimulus, China has accumulated large debts, which may inhibit its desire to pursue another extraordinary effort in 2020. China’s debt to GDP is substantial; some estimates suggest that China’s bank loans amount to almost half of *global* GDP.[[13]](#footnote-13),[[14]](#footnote-14) In contrast, China’s debt to GDP levels were modest in 2008-09. Moreover, most Chinese banks loans are used for covering interest payments on existing debts, according to the Rhodium Group,[[15]](#footnote-15) leaving little room for new investment. This presents Beijing with a difficult choice: either continue reducing debt levels and suffer a prolonged economic downturn, or launch another credit-fueled stimulus, which would risk mounting existing debts.

In addition, China’s stimulus has so far been measured because its epidemic suppression strategy has been immediate, drastic, and largely successful. For instance, both China’s exchange rate and its balance of payments have remained relatively stable. However, further risks may amplify existing fragilities, sending tremors to surrounding economies, from South Korea and Japan to Singapore and Australia. If the slowdown in China becomes larger and longer than expected, then the implications for neighboring countries will depend on Beijing’s willingness to exercise stimulus.

**C. The Eurozone**

The Eurozone, composed of the 19 E.U. member states that have adopted the euro as a single currency, remains politically, fiscally, and some may say, even morally divided, along north-south lines. The 2009-12 European sovereign debt crisis witnessed several eurozone members being unable to repay or refinance government debt or to bailout over-indebted banks without the assistance of other eurozone countries, the European Central Bank, or the International Monetary Fund. The crisis and its subsequent bailout programs and speculation about the breakup of the eurozone left resentments that the 2020 crisis has resurrected. On March 27, ministers from Italy, Spain and Portugal condemned the Dutch finance minister, who had called on the European Commission to investigate which E.U. countries had built up adequate financial buffers to deal with the present crisis. Eurozone members are divided on the question of issuing corona-bonds, a proposed joint debt instrument that all member states would guarantee. This follows the idea of Eurobonds, first raised by the Barroso European Commission in 2011, as a way to tackle the sovereign debt crisis by having all eurozone countries jointly issue government bonds in euros.

Corona-bonds, like Eurobonds, would allow already highly indebted eurozone states access to more funds at cheaper and better conditions thanks to the stronger confidence in other eurozone economies. ‘Southern’ countries, including France, Italy, Spain, and Portugal support the idea, while Germany and the Netherlands oppose it. The original Eurobonds plans failed due to German and Dutch opposition, and the European sovereign debt crisis was ultimately resolved by the European Central Bank's guarantee in 2012 that it would do "whatever it takes" to stabilize the euro currency.

This time however, southern states that were hit particularly hard by the debt crisis argue that northern states imposed austerity policies upon them that left insufficient flexibility to build up the buffers that the Dutch finance minister has called on the European Commission to investigate. The divide echoes a more general bitterness between southern states, who argue that German, Dutch and Nordic leaders unjustly lecture them on fiscal policies, and northern states, who argue that they should not have to bail out southern governments who pursue what they claim are irresponsible fiscal practices.

With a lack of progress on common eurozone fiscal policies, southern states, which have so far been worse hit by the coronavirus, stress that states should prioritize containing the pandemic, which they see as requiring support from other EU member states. Meanwhile, northern states maintain that the current crisis can be effectively tackled without corona bonds or similar joint debt instruments.

In the absence of large scale fiscal stimulus in China or the Eurozone, two of the largest economies with common monetary policy, or international coordination at the G7 or the G20, the option of launching a globally significant expansion has been left to the United States, the world’s largest national economy since it surpassed China around 1890.[[16]](#footnote-16)

**D. The United States**

With China so far unwilling and Europe largely unable to lead a fiscal stimulus that bails out the world economy from the current crisis, it has been left to the United States, the latest epicenter of the pandemic, to play a decisive role. However, this requires the Trump administration and the Republican Party in the House of Representatives, a majority of which voted against President George W. Bush’s 2008 bailout on both occasions, to implement policies and rescue programs that resemble socialization of the economy above and beyond any proposal by any U.S. president or major presidential candidate since at least the Great Depression.

Nevertheless, on March 27, 2020, President Trump signed into law a US$2 trillion stimulus bill called the CARES (Coronavirus Aid, Relief, and Economic Security Act), which had passed unanimously in the Senate and by a voice vote in the House of Representatives. The Act will increase fiscal spending and loans in 2020 by more than 10% of GDP, greater than the increase in the federal deficit in 2008 and 2009 combined. However, this is still likely to be smaller than China’s financial stimulus after the 2008 crisis, which amounted to 12.5% of the country’s GDP in 2008 to be spent from the fourth quarter of 2008 through the end of 2010.[[17]](#footnote-17)

The passing of the Act dismisses immediate concerns by many that the Trump administration would either lead a nationalist campaign against efforts by the Federal Reserve and the International Monetary Fund to undertake global financial stabilization or repeat the Hoover administration’s mistakes in the Great Depression to liquidate failing banks.[[18]](#footnote-18)

The 2020 economic stimulus has been less politically and morally divisive than in 2008 for at least two reasons. First, this is partly due to the severity of the sudden stop in economic activity: 3.3 million Americans filed for jobless claims in the week ending March 21,[[19]](#footnote-19) with estimates that the figure could rise to tens of millions in April. Second, this is also because, unlike in the 2008 recession, job losses are less concentrated in big banks and more acute in small- and medium-size enterprises across the country, and the viral cause of this crisis is neither attributable to irresponsible business, nor to imprudent regulation.

So far, the Federal Reserve has announced that it may finance part of this unprecedented fiscal stimulus by buying U.S. government bonds. In addition, the Fed’s balance sheet will also increase from purchases of mortgage bonds and packages of private loan assets. According to the Financial Times, the Fed’s balance sheet could increase from US$4.2 trillion at the end of 2019 to US$6-7 trillion by the end of this year. Such an increase corresponds to the total expansion in the central bank’s balance sheet over the whole decade following the 2008 crisis. In the 2020 crisis, many large economies are expected to increase government debt to GDP ratios by 10, if not 20 percentage points. Despite this, many investors and some policymakers disagree that this unprecedented stimulus by the U.S. and other industrialized economies will be sustainable, as it risks sparking government debt crises and ensuing rises in inflation. If either of these occur markets could lose confidence in the ability of governments to successfully manage the subsequent recession and asset prices could collapse considerably.

1. The Future

Going forward, economic effects and responses will change with the evolution of the pandemic and policymakers’ attempts to monitor and contain it. The foremost priority remains minimizing the loss of lives, and the combination of fiscal and monetary measures will have to adapt as economically necessary and politically possible to sustain incomes and revenues until the lockdowns can be lifted.

In many countries, the interest rates on long-term debt remain far below expected growth in nominal GDP and there is room for stimulus to provoke positive multiplier effects. Therefore, taking on government debt to finance deficit spending is likely to be manageable, even if central banks begin to offload assets on their balance sheets by selling public debt, a move which must eventually increase bond yields and the costs of financing public debt.

Mixed supply and demand effects could cause inflation to rise. For example, if supply chain disruptions continue while consumers increase spending from government transfers, then this could undermine direct fiscal stimulus because inflation is likely to put upward pressure on interest rates, which makes long-term public financing more expensive.

However, three countervailing factors are likely to limit inflation in this instance. First, inflation expectations facing most major central banks are already at or below inflation targets. Second, the collapse in the oil price keeps headline inflation low. These two factors combined temper any temporary inflation shocks as a consequence of the fiscal stimulus. The third reason is that the fiscal stimulus due to the disruptions from the coronavirus are more likely to end sooner than those following the 2008 global financial crisis.

In the longer run, two economic impacts are likely. First, supply chains, which are already under strain amid the U.S.-China trade dispute, are likely to further shorten or diversify. Calling for a new development model, French President Emmanuel Macron has questioned the market-liberal economic logic that has been pursued for decades and which he claims is now “revealing its flaws.” French minister of economy and finance, Bruno Le Maire, has added that “In the long term we cannot depend on Asia, on China for goods that are strategic for us, whether in aerospace or medical sectors, or in other supply chains.”

Second, the shift towards less labor-intensive and more automation-driven production will accelerate, generating considerable unemployment and reducing consumer demand as it renders the consequences of a lack of interest in workforce training painstakingly evident, as I have argued previously.[[20]](#footnote-20)

Of a more speculative nature is whether the suppression strategy and its central principle of social isolation will lead to lasting changes in norms and habits that in turn change our societies and economies. International travel, cinemas, education, entertainment, and mass gatherings from culture and conferences to music, sport, and politics could be significantly diminished with many activities being delivered digitally by default, on platforms where algorithmic decision-making and economies of scale virtually guarantee winner-takes-all competition and exacerbate existing inequalities.[[21]](#footnote-21) Consequently, such a migration from physical to digital would further erode local government revenues and depreciate the value of built infrastructure, from airports, airlines and hotels to theme parks, stadiums and convention centers. However, bars, cafés, and restaurants, as public places primed for leisure and basic human impulses, may be more likely to recover from the months-long confinement. Online communication, entertainment and work software are the frontline beneficiaries as our habits and routines go online.

In the longer term, emergency measures may also provide opportunities for governments to take on a larger role in the economy, for instance increasing the quality and quantity of basic safety nets or public healthcare. A risk remains whether leaders will seize the opportunity to monitor and contain the virus to grab power, increase surveillance, and track people’s every move in person and on the internet, or to use a national emergency to suspend elections indefinitely.

Until a vaccine is developed, which will take at least several months if not a year, many strict measures will remain in force. Societies will have to remain willing to persevere and repeatedly implement suppression strategies in the face of demanding and demoralizing conditions, perhaps for over a year if they are to completely suppress the pandemic as much modelling suggests. It remains an open question whether societies will be willing, let alone able, to tolerate this prospect in the face of indefinite confinements and a lack of hope or opportunity that our lives will return to normal. On March 23, ten days after declaring a national emergency, President Trump said that “we can’t have the cure be worse than the problem.” Similarly, Brazil's President Jair Bolsonaro, who has called the pandemic a “fantasy” created by the media,[[22]](#footnote-22) questioned Brazil’s quarantine measures, saying “if you don't die of the disease, you starve,” and “Brazil cannot stop or we'll turn into Venezuela.”[[23]](#footnote-23) As long as lockdowns continue, people and businesses will have to find ways to get money to avoid further devaluations, bankruptcies, obsolescence of skills, qualifications, and networks, long-term, mass unemployment, and severe and enduring damage to the overall economy. Notwithstanding these challenges, sustained, unprecedented and drastic action will be needed to reduce damage to both the economy and to human health before things can return to business as usual. In poignant words: everything will have to change so that everything can stay the same.[[24]](#footnote-24)

Amid the heightened uncertainties, policymakers will have to think and act faster than in all but wartime conditions to manage the crisis for an extended period. Divisive measures, such as unfounded claims that attribute the virus to U.S. or Chinese intentions or use the threat of the virus to engage in border diplomacy promote neither international cooperation, nor solutions in what is likely to be the most disruptive pandemic in human history. Governments will therefore have to improve their capabilities to identify and tackle fake news, and urgently, to stop creating it themselves.

To prevent future pandemics, most certainly during our lifetimes, we must learn from strategies that successfully tackled the crisis, in particular on how to effectively manage outbreaks and reduce infections. First, governments must use clear messaging, both domestically and internationally, to publicly acknowledge the magnitude of the threat and to implement immediate measures despite the costs on individuals and the economy. Governments must avoid mixed, contradictory signals or the baseless bashing of science and specialists. Second, governments must implement national testing programs and rigorous case tracking to identify who is safe to be in public and who ought to be isolated. As current tests detect virus-replicating cells in human bodies and the virus’ genetic materials may have disappeared once many of us have recovered, tests for antibodies in people’s blood, currently pending approval, will allow us to identify the subpopulation that has built up immunity. Third, all governments must have a strategic plan in place for future pandemics and other high-risk, low probability scenarios, from cyber, nuclear, biological and chemical error or terror, to climate change and seismic political shifts. This includes building international communication channels and organizational structures to accelerate responses to future crises. Governments must avoid waiting until the crisis occurs to build a strategy. As our bodies and the Covid-19 virus adapt to one another, CRISPR gene-editing techniques that promise to be rapidly programmable could remain effective as the virus mutates. Even so, governments will have to alter incentives and mobilize fiscal resources for the pharmaceutical industry to take sufficient interests in diagnostics, prevention, and infectious diseases, particularly in developing countries or tropical and humid climates, instead of concentrating research into the most profitable and immediately lucrative treatments and cures.

Finally, the environmental consequences of sustaining lockdowns across most major economies, in particular the suspension of air travel, will provide new evidence on the trade-offs between consumption, health, and sustainability. For instance, early data show that air pollution and greenhouse gas emissions have been significantly reduced in cities under lockdown, and natural habitats will likely recover from the fall in economic activity, especially the reduction of waste. Although prolonged confinement puts serious stresses on our mental health and social relations, the slowdown of daily life may help in many regards, while the time saved from unnecessary commutes and meetings is worthy of our utmost praise. Moreover, our common reliance on digital infrastructure is likely to test its resilience and our trust in its ability to substitute for analog alternatives to an unimagined extent. These kinds of insights will prove invaluable as the world population heads toward an estimated 11 billion people around the end of the 21st Century, as income per capita continues to rise in much of the world, and as we increasingly live, love and think on the internet.

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1. Imperial College Covid-19 Response Team (2020), “Report 9: Impact of non-pharmaceutical interventions (NPIs) to reduce COVID19 mortality and healthcare demand”, March 16, 2020, https://spiral.imperial.ac.uk/handle/10044/1/77482 (accessed March 30, 2020) [↑](#footnote-ref-1)
2. For instance, from February 20 to March 23, Germany’s DAX index fell by 36.0%, the U.S. S&P 500 by 33.7%, the U.K. FTSE 100 by 32.8%, Japan’s Nikkei 225 by 28.0%, and Hong Kong’s Hang Seng by 21.4%. All these record falls have since been followed by modest recoveries. [↑](#footnote-ref-2)
3. International Monetary Fund, "Policy Responses to COVID-19", https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19, accessed March 30, 2020. [↑](#footnote-ref-3)
4. de Juniac, Alexandre (2020), “Remarks of Alexandre de Juniac at the IATA Media Briefing on COVID-19, 24 March 2020”, Press Release, March 24, 2020, iata.org/en/pressroom/speeches/2020-03-24-01/, accessed March 30. [↑](#footnote-ref-4)
5. Centre for Aviation (CAPA) (2020), "COVID-19. By the end of May, most world airlines will be bankrupt", March 17, 2020, https://centreforaviation.com/analysis/reports/covid-19-by-the-end-of-may-most-world-airlines-will-be-bankrupt-517512, accessed March 30, 2020. [↑](#footnote-ref-5)
6. European Commission, “Daily News 19 / 03 / 2020”, Press Release, March 19, 2020, https://ec.europa.eu/commission/presscorner/detail/en/MEX\_20\_489, accessed March 30, 2020. [↑](#footnote-ref-6)
7. Federal Communications Commission, “116 More Broadband and Telephone Service Providers take Chairman Pai’s Keep Americans Connected Pledge”, Press Release, March 16, 2020, https://docs.fcc.gov/public/attachments/DOC-363075A1.pdf, accessed March 30, 2020. [↑](#footnote-ref-7)
8. European Central Bank (2020), “ECB announces €750 billion Pandemic Emergency Purchase Programme (PEPP)”, *European Central Bank Press Release,* 18 March 2020, https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318\_1~3949d6f266.en.html (accessed March 30, 2020) [↑](#footnote-ref-8)
9. Huang, Yukon and Bosler, Canyon, "China's Debt Dilemma: Deleveraging While Generating Growth", September 2014, https://carnegieendowment.org/files/china\_debt\_dilemma.pdf, accessed March 29, 2020. [↑](#footnote-ref-9)
10. Wong, Christine (2011), “The Fiscal Stimulus Programme and Public Governance Issues in China”, *OECD Journal on Budgeting*, Vol. 11/3. http://dx.doi.org/10.1787/budget-11-5kg3nhljqrjl (accessed March 30, 2020) [↑](#footnote-ref-10)
11. The Financial Times, "Coronavirus economic tracker: latest global fallout", March 29, 2020, https://www.ft.com/content/0c13755a-6867-11ea-800d-da70cff6e4d3, accessed March 30, 2020. [↑](#footnote-ref-11)
12. The Financial Times, "Coronavirus economic tracker: latest global fallout", March 29, 2020, https://www.ft.com/content/0c13755a-6867-11ea-800d-da70cff6e4d3, accessed March 30, 2020. [↑](#footnote-ref-12)
13. Kose, M. Ayhan; Nagle, Peter; Ohnsorge, Franziska; Sugawara, Naotaka (2020). Global Waves of Debt : Causes and Consequences. Washington, DC: World Bank. World Bank, available at: https://openknowledge.worldbank.org/handle/10986/32809. [↑](#footnote-ref-13)
14. Institute of International Finance, "Global Debt Monitor: Sustainability Matters", January 13, 2020, available https://www.iif.com/Portals/0/Files/content/Global%20Debt%20Monitor\_January2020\_vf.pdf, accessed March 29, 2020. [↑](#footnote-ref-14)
15. Wright, Logan and Feng, Allen, "City-level Financial Stress Rising", Rhodium Group, December 18, 2019, rhg.com/research/city-level-financial-stress-rising/, accessed December 22, 2019. [↑](#footnote-ref-15)
16. Maddison, Angus (2010), "Historical Statistics of the World Economy: 1-2008 AD", Excel file available at: www.ggdc.net/maddison/Maddison.htm, accessed March 27, 2020. [↑](#footnote-ref-16)
17. Naughton, Barry. 2009. “Understanding the Chinese Stimulus Package.” *China Leadership Monitor*, No. 28. [↑](#footnote-ref-17)
18. Bernanke, Ben S. "Non-Monetary Effects of the Financial Crisis in the Propagation of the Great Depression." The American Economic Review, Vol. 73, No. 3, (June 1983) pp. 257-276. [↑](#footnote-ref-18)
19. U.S. Department of Labor (2020), News Release Thursday, March 26, 2020”. https://www.dol.gov/ui/data.pdf. Last accessed March 29, 2020. [↑](#footnote-ref-19)
20. Christoph, Joël N. E. (2019) “Ethics and Workplace Automation.” The Institute of Business Ethics, https://www.ibe.org.uk/uploads/assets/14ab34e7-4530-48a2-972f709a64d88940/2019-Winning-Essay-Undergraduate.pdf [↑](#footnote-ref-20)
21. Noe, Thomas H. and Parker, Geoffrey, Winner Take All: Competition, Strategy, and the Structure of Returns in the Internet Economy (June 1, 2005). Journal of Economics & Management Strategy, Vol. 14, No. 1, p. 141, Spring 2005. Available at SSRN: https://ssrn.com/abstract=250371 or http://dx.doi.org/10.2139/ssrn.250371 [↑](#footnote-ref-21)
22. G1, "Bolsonaro diz que 'pequena crise' do coronavírus é 'mais fantasia' e não 'isso tudo' que mídia propaga", March 10, 2020, News Article (in Portuguese), g1.globo.com/politica/noticia/2020/03/10/bolsonaro-diz-que-questao-do-coronavirus-e-muito-mais-fantasia.ghtml, accessed March 30, 2020. [↑](#footnote-ref-22)
23. France 24, "Brazil economy 'can't stop' for coronavirus: Bolsonaro", News Report,, March 30, 2020, france24.com/en/20200329-brazil-economy-can-t-stop-for-coronavirus-bolsonaro, acccessed March 30, 2020. [↑](#footnote-ref-23)
24. Original quote: “If we want things to stay as they are, things will have to change.” in Tomasi di Lampedusa, Giuseppe, and Archibald Colquhoun (translation). 1960. The leopard. New York: Pantheon. [↑](#footnote-ref-24)