COVID-19: THE GREAT RESET

KLAUS SCHWAB
THIERRY MALLERET

FORUM PUBLISHING


COVI
THE G

COVID-19:
THE GREAT RESET

KLAUS SCHWAB
THIERRY MALLERET

FORUM PUBLISHING

Edition 1.0

World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland

Tel.: +41 (0)22 869 1212
Fax +41 (0)22 786 2744
mail: contact@weforum.org
www.weforum.org

ISBN 978-2-940631-11-7

About Covid-19: The Great Reset

Since it made its entry on the world stage, COVID-19 has dramatically torn up the existing script of how to govern countries, live with others and take part in the global economy. Written by World Economic Forum Founder Klaus Schwab and Monthly Barometer author Thierry Malleret, COVID-19: The Great Reset considers its far-reaching and dramatic implications on tomorrow's world.

The book's main objective is to help understand what's coming in a multitude of domains. Published in July 2020, in the midst of the crisis and when further waves of infection may still arise, it is a hybrid between a contemporary essay and an academic snapshot of a crucial moment in history. It includes theory and practical examples but is chiefly explanatory, containing many conjectures and ideas about what the post-pandemic world might, and perhaps should, look like.

The book has three main chapters, offering a panoramic overview of the future landscape. The first assesses what the impact of the pandemic will be on five key macro categories: the economic, societal, geopolitical, environmental and technological factors. The second considers the effects in micro terms, on specific industries and companies. The third hypothesizes about the nature of the possible consequences at the individual level.

In early July 2020, we are at a crossroads, the authors of COVID-19: The Great Reset argue. One path will take us to a better world: more inclusive, more equitable and more respectful of Mother Nature. The other will take us to a world that resembles the one we just left behind – but worse and constantly dogged by nasty surprises. We must therefore get it right. The looming challenges could be more consequential than we have until now chosen to imagine, but our capacity to reset could also be greater than we had previously dared to hope.

About the authors

Professor **Klaus Schwab** (1938, Ravensburg, Germany) is the Founder and Executive Chairman of the World Economic Forum. In 1971, he published Modern Enterprise Management in Mechanical Engineering. He argues in that book that a company must serve not only shareholders but all stakeholders to achieve long-term growth and prosperity. To promote the stakeholder concept, he founded the World Economic Forum the same year.

Professor Schwab holds doctorates in Economics (University of Fribourg) and in Engineering (Swiss Federal Institute of Technology) and obtained a master's degree in Public Administration (MPA) from the Kennedy School of Government at Harvard University. In 1972, in addition to his leadership role at the Forum, he became a professor at the University of Geneva. He has since received numerous international and national honours, including 17 honorary doctorates. His latest books are The Fourth Industrial Revolution (2016), a worldwide bestseller translated into 30 languages, and Shaping the Future of the Fourth Industrial Revolution (2018).

Thierry Malleret (1961, Paris, France) is the Managing Partner of the Monthly Barometer, a succinct predictive analysis provided to private investors, global CEOs and opinion- and decision-makers. His professional experience includes founding the Global Risk Network at the World Economic Forum and heading its Programme team.

Malleret was educated at the Sorbonne and the Ecole des Hautes Etudes en Sciences Sociales, Paris, and at St Antony's College, Oxford. He holds master’s degrees in Economics and History, and a PhD in Economics. His career spans investment banking, think tanks, academia and government (with a three-year spell in the prime minister's office in Paris). He has written several business and academic books and has published four novels. He lives in Chamonix, France, with his wife Mary Anne.

CONTENTS

INTRODUCTION

The worldwide crisis triggered by the coronavirus pandemic has no parallel in modern history. We cannot be accused of hyperbole when we say it is plunging our world in its entirety and each of us individually into the most challenging times we've faced in generations. It is our defining moment – we will be dealing with its fallout for years, and many things will change forever. It is bringing economic disruption of monumental proportions, creating a dangerous and volatile period on multiple fronts – politically, socially, geopolitically – raising deep concerns about the environment and also extending the reach (pernicious or otherwise) of technology into our lives. No industry or business will be spared from the impact of these changes. Millions of companies risk disappearing and many industries face an uncertain future; a few will thrive. On an individual basis, for many, life as they've always known it is unravelling at alarming speed. But deep, existential crises also favour introspection and can harbour the potential for transformation. The fault lines of the world – most notably social divides, lack of fairness, absence of cooperation, failure of global governance and leadership – now lie exposed as never before, and people feel the time for reinvention has come. A new world will emerge, the contours of which are for us to both imagine and to draw.

At the time of writing (June 2020), the pandemic continues to worsen globally. Many of us are pondering when things will return to normal. The short response is: never. Nothing will ever return to the "broken" sense of normalcy that prevailed prior to the crisis because the coronavirus pandemic marks a fundamental inflection point in our global trajectory. Some analysts call it a major bifurcation, others refer to a deep crisis of "biblical" proportions, but the essence remains the same: the world as we knew it in the early months of 2020 is no more, dissolved in the context of the pandemic. Radical changes of such consequence are coming that some pundits have referred to a "before coronavirus" (BC) and "after coronavirus" (AC) era. We will continue to be surprised by both the rapidity

and unexpected nature of these changes – as they conflate with each other, they will provoke second-, third-, fourth- and more-order consequences, cascading effects and unforeseen outcomes. In so doing, they will shape a "new normal" radically different from the one we will be progressively leaving behind. Many of our beliefs and assumptions about what the world could or should look like will be shattered in the process.

However, broad and radical pronouncements (like "everything will change") and an all-or-nothing, black-and-white analysis should be deployed with great care. Of course, reality will be much more nuanced. By itself, the pandemic may not completely transform the world, but it is likely to accelerate many of the changes that were already taking place before it erupted, which will in turn set in motion other changes. The only certainty: the changes won't be linear and sharp discontinuities will prevail. *COVID-19: The Great Reset* is an attempt to identify and shed light on the changes ahead, and to make a modest contribution in terms of delineating what their more desirable and sustainable form might resemble.

Let's begin by putting things into perspective: human beings have been around for about 200,000 years, the oldest bacteria for billions of years and viruses for at least 300 million years. This means that, most likely, pandemics have always existed and been an integral part of human history since people started travelling around; over the past 2000 years they have been the rule, not the exception. Because of their inherently disruptive nature, epidemics throughout history have proven to be a force for lasting and often radical change: sparking riots, causing population clashes and military defeats, but also triggering innovations, redrawing national boundaries and often paving the way for revolutions. Outbreaks forced empires to change course – like the Byzantine Empire when struck by the Plague of Justinian in 541-542 – and some even to disappear altogether – when Aztec and Inca emperors died with most of their subjects from European germs. Also, authoritative measures to attempt to contain them have always been part of the policy arsenal. Thus, there is nothing new about the confinement and lockdowns imposed upon much of the world to manage COVID-19. They have been common practice for centuries. The earliest forms of confinement came with the quarantines instituted in an effort to contain the Black Death that between 1347 and 1351 killed about a third of all Europeans. Coming from the word *quaranta* (which means

“forty” in Italian), the idea of confining people for 40 days originated without the authorities really understanding what they wanted to contain, but the measures were one of the first forms of “institutionalized public health” that helped legitimatize the “accretion of power” by the modern state. [1] The period of 40 days has no medical foundation; it was chosen for symbolic and religious reasons: both the Old and New Testaments often refer to the number 40 in the context of purification – in particular the 40 days of Lent and the 40 days of flood in Genesis.

The spread of infectious diseases has a unique ability to fuel fear, anxiety and mass hysteria. In so doing, as we have seen, it also challenges our social cohesion and collective capacity to manage a crisis. Epidemics are by nature divisive and traumatizing. What we are fighting against is invisible; our family, friends and neighbours may all become sources of infection; those everyday rituals that we cherish, like meeting a friend in a public place, may become a vehicle for transmission; and the authorities that try to keep us safe by enforcing confinement measures are often perceived as agents of oppression. Throughout history, the important and recurring pattern has been to search for scapegoats and place the blame firmly on the outsider. In medieval Europe, the Jews were almost always among the victims of the most notorious pogroms provoked by the plague. One tragic example illustrates this point: in 1349, two years after the Black Death had started to rove across the continent, in Strasbourg on Valentine’s day, Jews, who’d been accused of spreading the plague by polluting the wells of the city, were asked to convert. About 1,000 refused and were burned alive. During that same year, Jewish communities in other European cities were wiped out, forcing them to massively migrate to the eastern part of Europe (in Poland and Russia), permanently altering the demography of the continent in the process. What is true for European anti-Semitism also applies to the rise of the absolutist state, the gradual retreat of the church and many other historical events that can be attributed in no small measure to pandemics. The changes were so diverse and widespread that it led to “the end of an age of submission”, bringing feudalism and serfdom to an end and ushering in the era of Enlightenment. Put simply: “The Black Death may have been the unrecognized beginning of modern man.” [2] If such profound social, political and economic changes could be provoked by the plague in the medieval world, could the COVID-19 pandemic mark the

onset of a similar turning point with long-lasting and dramatic consequences for our world today? Unlike certain past epidemics, COVID-19 doesn’t pose a new existential threat. It will not result in unforeseen mass famines or major military defeats and regime changes. Whole populations will neither be exterminated nor displaced as a result of the pandemic. However, this does not equate to a reassuring analysis. In reality, the pandemic is dramatically exacerbating pre-existing dangers that we’ve failed to confront adequately for too long. It will also accelerate disturbing trends that have been building up over a prolonged period of time.

To begin elaborating a meaningful response, we need a conceptual framework (or a simple mental map) to help us reflect on what’s coming and to guide us in making sense of it. Insights offered by history can be particularly helpful. This is why we so often search for a reassuring “mental anchor” that can serve as a benchmark when we are forced to ask ourselves tough questions about what will change and to what extent. In doing so, we look for precedents, with questions such as: Is the pandemic like the Spanish flu of 1918 (estimated to have killed more than 50 million people worldwide in three successive waves)? Could it look like the Great Depression that started in 1929? Is there any resemblance with the psychological shock inflicted by 9/11? Are there similarities with what happened with SARS in 2003 and H1N1 in 2009 (albeit on a different scale)? Could it be like the great financial crisis of 2008, but much bigger? The correct, albeit unwelcome, answer to all of these is: no! None fits the reach and pattern of the human suffering and economic destruction caused by the current pandemic. The economic fallout in particular bears no resemblance to any crisis in modern history. As pointed out by many heads of state and government in the midst of the pandemic, we are at war, but with an enemy that is invisible, and of course metaphorically: “If what we are going through can indeed be called a war, it is certainly not a typical one. After all, today’s enemy is shared by all of humankind”. [3]

That said, World War II could even so be one of the most relevant mental anchors in the effort to assess what’s coming next. World War II was the quintessential transformational war, triggering not only fundamental changes to the global order and the global economy, but also entailing radical shifts in social attitudes and beliefs that eventually paved the way for radically new policies and social contract provisions (like women

joining the workforce before becoming voters). There are obviously fundamental dissimilarities between a pandemic and a war (that we will consider in some detail in the following pages), but the magnitude of their transformative power is comparable. Both have the potential to be a transformative crisis of previously unimaginable proportions. However, we must beware of superficial analogies. Even in the worst-case horrendous scenario, COVID-19 will kill far fewer people than the Great Plagues, including the Black Deaths, or World War II did. Furthermore, today's economy bears no resemblance to those of past centuries that relied on manual labour and farmland or heavy industry. In today's highly interconnected and interdependent world, however, the impact of the pandemic will go well beyond the (already staggering) statistics relating "simply" to death, unemployment and bankruptcies.

COVID-19: The Great Reset is written and published in the midst of a crisis whose consequences will unfold over many years to come. Little wonder that we all feel somewhat bewildered – a sentiment so very understandable when an extreme shock strikes, bringing with it the disquieting certainty that its outcomes will be both unexpected and unusual. This strangeness is well captured by Albert Camus in his 1947 novel *The Plague* : "Yet all these changes were, in one sense, so fantastic and had been made so precipitately that it wasn't easy to regard them as likely to have any permanence." [4] Now that the unthinkable is upon us, what will happen next, in the immediate aftermath of the pandemic and then in the foreseeable future?

It is of course much too early to tell with any reasonable accuracy what COVID-19 will entail in terms of "momentous" changes, but the objective of this book is to offer some coherent and conceptually sound guidelines about what might lie ahead, and to do so in the most comprehensive manner possible. Our aim is to help our readers grasp the multifaceted dimension of the changes that are coming. At the very least, as we will argue, the pandemic will accelerate systemic changes that were already apparent prior to the crisis: the partial retreat from globalization, the growing decoupling between the US and China, the acceleration of automation, concerns about heightened surveillance, the growing appeal of well-being policies, rising nationalism and the subsequent fear of immigration, the growing power of tech, the necessity for firms to have an even stronger online presence,

among many others. But it could go beyond a mere acceleration by altering things that previously seemed unchangeable. It might thus provoke changes that would have seemed inconceivable before the pandemic struck, such as new forms of monetary policy like helicopter money (already a given), the reconsideration/recalibration of some of our social priorities and an augmented search for the common good as a policy objective, the notion of fairness acquiring political potency, radical welfare and taxation measures, and drastic geopolitical realignments.

The broader point is this: the possibilities for change and the resulting new order are now unlimited and only bound by our imagination, for better or for worse. Societies could be poised to become either more egalitarian or more authoritarian, or geared towards more solidarity or more individualism, favouring the interests of the few or the many; economies, when they recover, could take the path of more inclusivity and be more attuned to the needs of our global commons, or they could return to functioning as they did before. You get the point: we should take advantage of this unprecedented opportunity to reimagine our world, in a bid to make it a better and more resilient one as it emerges on the other side of this crisis.

We are conscious that attempting to cover the scope and breadth of all the issues addressed in this book is an enormous task that may not even be possible. The subject and all the uncertainties attached to it are gargantuan and could have filled the pages of a publication five times the size of this one. But our objective was to write a relatively concise and simple book to help the reader understand what’s coming in a multitude of domains. To interrupt the flow of the text as little as possible, the reference information appears at the end of the book and direct attributions have been minimized. Published in the midst of the crisis and when further waves of infection are expected, it will continuously evolve to consider the changing nature of the subject matter. Future editions will be updated in view of new findings, the latest research, revised policy measures and ongoing feedback from readers.

This volume is a hybrid between a light academic book and an essay. It includes theory and practical examples but is chiefly explanatory, containing many conjectures and ideas about what the post-pandemic world might, and perhaps should, look like. It offers neither simple generalizations

nor recommendations for a world moving to a new normal, but we trust it will be useful.

This book is structured around three main chapters, offering a panoramic overview of the future landscape. The first assesses what the impact of the pandemic will be on five key macro categories: the economic, societal, geopolitical, environmental and technological factors. The second considers the effects in micro terms, on specific industries and companies. The third hypothesizes about the nature of the possible consequences at the individual level.

1. MACRO RESET

The first leg of our journey progresses across five macro categories that offer a comprehensive analytical framework to understand what's going on in today's world and how this might evolve. For ease of reading, we travel thematically through each separately. In reality, they are interdependent, which is where we begin: our brains make us think in linear terms, but the world that surrounds us is non-linear, that is to say: complex, adaptive, fast-paced and ambiguous.

1.1. Conceptual framework – Three defining characteristics of today's world

The macro reset will occur in the context of the three prevailing secular forces that shape our world today: interdependence, velocity and complexity. This trio exerts its force, to a lesser or greater degree, on us all, whoever or wherever we may be.

1.1.1. Interdependence

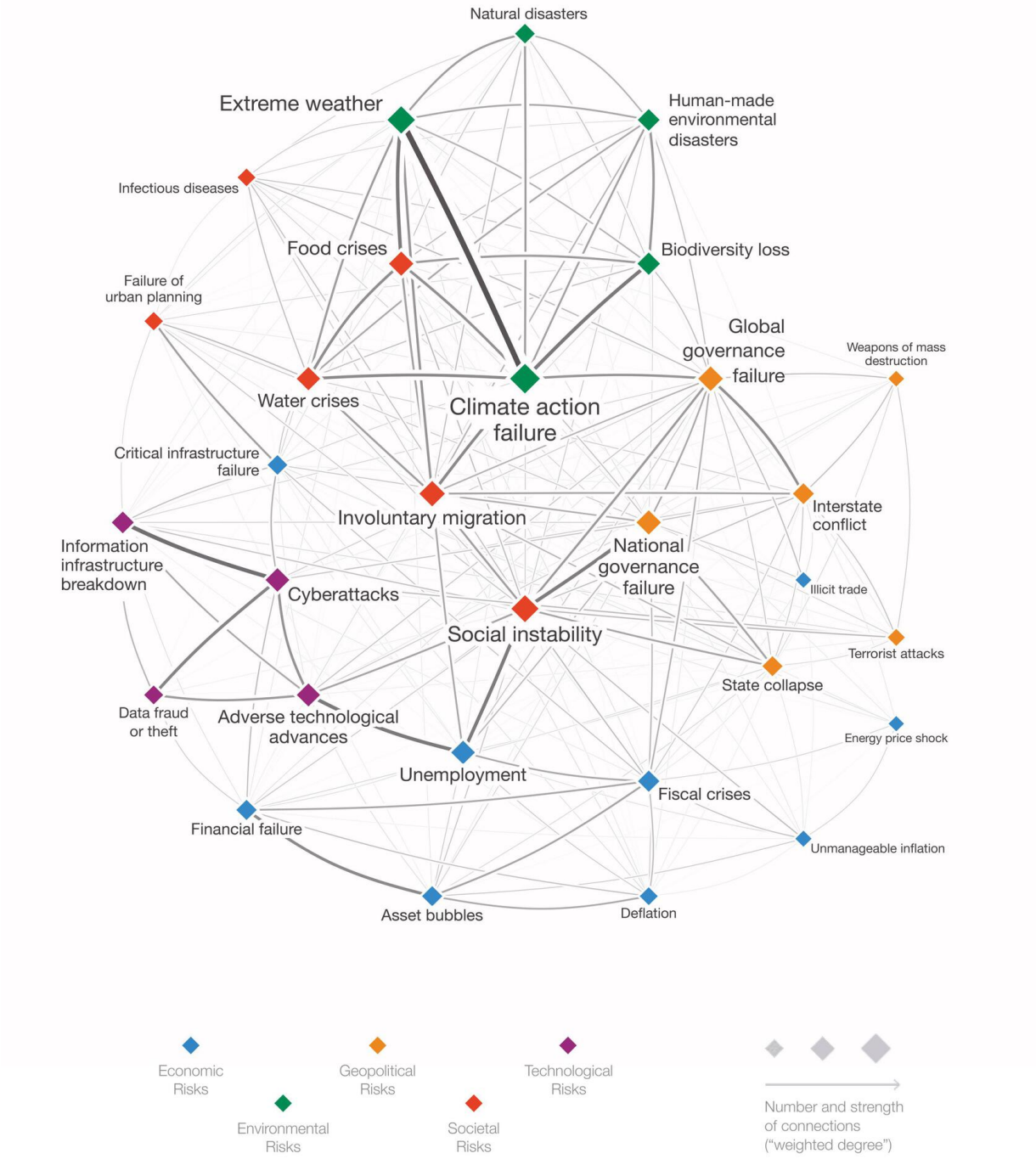
If just one word had to distil the essence of the 21st century, it would have to be "interdependence". A by-product of globalization and technological progress, it can essentially be defined as the dynamic of reciprocal dependence among the elements that compose a system. The fact that globalization and technological progress have advanced so much over the past few decades has prompted some pundits to declare that the world is now "hyperconnected" – a variant of interdependence on steroids! What does this interdependence mean in practice? Simply that the world is "concatenated": linked together. In the early 2010s, Kishore Mahbubani, an academic and former diplomat from Singapore, captured this reality with a boat metaphor: "The 7 billion people who inhabit planet earth no longer live in more than one hundred separate boats [countries]. Instead, they all live in 193 separate cabins on the same boat." In his own words, this is one of the greatest transformations ever. In 2020, he pursued this metaphor further in the context of the pandemic by writing: "If we 7.5 billion people are now stuck together on a virus-infected cruise ship, does it make sense to clean and scrub only our personal cabins while ignoring the corridors and air wells outside, through which the virus travels? The answer is clearly: no. Yet, this is what we have been doing. … Since we are now in the same boat, humanity has to take care of the global boat as a whole". [5]

An interdependent world is a world of deep systemic connectivity, in which all risks affect each other through a web of complex interactions. In such conditions, the assertion that an economic risk will be confined to the economic sphere or that an environmental risk won't have repercussions on risks of a different nature (economic, geopolitical and so on) is no longer

tenable. We can all think of economic risks turning into political ones (like a sharp rise in unemployment leading to pockets of social unrest), or of technological risks mutating into societal ones (such as the issue of tracing the pandemic on mobile phones provoking a societal backlash). When considered in isolation, individual risks – whether economic, geopolitical, societal or environmental in character – give the false impression that they can be contained or mitigated; in real life, systemic connectivity shows this to be an artificial construct. In an interdependent world, risks amplify each other and, in so doing, have cascading effects. That is why isolation or containment cannot rhyme with interdependence and interconnectedness.

The chart below, extracted from the World Economic Forum *Global Risks Report 2020* , [6] makes this plain. It illustrates the interconnected nature of the risks we collectively face; each individual risk always conflates with those from its own macro category but also with the individual risks from the other macro categories (economic risks appear in blue, geopolitical in orange, societal in red, environmental in green and technological in purple). In this manner, each individual risk harbours the potential to create ricochet effects by provoking other risks. As the chart makes clear, an “infectious diseases” risk is bound to have a direct effect on “global governance failure”, “social instability”, “unemployment”, “fiscal crises” and “involuntary migration” (to name just a few). Each of these in turn will influence other individual risks, meaning that the individual risk from which the chain of effects started (in this particular case “infectious diseases”) ends up amplifying many other risks not only in its own macro category (societal risks), but also in the other four macro categories. This displays the phenomenon of contagion by systemic connectivity. In the following sub-chapters, we explore what the pandemic risk might entail from an economic, societal, geopolitical, environmental and technological perspective.

Figure 1



Source: World Economic Forum, *The Global Risks Report 2020*, Figure IV: The Global Risks Interconnections Map 2020, World Economic Forum Global Risks Perception Survey 2019-2020

Interdependence has an important conceptual effect: it invalidates “silo thinking”. Since conflation and systemic connectivity are what ultimately matter, addressing a problem or assessing an issue or a risk in isolation from the others is senseless and futile. In the past, this “silo thinking” partly explains why so many economists failed to predict the credit crisis (in 2008) and why so few political scientists saw the Arab Spring coming (in 2011). Today, the problem is the same with the pandemic. Epidemiologists, public-health specialists, economists, social scientists and all the other scientists and specialists who are in the business of helping decision-makers understand what lies ahead find it difficult (and sometimes impossible) to cross the boundaries of their own discipline. That is why addressing complex trade-offs, such as containing the progression of the pandemic versus reopening the economy, is so fiendishly difficult. Understandably, most experts end up being segregated into increasingly narrow fields. Therefore, they lack the enlarged view necessary to connect the many different dots that provide the more complete picture the decision-makers desperately need.

1.1.2. Velocity

The above firmly points the finger at technological progress and globalization as the primary “culprits” responsible for greater interdependence. In addition, they have created such a culture of immediacy that it’s not an exaggeration to claim that, in today’s world, everything moves much faster than before. If just one thing were to be singled out to explain this astonishing increase in velocity, it would undoubtedly be the internet. More than half (52%) of the world’s population is now online, compared to less than 8% 20 years ago; in 2019, more than 1.5 billion smartphones – a symbol and vector of velocity that allows us to be reached anywhere and at any time – were sold around the world. The internet of things (IoT) now connects 22 billion devices in real time, ranging from cars to hospital beds, electric grids and water station pumps, to kitchen ovens and agricultural irrigation systems. This number is expected to reach 50 billion or more in 2030. Other explanations for the rise in velocity point to the “scarcity” element: as societies get richer, time becomes more valuable and is therefore perceived as evermore scarce. This may explain studies

showing that people in wealthy cities always walk faster than in poor cities – they have no time to lose! No matter what the causal explanation is, the endgame of all this is clear: as consumers and producers, spouses and parents, leaders and followers, we are all being subjected to constant, albeit discontinuous, rapid change.

We can see velocity everywhere; whether it's a crisis, social discontent, technological developments and adoption, geopolitical upheaval, the financial markets and, of course, the manifestation of infectious diseases – everything now runs on fast-forward. As a result, we operate in a real-time society, with the nagging feeling that the pace of life is ever increasing. This new culture of immediacy, obsessed with speed, is apparent in all aspects of our lives, from "just-in-time" supply chains to "high-frequency" trading, from speed dating to fast food. It is so pervasive that some pundits call this new phenomenon the "dictatorship of urgency". It can indeed take extreme forms. Research performed by scientists at Microsoft shows, for example, that being slower by no more than 250 milliseconds (a quarter of a second) is enough for a website to lose hits to its "faster" competitors! The all-embracing result is that the shelf life of a policy, a product or an idea, and the life cycle of a decision-maker or a project, are contracting sharply and often unpredictably.

Nothing illustrated this more vividly than the breakneck speed with which COVID-19 progressed in March 2020. In less than a month, from the maelstrom provoked by the staggering speed at which the pandemic engulfed most of the world, a whole new era seemed to emerge. The beginning of the outbreak was thought to have taken place in China sometime earlier, but the exponential global progression of the pandemic took many decision-makers and a majority of the public by surprise because we generally find it cognitively hard to grasp the significance of exponential growth. Consider the following in terms of "days for doubling": if a pandemic grows at 30% a day (as COVID-19 did around mid-March for some of the worst affected countries), registered cases (or deaths) will double in a little more than two days. If it grows at 20%, it will take between four and five days; and if it grows at 10%, it will take just more than a week. Expressed differently: at the global level, it took COVID-19 three months to reach 100,000 cases, 12 days to double to 200,000 cases, four days to reach 300,000 cases, and then 400,000 and 500,000 cases were

reached in two days each. These numbers make our heads spin – extreme velocity in action! Exponential growth is so baffling to our cognitive functions that we often deal with it by developing exponential “myopia”, [7] thinking of it as nothing more than “very fast”. In a famous experiment conducted in 1975, two psychologists found that when we have to predict an exponential process, we often underestimate it by factor of 10. [8] Understanding this growth dynamic and the power of exponentials clarifies why velocity is such an issue and why the speed of intervention to curb the rate of growth is so crucial. Ernest Hemingway understood this. In his novel *The Sun Also Rises* , two characters have the following conversation: “How did you go bankrupt?" Bill asked. “Two ways,” Mike said. “Gradually, then suddenly.” The same tends to happen for big systemic shifts and disruption in general: things tend to change gradually at first and then all at once. Expect the same for the macro reset.

Not only does velocity take extreme forms, but it can also engender perverse effects. “Impatience”, for example, is one, the effects of which can be seen similarly in the behaviour of participants in the financial markets (with new research suggesting that momentum trading, based on velocity, leads stock prices to deviate persistently from their fundamental value or “correct” price) and in that of voters in an election. The latter will have a critical relevance in the post-pandemic era. Governments, by necessity, take a while to make decisions and implement them: they are obliged to consider many different constituency groups and competing interests, balance domestic concerns with external considerations and secure legislative approval, before putting into motion the bureaucratic machinery to action all these decisions. By contrast, voters expect almost immediate policy results and improvements, which, when they don’t arrive fast enough, lead to almost instantaneous disappointment. This problem of asynchronicity between two different groups (policy-makers and the public) whose time horizon differs so markedly will be acute and very difficult to manage in the context of the pandemic. The velocity of the shock and (the depth) of the pain it has inflicted will not and cannot be matched with equal velocity on the policy side.

Velocity also led many observers to establish a false equivalence by comparing seasonal flu with COVID-19. This comparison, made again and again in the early months of the pandemic, was misleading and

conceptually erroneous. Let's take the example of the US to hammer out the point and better grasp the role played by velocity in all of this. According to the Centers for Disease Control (CDC), between 39 and 56 million Americans contracted the flu during the 2019-2020 winter season, with between 24,000 and 62,000 deaths. [9] By contrast, and according to Johns Hopkins University, on 24 June 2020, more than 2.3 million were diagnosed with COVID-19 and almost 121,000 people had died. [10] But the comparison stops there; it is meaningless for two reasons: 1) the flu numbers correspond to the estimated total flu burden while the COVID-19 figures are confirmed cases; and 2) the seasonal flu cascades in "gentle" waves over a period of (up to six) months in an even pattern while the COVID-19 virus spreads like a tsunami in a hotspot pattern (in a handful of cities and regions where it concentrates) and, in doing so, can overwhelm and jam healthcare capacities, monopolizing hospitals to the detriment of non-COVID-19 patients. The second reason – the velocity with which the COVID-19 pandemic surges and the suddenness with which clusters emerge – makes all the difference and renders the comparison with the flu irrelevant.

Velocity lies at the root of the first and second reasons: in a vast majority of countries, the speed with which the epidemic progressed made it impossible to have sufficient testing capabilities, and it then overwhelmed many national health systems equipped to deal with a predictable, recurrent and rather slow seasonal flu but not with a "superfast" pandemic.

Another important and far-reaching consequence of velocity is that decision-makers have more information and more analysis than ever before, but less time to decide. For politicians and business leaders, the need to gain a strategic perspective collides ever-more frequently with the day-to-day pressures of immediate decisions, particularly obvious in the context of the pandemic, and reinforced by complexity, as we see in the next section.

1.1.3. Complexity

In its simplest possible form, complexity can be defined as what we don't understand or find difficult to understand. As for a complex system, the psychologist Herbert Simon defined it as "one made up of a large number of parts that interact in a nonsimple way". [11] Complex systems are often

characterized by an absence of visible causal links between their elements, which makes them virtually impossible to predict. Deep in ourselves, we sense that the more complex a system is, the greater the likelihood that something might go wrong and that an accident or an aberration might occur and propagate.

Complexity can roughly be measured by three factors: “1) the amount of information content or the number of components in a system; 2) the interconnectedness – defined as the dynamic of reciprocal responsiveness – between these pieces of information or components; and 3) the effect of non-linearity (non-linear elements are often called ‘tipping points’). Non-linearity is a key feature of complexity because it means that a change in just one component of a system can lead to a surprising and disproportionate effect elsewhere.” [12] It is for this reason that pandemic models so often yield wide ranges of outcomes: a difference of assumption regarding just one component of the model can dramatically affect the end result. When one hears about “black swans”, “known unknowns” or “butterfly effects”, non-linearity is at work; it thus comes as no surprise that we often associate world complexity with “surprises”, “turbulence” and “uncertainty”. For example, in 2008, how many “experts” anticipated that mortgage-backed securities originating in the United States would cripple banks around the world and ultimately bring the global financial system to the verge of collapse? And in the early weeks of 2020, how many decision-makers foresaw the extent to which a possible pandemic would wreak havoc on some of the most sophisticated health systems in the world and would inflict such major damage to the global economy?

A pandemic is a complex adaptive system comprising many different components or pieces of information (as diverse as biology or psychology), whose behaviour is influenced by such variables as the role of companies, economic policies, government intervention, healthcare politics or national governance. For this reason, it can and should be viewed as a “living network” that adapts to changing conditions – not something set in stone, but a system of interactions that is both complex and adaptive. It is complex because it represents a “cat’s cradle” of interdependence and interconnections from which it stems, and adaptive in the sense that its “behaviour” is driven by interactions between nodes (the organizations, the people – us!) that can become confused and “unruly” in times of stress

(Will we adjust to the norms of confinement? Will a majority of us – or not – abide by the rules? etc.). The management (the containment, in this particular case) of a complex adaptive system requires continuous real-time but ever-changing collaboration between a vast array of disciplines, and between different fields within these disciplines. Just to provide a broad and oversimplified example, the containment of the coronavirus pandemic will necessitate a global surveillance network capable of identifying new outbreaks as soon as they arise, laboratories in multiple locations around the world that can rapidly analyse new viral strains and develop effective treatments, large IT infrastructures so that communities can prepare and react effectively, appropriate and coordinated policy mechanisms to efficiently implement the decisions once they are made, and so on. The important point is this: each separate activity by itself is necessary to address the pandemic but is insufficient if not considered in conjunction with the others. It follows that this complex adaptive system is greater than the sum of its parts. Its effectiveness depends on how well it works as a whole, and it is only as strong as its weakest link.

Many pundits have mischaracterized the COVID-19 pandemic as a black-swan event simply because it exhibits all the characteristics of a complex adaptive system. But in reality it is a white-swan event, something explicitly presented as such by Nassim Taleb in *The Black Swan* published in 2007: something that would eventually take place with a great deal of certainty. [13] Indeed! For years, international organizations like the World Health Organization (WHO), institutions like the World Economic Forum and the Coalition for Epidemic Preparedness Innovations (CEPI – launched at the Annual Meeting 2017 in Davos), and individuals like Bill Gates have been warning us about the next pandemic risk, even specifying that it: 1) would emerge in a highly populated place where economic development forces people and wildlife together; 2) would spread quickly and silently by exploiting networks of human travel and trade; and 3) would reach multiple countries by thwarting containment. As we will see in the following chapters, properly characterizing the pandemic and understanding its characteristics are vital because they were what underpinned the differences in terms of preparedness. Many Asian countries reacted quickly because they were prepared logistically and organizationally (due to SARS) and thus were able to lessen the impact of the pandemic. By contrast, many Western

countries were unprepared and were ravaged by the pandemic – it is no coincidence that they are the ones in which the false notion of a black-swan event circulated the most. However, we can confidently assert that the pandemic (a high probability, high consequences white-swan event) will provoke many black-swan events through second-, third-, fourth- and more-order effects. It is hard, if not impossible, to foresee what might happen at the end of the chain when multiple-order effects and their ensuing cascades of consequences have occurred after unemployment spikes, companies go bust and some countries are teetering on the verge of collapse. None of these are unpredictable per se, but it is their propensity to create perfect storms when they conflate with other risks that will take us by surprise. To sum up, the pandemic is not a black-swan event, but some of its consequences will be.

The fundamental point here is this: complexity creates limits to our knowledge and understanding of things; it might thus be that today's increasing complexity literally overwhelms the capabilities of politicians in particular – and decision-makers in general – to make well informed decisions. A theoretical physicist turned head of state (President Armen Sarkissian of Armenia) made this point when he coined the expression "quantum politics", outlining how the classical world of post-Newtonian physics – linear, predictable and to some extent even deterministic – had given way to the quantum world: highly interconnected and uncertain, incredibly complex and also changing depending on the position of the observer. This expression recalls quantum physics, which explains how everything works and is "the best description we have of the nature of the particles that make up matter and the forces with which they interact." [14] The COVID-19 pandemic has laid bare this quantum world.

1.2. Economic reset

1.2.1. The economics of COVID-19

Our contemporary economy differs radically from that of previous centuries. Compared to the past, it is infinitely more interconnected, intricate and complex. It is characterized by a world population that has grown exponentially, by airplanes that connect any point anywhere to another somewhere else in just a few hours, resulting in more than a billion of us crossing a border each year, by humans encroaching on nature and the habitats of wildlife, by ubiquitous, sprawling megacities that are home to millions of people living cheek by jowl (often without adequate sanitation and medical care). Measured against the landscape of just a few decades ago, let alone centuries ago, today's economy is simply unrecognizable. Notwithstanding, some of the economic lessons to be gleaned from historical pandemics are still valid today to help grasp what lies ahead. The global economic catastrophe that we are now confronting is the deepest recorded since 1945; in terms of its sheer speed, it is unparalleled in history. Although it does not rival the calamities and the absolute economic desperation that societies endured in the past, there are some telling characteristics that are hauntingly similar. When in 1665, over the space of 18 months, the last bubonic plague had eradicated a quarter of London's population, Daniel Defoe wrote in *A Journal of the Plague Year* [15] (published in 1722): "All trades being stopped, employment ceased: the labour, and by that the bread, of the poor were cut off; and at first indeed the cries of the poor were most lamentable to hear … thousands of them having stayed in London till nothing but desperation sent them away, death overtook them on the road, and they served for no better than the messengers of death." Defoe's book is full of anecdotes that resonate with today's situation, telling us how the rich were escaping to the country, "taking death with them", and observing how the poor were much more exposed to the outbreak, or describing how "quacks and mountebanks" sold false cures. [16]

What the history of previous epidemics shows again and again is how pandemics exploit trade routes and the clash that exists between the

interests of public health and those of economics (something that constitutes an economic "aberration" as we will see in just a few pages). As the historian Simon Schama describes:

> In the midst of calamity, economics was always at loggerheads with the interests of public health. Even though, until there was an understanding of germ-borne diseases, the plague was mostly attributed to 'foul air' and noxious vapours said to arise from stagnant or polluted marshes, there was nonetheless a sense that the very commercial arteries that had generated prosperity were now transformed into vectors of poison. But when quarantines were proposed or imposed (…), those who stood to lose most, merchants and in some places artisans and workers, from the stoppage of markets, fairs and trade, put up stiff resistance. Must the economy die so that it could be resurrected in robust good health? Yes, said the guardians of public health, who became part of urban life in Europe from the 15th century onwards. [17]

History shows that epidemics have been the great resetter of countries' economy and social fabric. Why should it be different with COVID-19? A seminal paper on the long-term economic consequences of major pandemics throughout history shows that significant macroeconomic after-effects can persist for as long as 40 years, substantially depressing real rates of return. [18] This is in contrast to wars that have the opposite effect: they destroy capital while pandemics do not – wars trigger higher real interest rates, implying greater economic activity, while pandemics trigger lower real rates, implying sluggish economic activity. In addition, consumers tend to react to the shock by increasing their savings, either because of new precautionary concerns, or simply to replace the wealth lost during the epidemic. On the labour side, there will be gains at the expense of capital since real wages tend to rise after pandemics. As far back as the Black Death that ravaged Europe from 1347 to 1351 (and that suppressed 40% of Europe's population in just a few years), workers discovered for the first time in their life that the power to change things was in their hands. Barely a year after the epidemic had subsided, textile workers in Saint-Omer (a small city in northern France) demanded and received successive wage rises. Two years later, many workers' guilds negotiated shorter hours and higher pay, sometimes as much as a third more than their pre-plague level.

Similar but less extreme examples of other pandemics point to the same conclusion: labour gains in power to the detriment of capital. Nowadays, this phenomenon may be exacerbated by the ageing of much of the population around the world (Africa and India are notable exceptions), but such a scenario today risks being radically altered by the rise of automation, an issue to which we will return in section 1.6. Unlike previous pandemics, it is far from certain that the COVID-19 crisis will tip the balance in favour of labour and against capital. For political and social reasons, it could, but technology changes the mix.

1.2.1.1. Uncertainty

The high degree of ongoing uncertainty surrounding COVID-19 makes it incredibly difficult to precisely assess the risk it poses. As with all new risks that are agents of fear, this creates a lot of social anxiety that impacts economic behaviour. An overwhelming consensus has emerged within the global scientific community that Jin Qi (one of China's leading scientists) had it right when he said in April 2020: "This is very likely to be an epidemic that co-exists with humans for a long time, becomes seasonal and is sustained within human bodies." [19]

Ever since the pandemic started, we have been bombarded daily with a relentless stream of data but, in June 2020, roughly half a year after the beginning of the outbreak, our knowledge is still very patchy and as a result we still don't really know just how dangerous COVID-19 is. Despite the deluge of scientific papers published on the coronavirus, its infection fatality rate (i.e. the number of COVID-19 cases, measured or not, that result in death) remains a matter of debate (around 0.4%-0.5% and possibly up to 1%). The ratio of undetected to confirmed cases, the rate of transmissions from asymptomatic individuals, the seasonality effect, the length of the incubation period, the national infection rates – progress in terms of understanding each of these is being made, but they and many other elements remain "known unknowns" to a large extent. For policy-makers and public officials, this prevailing level of uncertainty makes it very difficult to devise the right public-health strategy and the concomitant economic strategy.

This should not come as a surprise. Anne Rimoin, a professor of epidemiology at UCLA, confesses: “This is a novel virus, new to humanity, and nobody knows what will happen.” [20] Such circumstances require a good dose of humility because, in the words of Peter Piot (one of the world’s leading virologists): “The more we learn about the coronavirus, the more questions arise.” [21] COVID-19 is a master of disguise that manifests itself with protean symptoms that are confounding the medical community. It is first and foremost a respiratory disease but, for a small but sizeable number of patients, symptoms range from cardiac inflammation and digestive problems to kidney infection, blood clots and meningitis. In addition, many people who recover are left with chronic kidney and heart problems, as well as lasting neurological effects.

In the face of uncertainty, it makes sense to resort to scenarios to get a better sense of what lies ahead. With the pandemic, it is well understood that a wide range of potential outcomes is possible, subject to unforeseen events and random occurrences, but three plausible scenarios stand out. Each may help to delineate the contours of what the next two years could be like.

These three plausible scenarios [22] are all based on the core assumption that the pandemic could go on affecting us until 2022; thus they can help us to reflect upon what lies ahead. In the first scenario, the initial wave that began in March 2020 is followed by a series of smaller waves that occur through mid-2020 and then over a one- to two-year period, gradually diminishing in 2021, like “peaks and valleys”. The occurrence and amplitude of these peaks and valleys vary geographically and depend on the specific mitigation measures that are implemented. In the second scenario, the first wave is followed by a larger wave that takes place in the third or fourth quarter of 2020, and one or several smaller subsequent waves in 2021 (like during the 1918-1919 Spanish flu pandemic). This scenario requires the reimplementation of mitigation measures around the fourth quarter of 2020 to contain the spread of infection and to prevent healthcare systems from being overwhelmed. In the third scenario, not seen with past influenza pandemics but possible for COVID-19, a “slow burn” of ongoing transmission and case occurrence follow the first wave of 2020, but without a clear wave pattern, just with smaller ups and downs. Like for the other scenarios, this pattern varies geographically and is to a certain extent determined by the nature of the earlier mitigation measures put into place in

each particular country or region. Cases of infection and deaths continue to occur, but do not require the reinstitution of mitigation measures.

A large number of scientists seem to agree with the framework offered by these three scenarios. Whichever of the three the pandemic follows, they all mean, as the authors explicitly state, that policy-makers must be prepared to deal with “at least another 18 to 24 months of significant COVID-19 activity, with hotspots popping up periodically in diverse geographic areas”. As we will argue next, a full-fledged economic recovery cannot take place until the virus is defeated or behind us.

1.2.1.2. The economic fallacy of sacrificing a few lives to save growth

Throughout the pandemic, there has been a perennial debate about “saving lives versus saving the economy” – lives versus livelihoods. This is a false trade-off. From an economic standpoint, the myth of having to choose between public health and a hit to GDP growth can easily be debunked. Leaving aside the (not insignificant) ethical issue of whether sacrificing some lives to save the economy is a social Darwinian proposition (or not), deciding not to save lives will not improve economic welfare. The reasons are twofold:

1. On the supply side, if prematurely loosening the various restrictions and the rules of social distancing result in an acceleration of infection (which almost all scientists believe it would), more employees and workers would become infected and more businesses would just stop functioning. After the onset of the pandemic in 2020, the validity of this argument was proven on several occasions. They ranged from factories that had to stop operating because too many workers had fallen ill (primarily the case for work environments that forced physical proximity between workers, like in meat-processing facilities) to naval ships stranded because too many crew members had been infected, thus preventing the vessel from operating normally. An additional factor that negatively affects the supply of labour is that, around the world, there were repeated instances of workers refusing to return to work for fear of becoming infected. In many

large companies, employees who felt vulnerable to the disease generated a wave of activism, including work stoppages.

2. On the demand side, the argument boils down to the most basic, and yet fundamental, determinant of economic activity: sentiments. Because consumer sentiments are what really drive economies, a return to any kind of "normal" will only happen when and not before confidence returns. Individuals' perceptions of safety drive consumer and business decisions, which means that sustained economic improvement is contingent upon two things: the confidence that the pandemic is behind us – without which people will not consume and invest – and the proof that the virus is defeated globally – without which people will not be able to feel safe first locally and subsequently further afield.

The logical conclusion of these two points is this: governments must do whatever it takes and spend whatever it costs in the interests of our health and our collective wealth for the economy to recover sustainably. As both an economist and public-health specialist put it: "Only saving lives will save livelihoods", [23] making it clear that only policy measures that place people's health at their core will enable an economic recovery, adding: "If governments fail to save lives, people afraid of the virus will not resume shopping, traveling, or dining out. This will hinder economic recovery, lockdown or no lockdown."

Only future data and subsequent analysis will provide incontrovertible proof that the trade-off between health and the economy does not exist. That said, some US data collected in the early phases of reopening in some states showed a drop in spending and working even before the lockdown. [24] Once people began to worry about the pandemic, they effectively started to "shut down" the economy, even before the government had officially asked them to do so. A similar phenomenon took place after some American states decided to (partially) reopen: consumption remained subdued. This proves the point that economic life cannot be activated by fiat, but it also illustrates the predicament that most decision-makers experienced when having to decide whether to reopen or not. The economic and societal damage of a lockdown is glaringly obvious to everybody, while success in terms of containing the outbreak and preventing deaths – a prerequisite for a successful opening – is more or less invisible. There is no

public celebration when a coronavirus case or death doesn't happen, leading to the public-health policy paradox that "when you do it right, nothing happens". This is why delaying the lockdown or opening too early was always such a strong policy temptation. However, several studies have since shown how such a temptation carried considerable risk. Two, in particular, coming to similar conclusions with different methodologies, modelled what could have happened without lockdown. According to one conducted by Imperial College London, wide-scale rigorous lockdowns imposed in March 2020 averted 3.1 million deaths in 11 European countries (including the UK, Spain, Italy, France and Germany). [25] The other, led by the University of California, Berkeley, concluded that 530 million total infections, corresponding to 62 million confirmed cases, were averted in six countries (China, South Korea, Italy, Iran, France and the US) by the confinement measures that each had put into place. [26] The simple conclusion: in countries afflicted with registered COVID-19 cases that, at the peak, were roughly doubling every two days, governments had no reasonable alternative but to impose rigorous lockdowns. Pretending otherwise is to ignore the power of exponential growth and the considerable damage it can inflict through a pandemic. Because of the extreme velocity of the COVID-19 progression, the timing and forcefulness of the intervention were of the essence.

1.2.2. Growth and employment

Before March 2020, never had the world economy come to such an abrupt and brutal stop; never before had anyone alive experienced an economic collapse so dramatic and drastic both in its nature and pace.

The shock that the pandemic has inflicted on the global economy has been more severe and has occurred much faster than anything else in recorded economic history. Even in the Great Depression in the early 1930s and the Global Financial Crisis in 2008, it took several years for GDP to contract by 10% or more and for unemployment to soar above 10%. With the pandemic, disaster-like macroeconomic outcomes – in particular exploding unemployment levels and plunging GDP growth – happened in March 2020 over the course of just three weeks. COVID-19 inflicted a crisis of both supply and demand that led to the deepest dive on record for the global

economy for over 100 years. As the economist Kenneth Rogoff warned: “Everything depends on how long it lasts, but if this goes on for a long time, it’s certainly going to be the mother of all financial crises.” [27]

The length and acuteness of the downturn, and its subsequent hit to growth and employment, depend on three things: 1) the duration and severity of the outbreak; 2) each country’s success at containing the pandemic and mitigating its effects; and 3) the cohesiveness of each society in dealing with the post-confinement measures and the various opening strategies. At the time of writing (end of June 2020), all three aspects remain unknown. Renewed waves of outbreaks (big and small) are occurring, countries’ success at containing the outbreak can either last or suddenly be reversed by new waves, and societies’ cohesion can be challenged by renewed economic and social pain.

1.2.2.1. Economic growth

At different moments between February and May 2020, in a bid to contain the pandemic, governments worldwide made the deliberate decision to shut down much of their respective economies. This unprecedented course of events has brought with it a fundamental shift in the way the world economy operates, marked by an abrupt and unsolicited return to a form of relative autarky, with every nation trying to move towards certain forms of self-sufficiency, and a reduction in national and global output. The impact of these decisions seemed all the more dramatic because they concerned first and foremost service industries, a sector traditionally more immune than other industries (like construction or manufacturing) to the cyclical swings of economic growth. Consequently, the service sector that represents by far the largest component of economic activity in any developed economy (about 70% of GDP and more than 80% of employment in the US) was hit the hardest by the pandemic. It also suffered from another distinctive characteristics: contrary to manufacturing or agriculture, lost revenues in services are gone forever. They cannot be deferred because service companies don’t hold inventories or stock raw materials.

Several months into the pandemic, it looks like even a semblance of a return to “business as usual” for most service companies is inconceivable as long as COVID-19 remains a threat to our health. This in turn suggests that

a full return to “normal” cannot be envisaged before a vaccine is available. When might that be? According to most experts, it is unlikely to be before the first quarter of 2021 at the earliest. In mid-June 2020, already more than 135 trials were under way, proceeding at a remarkable pace considering that in the past it could take up to 10 years to develop a vaccine (five in the case of Ebola), so the reason is not science, but production. Manufacturing billions of doses constitutes the real challenge that will require a massive expansion and diversion of existing capacity. The next hurdle is the political challenge of vaccinating enough people worldwide (we are collectively as strong as the weakest link) with a high enough compliance rate despite the rise of anti-vaxxers. During the intervening months, the economy will not operate at full capacity: a country-dependent phenomenon dubbed the 80% economy. Companies in sectors as varied as travel, hospitality, retail or sports and events will face the following triple whammy: 1) fewer customers (who will respond to uncertainty by becoming more risk-averse); 2) those who consume will spend less on average (because of precautionary savings); and 3) transaction costs will be higher (serving one customer will cost more because of physical-distancing and sanitation measures).

Taking into account the criticality of services for GDP growth (the richer the country, the greater the importance of services for growth), this new reality of a 80% economy begs the question of whether successive possible shutdowns of business activity in the service sector will have lasting effects on the broader economy through bankruptcies and losses of employment, which in turn begs the question of whether these possible lasting effects could be followed by a collapse in demand as people lose their income and their confidence in the future. Such a scenario will almost inevitably lead to a collapse in investment among business and a surge in precautionary saving among consumers, with fallout in the entire global economy through capital flight, the rapid and uncertain movement of large amounts of money out of a country, which tends to exacerbate economic crises.

According to the OECD, the immediate yearly impact of the economy having been “switched-off” could be a reduction in GDP in the G7 countries of between 20% and 30%. [28] But again, this estimate depends on the outbreak’s duration and severity in each country: the longer lockdowns last, the greater the structural damage they inflict by leaving permanent scars in the economy through job losses, bankruptcies and capital spending

cancellations. As a rule of thumb, every month that large parts of an economy remain closed, annual growth might fall by a further 2 percentage points. But as we would expect, the relationship between the duration of restrictive measures and the corresponding impact on GDP is not linear. The Dutch central planning bureau found that every additional month of containment results in a greater, non-proportional deterioration of economic activity. According to the model, a full month of economic "hibernation" would result in a loss of 1.2% in Dutch growth in 2020, while three months would cause a 5% loss. [29]

For the regions and countries that have already exited lockdowns, it is too early to tell how GDP growth will evolve. At the end of June 2020, some V-shaped data (like the eurozone Purchasing Manufacturing Indices - PMI) and a bit of anecdotal evidence generated a stronger-than-expected rebound narrative, but we should not get carried away for two reasons:

1. The marked improvement in PMI in the eurozone and the US does not mean that these economies have turned the corner. It simply indicates that business activity has improved compared to previous months, which is natural since a significant pickup in activity should follow the period of inactivity caused by rigorous lockdowns.

2. In terms of future growth, one of the most meaningful indicators to watch is the savings rate. In April (admittedly during the lockdown), the US personal savings rate climbed to 33% while, in the eurozone, the household savings rate (calculated differently than the US personal savings rate) rose to 19%. They will both significantly drop as the economies reopen, but probably not enough to prevent these rates from remaining at historically elevated levels.

In its "World Economic Outlook Update" published in June 2020, the International Monetary Fund (IMF) warned about "a crisis like no other" and an "uncertain recovery". [30] Compared to April, it revised its projections for global growth downwards, anticipating global GDP at -4.9% in 2020, almost two percentage points below its previous estimate.

1.2.2.2. Employment

The pandemic is confronting the economy with a labour market crisis of gigantic proportions. The devastation is such and so sudden as to leave even the most seasoned policy-makers almost speechless (and worse still, nigh on “policy-less”). In testimony before the US Senate Committee on Banking on 19 May, the Federal Reserve System’s chairman – Jerome “Jay” Powell – confessed: “This precipitous drop in economic activity has caused a level of pain that is hard to capture in words, as lives are upended amid great uncertainty about the future.” [31] In just the two months of March and April 2020, more than 36 million Americans lost their jobs, reversing 10 years of job gains. In the US, like elsewhere, temporary dismissals caused by the initial lockdowns may become permanent, inflicting intense social pain (that only robust social safety nets can alleviate) and profound structural damage on countries’ economies.

The level of global unemployment will ultimately depend on the depth of the collapse in economic activity, but hovering around or exceeding two-digit levels across the world are a given. In the US, a harbinger of difficulties to come elsewhere, it is estimated that the official rate of unemployment could reach a peak of 25% in 2020 – a level equivalent to that of the Great Depression – that would be even higher if hidden unemployment were to be taken into account (like workers who are not counted in official statistics because they are so discourage they abandoned the workforce and ceased looking for a job, or part-time workers who are looking for a full-time job). The situation of employees in the service industry will be particularly dire. That of workers not officially employed will be even worse.

As for GDP growth, the magnitude and severity of the unemployment situation are country-dependent. Each nation will be affected differently, depending on its economic structure and the nature of its social contract, but the US and Europe offer two radically different models of how the issue is being addressed by policy-makers and of what lies ahead.

As of June 2020, the rise in the US unemployment rate (it stood at a mere 3.5% prior to the pandemic) was much higher than anywhere else. In April 2020, the US unemployment rate had risen by 11.2 percentage points compared to February, while, during the same period in Germany, it had increased by less than one percentage point. Two reasons account for this

striking difference: 1) the US labour market has a “hire-and-fire” culture that doesn’t exist and is often prohibited by law in Europe; and 2) right from the onset of the crisis, Europe put into place fiscal measures destined to support employment.

In the US, government support so far (June 2020) has been larger than in Europe, but of a fundamentally different nature. It provides income support for those who lost their job, with the occasional result that those displaced are better off than in their full-time jobs before the crisis. In Europe, by contrast, the governments decided to directly support those businesses that kept workers formally “employed” in their original jobs, even when they were no longer working full time or not working at all.

In Germany, the short-time working scheme (called *Kurzarbeit* – a model emulated elsewhere) replaced up to 60% of earnings for 10 million employees who would have otherwise lost their jobs, while in France a similar scheme also compensated a similar number of workers by providing them with up to 80% of their previous salary. Many other European countries came up with similar solutions, without which lay-offs and redundancies would have been much more consequential. These labour market supporting measures are accompanied by other governmental emergency measures, like those giving insolvent companies the possibility to buy time. In many European countries, if firms can prove that their liquidity problems were caused by the pandemic, they won’t have to file for bankruptcy until later (possibly as late as March 2021 in some countries). This makes eminent sense if the recovery takes hold, but it could be that this policy is only postponing the problem. Globally, a full recovery of the labour market could take decades and, in Europe like elsewhere, the fear of mass bankruptcies followed by mass unemployment looms large.

In the coming months, the unemployment situation is bound to deteriorate further for the simple reason that it cannot improve significantly until a sustainable economic recovery begins. This won’t happen before a vaccine or a treatment is found, meaning that many people will be doubly worried – about losing their job and about not finding another one if they do lose it (which will lead to a sharp increase in savings rates). In a slightly more distant time (from a few months to a few years), two categories of people will face a particularly bleak employment situation: young people entering

for the first time a job market devastated by the pandemic and workers susceptible to be replaced by robots. These are fundamental issues at the intersection of economics, society and technology with defining implications for the future of work. Automation, in particular, will be a source of acute concern. The economic case that technology always exerts a positive economic effect in the long term is well known. The substance of the argument goes like this: automation is disruptive, but it improves productivity and increases wealth, which in turn lead to greater demands for goods and services and thus to new types of jobs to satisfy those demands. This is correct, but what happens between now and the long term?

In all likelihood, the recession induced by the pandemic will trigger a sharp increase in labour-substitution, meaning that physical labour will be replaced by robots and “intelligent” machines, which will in turn provoke lasting and structural changes in the labour market. In the technology chapter, we analyse in more detail the impact that the pandemic is having on automation, but there is already ample evidence that it is accelerating the pace of transformation. The call centre sector epitomizes this situation.

In the pre-pandemic era, new artificial intelligence (AI)-based technologies were being gradually introduced to automate some of the tasks performed by human employees. The COVID-19 crisis, and its accompanying measures of social distancing, has suddenly accelerated this process of innovation and technological change. Chatbots, which often use the same voice recognition technology behind Amazon’s Alexa, and other software that can replace tasks normally performed by human employees, are being rapidly introduced. These innovations provoked by necessity (i.e. sanitary measures) will soon result in hundreds of thousands, and potentially millions, of job losses.

As consumers may prefer automated services to face-to-face interactions for some time to come, what is currently happening with call centres will inevitably occur in other sectors as well. “Automation anxiety” is therefore set for a revival, [32] which the economic recession will exacerbate. The process of automation is never linear; it tends to happen in waves and often in harsh economic times, when the decline in companies’ revenues makes labour costs relatively more expensive. This is when employers replace less-skilled workers with automation to increase labour productivity. [33]

Low-income workers in routine jobs (in manufacturing and services like food and transportation) are those most likely to be affected. The labour market will become increasingly polarized between highly paid work and lots of jobs that have disappeared or aren't well paid and are not very interesting. In emerging and developing countries (particularly those with a "youth bulge"), technology runs the risk of transforming the "demographic dividend" into a "demographic nightmare" because automation will make it much harder to get on the escalator of economic growth.

It is easy to give way to excessive pessimism because we human beings find it much easier to visualize what is disappearing than what is coming next. We know and understand that levels of unemployment are bound to rise globally in the foreseeable future, but over the coming years and decades we may be surprised. We could witness an unprecedented wave of innovation and creativity driven by new methods and tools of production. There might also be a global explosion of hundreds of thousands of new micro industries that will hopefully employ hundreds of millions of people. Of course, we cannot know what the future holds, except that much will depend on the trajectory of future economic growth.

1.2.2.3. What future growth could look like

In the post-pandemic era, according to current projections, the new economic "normal" may be characterized by much lower growth than in past decades. As the recovery begins, quarter-to-quarter GDP growth may look impressive (because it will start from a very low basis), but it may take years before the overall size of most nations' economy returns to their pre-pandemic level. This is also due to the fact that the severity of the economic shock inflicted by the coronavirus will conflate with a long-term trend: declining populations in many countries and ageing (demographics is "destiny" and a crucial driver of GDP growth). Under such conditions, when lower economic growth seems almost certain, many people may wonder whether "obsessing" about growth is even useful, concluding that it doesn't make sense to chase a target of ever-higher GDP growth.

The deep disruption caused by COVID-19 globally has offered societies an enforced pause to reflect on what is truly of value. With the economic emergency responses to the pandemic now in place, the opportunity can be

seized to make the kind of institutional changes and policy choices that will put economies on a new path towards a fairer, greener future. The history of radical rethinking in the years following World War II, which included the establishment of the Bretton Woods institutions, the United Nations, the EU and the expansion of welfare states, shows the magnitude of the shifts possible.

This raises two questions: 1) What should the new compass for tracking progress be? and 2) What will the new drivers of an economy that is inclusive and sustainable be?

In relation to the first question, changing course will require a shift in the mindset of world leaders to place greater focus and priority on the well-being of all citizens and the planet. Historically, national statistics were amassed principally to furnish governments with a better understanding of the available resources for taxation and waging war. As democracies grew stronger, in the 1930s the remit of national statistics was extended to capture the economic welfare of the population, [34] yet distilled into the form of GDP. Economic welfare became equivalent to current production and consumption with no consideration given to the future availability of resources. Policy-makers' over-reliance on GDP as an indicator of economic prosperity has led to the current state of natural and social resource depletion.

What other elements should an improved dashboard for progress include? First, GDP itself needs to be updated to reflect the value created in the digital economy, the value created through unpaid work as well as the value potentially destroyed through certain types of economic activity. The omission of value created through work carried out in the household has been a long-standing issue and research efforts to create a measurement framework will need new momentum. In addition, as the digital economy is expanding, the gap between measured activity and actual economic activity has been growing wider. Furthermore, certain types of financial products, which through their inclusion in GDP are captured as value creating, are merely shifting value from one place to another or sometimes even have the effect of destroying it.

Second, it is not only the overall size of the economy that matters but also the distribution of gains and the progressive evolution of access to

opportunity. With income inequality more marked than ever in many countries and technological developments driving further polarization, total GDP or averages such as GDP per capita are becoming less and less useful as true indicators of individuals' quality of life. Wealth inequality is a significant dimension of today's dynamic of inequality and should be more systematically tracked.

Third, resilience will need to be better measured and monitored to gauge the true health of an economy, including the determinants of productivity, such as institutions, infrastructure, human capital and innovation ecosystems, which are critical for the overall strength of a system. Furthermore, the capital reserves upon which a country can draw in times of crisis, including financial, physical, natural and social capital will need to be tracked systematically. Albeit that natural and social capital in particular are difficult to measure, they are critical to the social cohesion and environmental sustainability of a country and should not be underestimated. Recent academic efforts are beginning to tackle the measurement challenge by bringing public- and private-sector data sources together.

Real examples of a shift in policy-makers' emphasis are appearing. It is no coincidence that in 2019, a country placed in the top 10 ranking of the *World Happiness Report* unveiled a "well-being budget". The Prime Minster of New Zealand's decision to earmark money for social issues, such as mental health, child poverty and family violence, made well-being an explicit goal of public policy. In so doing, Prime Minister Ardern turned into policy what everybody has known for years, that an increase in GDP does not guarantee an improvement in living standards and social welfare.

Additionally, several institutions and organizations, ranging from cities to the European Commission, are reflecting on options that would sustain future economic activity at a level that matches the satisfaction of our material needs with the respect of our planetary boundaries. The municipality of Amsterdam is the first in the world to have formally committed to this framework as a starting point for public policy decisions in the post-pandemic world. The framework resembles a "doughnut" in which the inner ring represents the minimum we need to lead a good life (as enunciated by the UN's Sustainable Development Goals) and the outer ring the ecological ceiling defined by earth-system scientists (which highlights

the boundaries not to be crossed by human activity to avoid environmentally negative impact on climate, soil, oceans, the ozone layer, freshwater and biodiversity). In between the two rings is the sweet spot (or "dough") where our human needs and those of the planet are being met. [35]

We do not know yet whether the "tyranny of GDP growth" will come to an end, but different signals suggest that the pandemic may accelerate changes in many of our well-entrenched social norms. If we collectively recognize that, beyond a certain level of wealth defined by GDP per capita, happiness depends more on intangible factors such as accessible healthcare and a robust social fabric than on material consumption, then values as different as the respect for the environment, responsible eating, empathy or generosity may gain ground and progressively come to characterize the new social norms.

Beyond the immediate ongoing crisis, in recent years the role of economic growth in advancing living standards has varied depending on context. In high-income economies, productivity growth has been steadily declining since the 1970s, and it has been argued that there are currently no clear policy avenues for reviving long-term growth. [36] In addition, the growth that did materialize disproportionately accrued to individuals at the top end of the income distribution. A more effective approach may be for policy-makers to target welfare-enhancing interventions more directly. [37] In low- and middle-income countries, the benefits of economic growth have lifted millions out of poverty in large emerging markets. The policy options to boost growth performance are better known (e.g. addressing basic distortions), yet new approaches will have to be found as the manufacturing-led development model is fast losing its power with the advent of the Fourth Industrial Revolution. [38]

This leads to the second key question around future growth. If the direction and quality of economic growth matter as much as – or perhaps even more than – its speed, what are likely to be the new drivers of this quality in the post-pandemic economy? Several areas have the potential to offer an environment capable of boosting a more inclusive and sustainable dynamism.

The green economy spans a range of possibilities from greener energy to ecotourism to the circular economy. For example, shifting from the "take-

make-dispose" approach to production and consumption to a model that is "restorative and regenerative by design" [39] can preserve resources and minimize waste by using a product again when it reaches the end of its useful life, thus creating further value that can in turn generate economic benefits by contributing to innovation, job creation and, ultimately, growth. Companies and strategies that favour reparable products with longer lifespans (from phones and cars to fashion) that even offer free repairs (like Patagonia outdoor wear) and platforms for trading used products are all expanding fast. [40]

The social economy spans other high-growth and job-creating areas in the fields of caregiving and personal services, education and health. Investment in childcare, care for the elderly and other elements of the care economy would create 13 million jobs in the US alone and 21 million jobs in seven economies, and would lead to a 2% rise in GDP growth in the countries studied. [41] Education is also an area of massive job creation, particularly when considering primary and secondary education, technical and vocational education and training, university and adult training together. Health, as the pandemic has demonstrated, requires much greater investment both in terms of infrastructure and innovation as well as human capital. These three areas create a multiplier effect both through their own employment potential and the long-term benefits they unleash across societies in terms of equality, social mobility and inclusive growth.

Innovation in production, distribution and business models can generate efficiency gains and new or better products that create higher value added, leading to new jobs and economic prosperity. Governments thus have tools at their disposal to make the shift towards more inclusive and sustainable prosperity, combining public-sector direction-setting and incentives with commercial innovation capacity through a fundamental rethinking of markets and their role in our economy and society. This requires investing differently and deliberately in the frontier markets outlined above, areas where market forces could have a transformative effect on economies and societies but where some of the necessary preconditions to function are still lacking (for instance, technical capacities to sustainably produce a product or asset at scale are still insufficient, standards are not well defined or legal frameworks are not yet well developed). Shaping the rules and mechanisms of these new markets can have a transformational impact on the economy. If

governments want the shift to a new and better kind of growth, they have a window of opportunity to act now to create incentives for innovation and creativity in the areas outlined above.

Some have called for “degrowth”, a movement that embraces zero or even negative GDP growth that is gaining some traction (at least in the richest countries). As the critique of economic growth moves to centre stage, consumerism’s financial and cultural dominance in public and private life will be overhauled. [42] This is made obvious in consumer-driven degrowth activism in some niche segments – like advocating for less meat or fewer flights. By triggering a period of enforced degrowth, the pandemic has spurred renewed interest in this movement that wants to reverse the pace of economic growth, leading more than 1,100 experts from around the world to release a manifesto in May 2020 putting forward a degrowth strategy to tackle the economic and human crisis caused by COVID-19. [43] Their open letter calls for the adoption of a democratically “planned yet adaptive, sustainable, and equitable downscaling of the economy, leading to a future where we can live better with less”.

However, beware of the pursuit of degrowth proving as directionless as the pursuit of growth! The most forward-looking countries and their governments will instead prioritize a more inclusive and sustainable approach to managing and measuring their economies, one that also drives job growth, improvements in living standards and safeguards the planet. The technology to do more with less already exists. [44] There is no fundamental trade-off between economic, social and environmental factors if we adopt this more holistic and longer-term approach to defining progress and incentivizing investment in green and social frontier markets.

1.2.3. Fiscal and monetary policies

The fiscal and monetary policy response to the pandemic has been decisive, massive and swift.

In systemically important countries, central banks decided almost immediately after the beginning of the outbreak to cut interest rates while launching large quantitative-easing programmes, committing to print the money necessary to keep the costs of government borrowing low. The US

Fed undertook to buy Treasury bonds and agency mortgage-backed securities, while the European Central Bank promised to buy any instrument that governments would issue (a move that succeeded in reducing the spread in borrowing costs between weaker and stronger eurozone members).

Concomitantly, most governments launched ambitious and unprecedented fiscal policy responses. Urgent and expansive measures were taken very early on during the crisis, with three specific aims: 1) fight the pandemic with as much spending as required to bring it under control as rapidly as possible (through the production of tests, hospital capabilities, research in drugs and vaccines, etc.); 2) provide emergency funds to households and firms on the verge of bankruptcy and disaster; and 3) support aggregate demand so that the economy can operate as far as possible close to potential. [45]

These measures will lead to very large fiscal deficits, with a likely increase in debt-to-GDP ratios of 30% of GDP in the rich economies. At the global level, the aggregate stimulus from government spending will likely exceed 20% of global GDP in 2020 with significant variation across countries, ranging from 33% in Germany to more than 12% in the US.

This expansion of fiscal capabilities has dramatically different implications depending on whether the country concerned is advanced or emerging. High-income countries have more fiscal space because a higher level of debt should prove sustainable and entail a viable level of welfare cost for future generations, for two reasons: 1) the commitment from central banks to purchase whatever amount of bonds it takes to maintain low interest rates; and 2) the confidence that interest rates are likely to remain low in the foreseeable future because uncertainty will continue hampering private investment and will justify high levels of precautionary savings. In contrast, the situation couldn’t be starker in emerging and developing economies. Most of them don’t have the fiscal space required to react to the pandemic shock; they are already suffering from major capital outflows and a fall in commodity prices, which means their exchange rate will be hammered if they decide to launch expansionary fiscal policies. In these circumstances, help in the form of grants and debt relief, and possibly an outright moratorium, [46] will not only be needed but will be critical.

These are unprecedented programmes for an unprecedented situation, something so new that the economist Carmen Reinhart has called it a "whatever-it-takes moment for large-scale, outside-the-box fiscal and monetary policies". [47] Measures that would have seemed inconceivable prior to the pandemic may well become standard around the world as governments try to prevent the economic recession from turning into a catastrophic depression. Increasingly, there will be calls for government to act as a "payer of last resort" [48] to prevent or stem the spate of mass layoffs and business destruction triggered by the pandemic.

All these changes are altering the rules of the economic and monetary policy "game". The artificial barrier that makes monetary and fiscal authorities independent from each other has now been dismantled, with central bankers becoming (to a relative degree) subservient to elected politicians. It is now conceivable that, in the future, government will try to wield its influence over central banks to finance major public projects, such as an infrastructure or green investment fund. Similarly, the precept that government can intervene to preserve workers' jobs or incomes and protect companies from bankruptcy may endure after these policies come to an end. It is likely that public and political pressure to maintain such schemes will persist, even when the situation improves. One of the greatest concerns is that this implicit cooperation between fiscal and monetary policies leads to uncontrollable inflation. It originates in the idea that policy-makers will deploy massive fiscal stimulus that will be fully monetized, i.e. not financed through standard government debt. This is where Modern Monetary Theory (MMT) and helicopter money come in: with interest rates hovering around zero, central banks cannot stimulate the economy by classic monetary tools; i.e. a reduction in interest rates – unless they decided to go for deeply negative interest rates, a problematic move resisted by most central banks. [49] The stimulus must therefore come from an increase in fiscal deficits (meaning that public expenditure will go up at a time when tax revenues decline). Put in the simplest possible (and, in this case, simplistic) terms, MMT runs like this: governments will issue some debt that the central bank will buy. If it never sells it back, it equates to monetary finance: the deficit is monetized (by the central bank purchasing the bonds that the government issues) and the government can use the money as it sees fit. It can, for example, metaphorically drop it from helicopters to those people in need.

The idea is appealing and realizable, but it contains a major issue of social expectations and political control: once citizens realize that money can be found on a “magic money tree”, elected politicians will be under fierce and relentless public pressure to create more and more, which is when the issue of inflation kicks in.

1.2.3.1. Deflation or inflation?

Two technical elements embedded in the issue of monetary finance are associated with the risk of inflation. First, the decision to engage in perpetual quantitative easing (i.e. in monetary finance) doesn’t have to be taken when the central bank buys the debt issued by the government; it can be left to the contingent future to hide or circumvent the idea that money “grows on trees”. Second, the inflationary impact of helicopter money is not related to whether the deficit is funded or unfunded, but is directly proportional to the amount of money involved. There are no nominal limits to how much money a central bank can create, but there are sensible limits to how much they would want to create to achieve reflation without risking too much inflation. The resultant increase in nominal GDP will be split between a real output effect and an increase in price level effect – this balance and its inflationary nature will depend on how tight the supply constraints are, so ultimately on the amount of money created. Central bankers may decide that there is nothing to worry about with inflation at 2% or 3%, and that 4% to 5% is also fine, but they will have to define an upper limit at which inflation becomes disruptive and a real concern. The challenge will be to determine at what level inflation becomes corrosive and a source of obsessive concern for consumers.

For the moment, some fear deflation while others worry about inflation. What lies behind these divergent anxieties for the future? The deflation worriers point to a collapsing labour market and stumbling commodity prices, and wonder how inflation could possibly pick up anytime soon in these conditions. Inflation worriers observe the substantial increases in central bank balance sheets and fiscal deficits and ask how these will not, one day, lead to inflation, and possibly high inflation, and even hyperinflation. They point to the example of Germany after World War I, which inflated away its domestic war debt in the hyperinflation of 1923, or

the UK, which eroded with a bit of inflation the massive amount of debt (250%) it inherited from World War II. These worriers acknowledge that, in the short term, deflation may be the bigger risk, but argue that inflation is ultimately unavoidable given the massive and inevitable amounts of stimulus.

At this current juncture, it is hard to imagine how inflation could pick up anytime soon. The reshoring of production activities could generate occasional pockets of inflation, but they are likely to remain limited. The combination of potent, long-term, structural trends like ageing and technology (both are deflationary in nature) and an exceptionally high unemployment rate that will constrain wage increases for years puts strong downward pressure on inflation. In the post-pandemic era, strong consumer demand is unlikely. The pain inflicted by widespread unemployment, lower incomes for large segments of the population and uncertainty about the future are all likely to lead to an increase in precautionary savings. When social distancing eventually eases, pent-up demand could provoke a bit of inflation, but it is likely to be temporary and will therefore not affect inflation expectations. Olivier Blanchard, the former chief economist of the IMF, thinks that only the combination of the following three elements could create inflation: 1) a very large increase in the debt to GDP ratio, larger than the current forecast of 20-30%; 2) a very large increase in the neutral rate (i.e. the safe real rate required to keep the economy at potential); and 3) fiscal dominance of monetary policy. [50] The probability of each individually is already low, so the probability of the three occurring in conjunction with each other is extremely low (but not nil). Bond investors think alike. This could change, of course, but at the moment the low rate differential between nominal and inflation-indexed bonds paints a picture of ongoing very low inflation at best.

In the coming years, high-income countries may well face a situation similar to that of Japan over the past few decades: structurally weak demand, very low inflation and ultra-low interest rates. The possible “Japanification” of the (rich) world is often depicted as a hopeless combination of no growth, no inflation and insufferable debt levels. This is misleading. When the data is adjusted for demographics, Japan does better than most. Its GDP per capita is high and growing and, since 2007, its real GDP per member of the working age population has risen faster than in any

other G7 country. Naturally, there are many idiosyncratic reasons for this (a very high level of social capital and trust, but also labour productivity growth that surpasses the average, and a successful absorption of elderly workers into the labour force), but it shows that a shrinking population doesn't have to lead to economic oblivion. Japan's high living standards and well-being indicators offer a salutary lesson that there is hope in the face of economic hardship.

1.2.3.2. The fate of the US dollar

For decades, the US has enjoyed the "exorbitant privilege" of retaining the global currency reserve, a status that has long been "a perk of imperial might and an economic elixir". [51] To a considerable extent, American power and prosperity have been built and reinforced by the global trust in the dollar and the willingness of customers abroad to hold it, most often in the form of US government bonds. The fact that so many countries and foreign institutions want to hold dollars as a store of value and as an instrument of exchange (for trade) has anchored its status as the global reserve currency. This has enabled the US to borrow cheaply abroad and benefit from low interest rates at home, which in turn has allowed Americans to consume beyond their means. It has also made large recent US government deficits possible, permitted the US to run substantial trade deficits, reduced the exchange-rate risk and made the US financial markets more liquid. At the core of the US dollar status as a reserve currency lies a critical issue of trust: non-Americans who hold dollars trust that the United States will protect both its own interests (by managing sensibly its economy) and the rest of the world as far as the US dollar is concerned (by managing sensibly its currency, like providing dollar liquidity to the global financial system efficiently and rapidly).

For quite some time, some analysts and policy-makers have been considering a possible and progressive end to the dominance of the dollar. They now think that the pandemic might be the catalyst that proves them right. Their argument is twofold and relates to both sides of the trust issue.

On the one hand (managing the economy sensibly), doubters of US dollar dominance point to the inevitable and sharp deterioration of the US fiscal position. In their mind, unsustainable levels of debt will eventually erode

confidence in the US dollar. Just prior to the pandemic, US defence spending, plus interest on the federal debt, plus annual entitlement payments – Medicare, Medicaid and social security – represented 112% of federal tax receipts (versus 95% in 2017). This unsustainable path will worsen in the post-pandemic, post-bailout era. This argument suggests that something major will therefore have to change, either through a much reduced geopolitical role or higher taxation, or both, otherwise the rising deficit will reach a threshold beyond which non-US investors are unwilling to fund it. After all, the status of reserve currency cannot last longer than foreign confidence in the ability of the holder to honour its payments.

On the other hand (managing the US dollar sensibly for the rest of the world), doubters of the dollar's dominance point to the incompatibility of its status as a global reserve currency with rising economic nationalism at home. Even though the Fed and the US Treasury manage the dollar and its influential network worldwide with efficacy, sceptics emphasize that the willingness of the US administration to weaponize the US dollar for geopolitical purposes (like punishing countries and companies that trade with Iran or North Korea) will inevitably incentivize dollar holders to look for alternatives.

Are there any viable alternatives? The US remains a formidable global financial hegemon (the role of the dollar in international financial transactions is far greater, albeit less visible, than in international trade), but it is also true than many countries would like to challenge the dollar's global dominance. In the short term, there are no alternatives. The Chinese renminbi (RMB) could be an option, but not until strict capital controls are eliminated and the RMB turns into a market-determined currency, which is unlikely to happen in the foreseeable future. The same goes for the euro; it could be an option, but not until doubts about a possible implosion of the eurozone dissipate for good, which again is an unlikely prospect in the next few years. As for a global virtual currency, there is none in sight yet, but there are attempts to launch national digital currencies that may eventually dethrone the US dollar supremacy. The most significant one took place in China at the end of April 2020 with a test of a national digital currency in four large cities. [52] The country is years ahead of the rest of the world in developing a digital currency combined with powerful electronic payment platforms; this experiment clearly shows that there are monetary systems

that are trying to become independent from US intermediaries while moving towards greater digitization.

Ultimately, the possible end of the US dollar's primacy will depend on what happens in the US. As Henry Paulson, a former US Treasury Secretary, says: "US dollar prominence begins at home (…). The United States must maintain an economy that inspires global credibility and confidence. Failure to do so will, over time, put the US dollar's position in peril". [53] To a large extent, US global credibility also depends on geopolitics and the appeal of its social model. The "exorbitant privilege" is intricately intertwined with global power, the perception of the US as a reliable partner and its role in the working of multilateral institutions. "If that role were seen as less sure and that security guarantee as less iron clad, because the US was disengaging from global geopolitics in favour of more stand-alone, inward-looking policies, the security premium enjoyed by the US dollar could diminish," warns Barry Eichengreen and European Central Bank representatives. [54]

Questions and doubts about the future status of the dollar as a global currency reserve are an apt reminder that economics does not exist in isolation. This reality is particularly harsh in over-indebted emerging and poor countries now unable to repay their debt often denominated in dollars. For them, this crisis will take on huge proportions and years to sort out, with considerable economic damage translating fast into social and humanitarian pain. In all these countries, the COVID crisis may well end the gradual process of convergence that was supposed to bring highly developed and emerging or developing countries into closer alignment. This will lead to an increase in societal and geopolitical risks – a stark reminder of the extent to which economic risks intersect with societal issues and geopolitics.

1.3. Societal reset

Historically, pandemics have tested societies to their core; the 2020 COVID-19 crisis will be no exception. Comparable to the economy, as we just saw, and geopolitics, as we will see in the next chapter, the societal upheaval unleashed by COVID-19 will last for years, and possibly generations. The most immediate and visible impact is that many governments will be taken to task, with a lot of anger directed at those policy-makers and political figures that have appeared inadequate or ill-prepared in terms of their response to dealing with COVID-19. As Henry Kissinger observed: “Nations cohere and flourish on the belief that their institutions can foresee calamity, arrest its impact and restore stability. When the COVID-19 pandemic is over, many countries’ institutions will be perceived as having failed”. [55] This will be particularly true for some rich countries endowed with sophisticated health systems and strong assets in research, science and innovation where citizens will ask why their authorities did so poorly when compared to others. In these, the very essence of their social fabric and socio-economic system may emerge and be denounced as the “real” culprit, guilty of failing to guarantee economic and social welfare for the majority of citizens. In poorer countries, the pandemic will exact a dramatic toll in terms of social costs. It will exacerbate the societal issues that already beset them – in particular poverty, inequality and corruption. This could, in some cases, lead to extreme outcomes as severe as social and societal disintegration (“social” refers to interactions between individuals or groups of individuals while “societal” is the adjective that relates to society as a whole).

Are there any systemic lessons to be learned relating to what has and hasn’t worked in terms of dealing with the pandemic? To what extent does the response of different nations reveal some inner strengths and weaknesses about particular societies or systems of governance? Some, such as Singapore, South Korea and Denmark (among others), seemed to fare rather well and certainly better than most. Others, such as Italy, Spain, the US or the UK, seemed to underperform on different counts, whether in terms of preparation, crisis management, public communication, the number of confirmed cases and deaths, and various other metrics. Neighbouring

countries that share many structural similarities, like France and Germany, had a rough equivalent number of confirmed cases but a strikingly different number of deaths from COVID-19. Apart from differences in healthcare infrastructure, what accounts for these apparent anomalies? Currently (June 2020), we are still faced with multiple "unknowns" regarding the reasons why COVID-19 struck and spread with particular virulence in some countries and regions, and not in others. However, and on aggregate, the countries that fare better share the following broad and common attributes:

- They were "prepared" for what was coming (logistically and organizationally).
- They made rapid and decisive decisions.
- They have a cost-effective and inclusive healthcare system.
- They are high-trust societies in which citizens have confidence in both the leadership and the information they provide.
- They seem under duress to exhibit a real sense of solidarity, favouring the common good over individual aspirations and needs.

With the partial exception of the first and second attributes that are more technical (albeit technicality has cultural elements embedded in it), all the others can be categorized as "favourable" societal characteristics, proving that core values of inclusivity, solidarity and trust are strong determining elements and important contributors to success in containing an epidemic.

It is of course much too early to depict with any degree of accuracy the form that the societal reset will take in different countries, but some of its broad global contours can already be delineated. First and foremost, the post-pandemic era will usher in a period of massive wealth redistribution, from the rich to the poor and from capital to labour. Second, COVID-19 is likely to sound the death knell of neoliberalism, a corpus of ideas and policies that can loosely be defined as favouring competition over solidarity, creative destruction over government intervention and economic growth over social welfare. For a number of years, the neoliberal doctrine has been on the wane, with many commentators, business leaders and policy-makers increasingly denouncing its "market fetishism", but COVID-19 brought the *coup de grâce* . It is no coincidence that the two countries that over the past few years embraced the policies of neoliberalism with most fervour – the US and the UK – are among those that suffered the most

casualties during the pandemic. These two concomitant forces – massive redistribution on the one hand and abandoning neoliberal policies on the other – will exert a defining impact on our societies' organization, ranging from how inequalities could spur social unrest to the increasing role of governments and the redefinition of social contracts.

1.3.1. Inequalities

One seriously misleading cliché about the coronavirus resides in the metaphor of COVID-19 as a "great leveller". [56] The reality is quite the opposite. COVID-19 has exacerbated pre-existing conditions of inequality wherever and whenever it strikes. As such, it is not a "leveller", neither medically nor economically, or socially or psychologically. The pandemic is in reality a "great unequalizer" [57] that has compounded disparities in income, wealth and opportunity. It has laid bare for all to see not only the vast numbers of people in the world who are economically and socially vulnerable, but also the depth and degree of their fragility – a phenomenon even more prevalent in countries with low or non-existent social safety nets or weak family and social bonds. This situation, of course, predates the pandemic but, as we observed for other global issues, the virus acted as an amplifier, forcing us to recognize and acknowledge the severity of the problems relating to inequality, formerly brushed aside by too many for too long.

The first effect of the pandemic has been to magnify the macro challenge of social inequalities by placing a spotlight on the shocking disparities in the degree of risk to which different social classes are exposed. In much of the world, an approximate, albeit revealing, narrative emerged during the lockdowns. It described a dichotomy: the upper and middle classes were able to telework and self-school their children from their homes (primary or, when possible, secondary, more remote residences considered safer), while members of the working class (for those with a job) were not at home and were not overseeing their children's education, but were working on the front line to help save lives (directly or not) and the economy – cleaning hospitals, manning the checkouts, transporting essentials and ensuring our security. In the case of a highly developed service economy like the US, roughly a third of total jobs can be performed from home, or remotely, with

considerable discrepancies that are highly correlated with earnings by sectors. More than 75% of American finance and insurance workers can do their job remotely, while just 3% of much lesser paid workers in the food industry can do so. [58] In the midst of the pandemic (mid-April), most new cases of infection and the death count made it clearer than ever that COVID-19 was far from being the “great leveller” or “equalizer” that so many people were referring to at the beginning of the pandemic. Instead, what rapidly emerged was that there was nothing fair or even-handed about how the virus went about its deadly work.

In the US, COVID-19 has taken a disproportionate toll on African Americans, low-income people and vulnerable populations, such as the homeless. In the state of Michigan where less than 15% of the population is black, black residents represented around 40% of deaths from COVID-19 complications. The fact that COVID-19 affected black communities so disproportionately is a mere reflection of existing inequalities. In America as in many other countries, African Americans are poorer, more likely to be unemployed or underemployed and victims of substandard housing and living conditions. As a result, they suffer more from pre-existing health conditions like obesity, heart disease or diabetes that make COVID-19 particularly deadly.

The second effect of the pandemic and the state of lockdown that ensued was to expose the profound disconnect between the essential nature and innate value of a job done and the economic recompense it commands. Put another way: we value least economically the individuals society needs the most. The sobering truth is that the heroes of the immediate COVID-19 crisis, those who (at personal risk) took care of the sick and kept the economy ticking, are among the worst paid professionals – the nurses, the cleaners, the delivery drivers, the workers in food factories, care homes and warehouses, among others. It is often their contribution to economic and societal welfare that is the least recognized. The phenomenon is global but particularly stark in the Anglo-Saxon countries where poverty is coupled with precariousness. The citizens in this group are not only the worst paid, but also those most at risk of losing their jobs. In the UK, for example, a large majority (almost 60%) of care providers working in the community operate on “zero-hour contracts”, which means they have no guaranteed regular hours and, as a result, no certainty of a regular income. Likewise,

workers in food factories are often on temporary employment contracts with fewer rights than normal and with no security. As for the delivery drivers, most of the time categorized as self-employed, they are paid per "drop" and receive no sick or holiday pay – a reality poignantly portrayed in Ken Loach's most recent work "Sorry We Missed You", a movie that illustrates the dramatic extent to which these workers are always just one mishap away from physical, emotional or economic ruin, with cascading effects worsened by stress and anxiety.

In the post-pandemic era, will social inequalities increase or decrease? Much anecdotal evidence suggests, at least in the short term, that the inequalities are likely to increase. As outlined earlier, people with no or low incomes are suffering disproportionately from the pandemic: they are more susceptible to chronic health conditions and immune deficiency, and are therefore more likely to catch COVID-19 and suffer from severe infections. This will continue in the months following the outbreak. As with previous pandemic episodes like the plague, not everyone will benefit equally from medical treatments and vaccines. Particularly in the US, as Angus Deaton, the Nobel laureate who co-authored *Deaths of Despair and the Future of Capitalism* with Anne Case, observed: "drug-makers and hospitals will be more powerful and wealthier than ever", [59] to the disadvantage of the poorest segments of the population. In addition, ultra-accommodative monetary policies pursued around the world will increase wealth inequalities by fuelling asset prices, most notably in financial markets and property.

However, moving beyond the immediate future, the trend could reverse and provoke the opposite – less inequality. How might it happen? It could be that enough people are sufficiently outraged by the glaring injustice of the preferential treatment enjoyed exclusively by the rich that it provokes a broad societal backlash. In the US, a majority or a very vocal minority may demand national or community control over healthcare, while, in Europe, underfunding of the health system will no longer be politically acceptable. It may also be that the pandemic will eventually compel us to rethink occupations we truly value and will force us to redesign how we collectively remunerate them. In the future, will society accept that a star hedge fund manager who specializes in short-selling (whose contribution to economic and social welfare is doubtful, at best) can receive an income in

the millions per year while a nurse (whose contribution to social welfare is incontrovertible) earns an infinitesimal fraction of that amount? In such an optimistic scenario, as we increasingly recognize that many workers in low-paid and insecure jobs play an essential role in our collective well-being, policies would adjust to improve both their working conditions and remuneration. Better wages would follow, even if they are accompanied by reduced profits for companies or higher prices; there will be strong social and political pressure to replace insecure contracts and exploitative loopholes with permanent positions and better training. Inequalities could therefore decline but, if history is any guide, this optimistic scenario is unlikely to prevail without massive social turmoil first.

1.3.2. Social unrest

One of the most profound dangers facing the post-pandemic era is social unrest. In some extreme cases, it could lead to societal disintegration and political collapse. Countless studies, articles and warnings have highlighting this particular risk, based on the obvious observation that when people have no jobs, no income and no prospects for a better life, they often resort to violence. The following quote captures the essence of the problem. It applies to the US, but its conclusions are valid for most countries around the world:

> Those who are left hopeless, jobless, and without assets could easily turn against those who are better off. Already, some 30% of Americans have zero or negative wealth. If more people emerge from the current crisis with neither money, nor jobs, nor access to health care, and if these people become desperate and angry, such scenes as the recent escape of prisoners in Italy or the looting that followed Hurricane Katrina in New Orleans in 2005 might become commonplace. If governments have to resort to using paramilitary or military forces to quell, for example, riots or attacks on property, societies could begin to disintegrate. [60]

Well before the pandemic engulfed the world, social unrest had been on the rise globally, so the risk is not new but has been amplified by COVID-19. There are different ways to define what constitutes social unrest but, over

the past two years, more than 100 significant anti-government protests have taken place around the world, [61] in rich and poor countries alike, from the yellow vests' riots in France to demonstrations against strongmen in countries such as Bolivia, Iran and Sudan. Most (of the latter) were suppressed by brutal crackdowns, and many went into hibernation (like the global economy) when governments forced their populations into lockdowns to contain the pandemic. But after the interdiction to gather in groups and take to the streets is lifted, it is hard to imagine that old grievances and temporarily suppressed social disquiet will not erupt again, possibly with renewed strength. In the post-pandemic era, the numbers of unemployed, worried, miserable, resentful, sick and hungry will have swelled dramatically. Personal tragedies will accrue, fomenting anger, resentment and exasperation in different social groups, including the unemployed, the poor, the migrants, the prisoners, the homeless, all those left out… How could all this pressure not end in an eruption? Social phenomena often exhibit the same characteristics as pandemics and, as observed in previous pages, tipping points apply equally to both. When poverty, a sense of being disenfranchised and powerlessness reach a certain tipping point, disruptive social action often becomes the option of last resort.

In the early days of the crisis, prominent individuals echoed such concerns and alerted the world to the growing risk of social unrest. Jacob Wallenberg, the Swedish industrialist, is one of them. In March 2020, he wrote: "If the crisis goes on for long, unemployment could hit 20-30 per cent while economies could contract by 20-30 per cent ... There will be no recovery. There will be social unrest. There will be violence. There will be socio-economic consequences: dramatic unemployment. Citizens will suffer dramatically: some will die, others will feel awful." [62] We are now beyond the threshold of what Wallenberg considered to be "worrying", with unemployment exceeding 20% to 30% in many countries around the world and with most economies having contracted in the second quarter of 2020 beyond a level previously considered of concern. How is this going to play out and where is social unrest most likely to occur and to what degree?

At the time of writing this book, COVID-19 has already unleashed a global wave of social unrest. It started in the US with the Black Lives Matter protests following the killing of George Floyd at the end of May 2020, but

it rapidly spread around the world. COVID-19 was a determining element: George Floyd's death was the spark that lit the fire of social unrest, but the underlying conditions created by the pandemic, in particular the racial inequalities that it laid bare and the rising level of unemployment, were the fuel that amplified the protests and kept them going. How? Over the past six years, nearly 100 African Americans have died in police custody, but it took the killing of George Floyd to trigger a national uprising. Therefore, it is not by chance that this outburst of anger occurred during the pandemic that has disproportionately affected the US African-American community (as pointed out earlier). At the end of June 2020, the mortality rate inflicted by COVID-19 on black Americans was 2.4 times higher than for white Americans. Simultaneously, employment among black Americans was being decimated by the corona crisis. This should not come as a surprise: the economic and social divide between African Americans and white Americans is so profound that, according to almost every metric, black workers are disadvantaged compared to white workers. [63] In May 2020, unemployment among African Americans stood at 16.8% (versus a national level of 13.3%), a very high level that feeds into a phenomenon described by sociologists as "biographical availability": [64] the absence of full-time employment tends to increase the participation level in social movements. We do not know how the Black Lives Matter movement will evolve and, if it persists, what form it will take. However, indications show it is turning into something broader than race-specific issues. The protests against systemic racism have led to more general calls about economic justice and inclusiveness. This is a logical segue to the issues of inequality addressed in the previous sub-chapter, which also illustrates how risks interact with each other and amplify one another.

It is important to emphasize that no situation is set in stone and that there are no "mechanical" triggers for social unrest – it remains an expression of a collective human dynamic and frame of mind that is dependent upon a multitude of factors. True to the notions of interconnectedness and complexity, outbursts of social unrest are quintessential non-linear events that can be triggered by a broad variety of political, economic, societal, technological and environmental factors. They range from things as different as economic shocks, hardship caused by extreme weather events, racial tensions, food scarcity and even sentiments of unfairness. All these,

and more, almost always interact with each other and create cascading effects. Therefore, specific situations of turmoil cannot be forecasted, but can, however, be anticipated. Which countries are most susceptible? At first glance, poorer countries with no safety nets and rich countries with weak social safety nets are most at risk because they have no or fewer policy measures like unemployment benefits to cushion the shock of income loss. For this reason, strongly individualistic societies like the US could be more at risk than European or Asian countries that either have a greater sense of solidarity (like in southern Europe) or a better social system for assisting the underprivileged (like in northern Europe). Sometimes, the two come together. Countries like Italy, for example, possess both a strong social safety net and a strong sense of solidarity (particularly in intergenerational terms). In a similar vein, the Confucianism prevalent in so many Asian countries places a sense of duty and generational solidarity before individual rights; it also puts high value on measures and rules that benefit the community as a whole. All this does not mean, of course, that European or Asian countries are immune from social unrest. Far from it! As the yellow vests movement demonstrated in the case of France, violent and sustained forms of social unrest can erupt even in countries endowed with a robust social safety net but where social expectations are left wanting.

Social unrest negatively affects both economic and social welfare, but it is essential to emphasize that we are not powerless in the face of potential social unrest, for the simple reason that governments and to a lesser extent companies and other organizations can prepare to mitigate the risk by enacting the right policies. The greatest underlying cause of social unrest is inequality. The policy tools to fight unacceptable levels of inequality do exist and they often lie in the hands of governments.

1.3.3. The return of “big” government

In the words of John Micklethwait and Adrian Wooldridge: “The COVID-19 pandemic has made government important again. Not just powerful again (look at those once-mighty companies begging for help), but also vital again: It matters enormously whether your country has a good health service, competent bureaucrats and sound finances. Good government is the difference between living and dying”. [65]

One of the great lessons of the past five centuries in Europe and America is this: acute crises contribute to boosting the power of the state. It's always been the case and there is no reason why it should be different with the COVID-19 pandemic. Historians point to the fact that the rising fiscal resources of capitalist countries from the 18th century onwards were always closely associated with the need to fight wars, particularly those that took place in distant countries and that required maritime capacities. Such was the case with the Seven Years' War of 1756-1763, described as the first truly global war that involved all the great powers of Europe at the time. Since then, the responses to major crises have always further consolidated the power of the state, starting with taxation: "an inherent and essential attribute of sovereignty belonging as a *matter of right* to every independent government". [66] A few examples illustrating the point strongly suggest that this time, as in the past, taxation will increase. As in the past, the social rationale and political justification underlying the increases will be based upon the narrative of "countries at war" (only this time against an invisible enemy).

France's top rate of income tax was zero in 1914; a year after the end of World War I, it was 50%. Canada introduced income tax in 1917 as a "temporary" measure to finance the war, and then expanded it dramatically during World War II with a flat 20% surtax imposed on all income tax payable by persons other than corporations and the introduction of high marginal tax rates (69%). Rates came down after the war but remained substantially higher than they had been before. Similarly, during World War II, income tax in America turned from a "class tax" to a "mass tax", with the number of payers rising from 7 million in 1940 to 42 million in 1945. The most progressive tax years in US history were 1944 and 1945, with a 94% rate applied to any income above $200,000 (the equivalent in 2009 of $2.4 million). Such top rates, often denounced as confiscatory by those who had to pay them, would not drop below 80% for another 20 years. At the end of World War II, many other countries adopted similar and often extreme tax measures. In the UK during the war, the top income tax rate rose to an extraordinarily stunning 99.25%! [67]

At times, the sovereign power of the state to tax translated into tangible societal gains in different domains, such as the creation of a welfare system. However, these massive transitions to something entirely "new" were

always defined in terms of a response to a violent external shock or the threat of one to come. World War II, for example, led to the introduction of cradle-to-grave state welfare systems in most of Europe. So did the Cold War: governments in capitalist countries were so worried by an internal communist rebellion that they put into place a state-led model to forestall it. This system, in which state bureaucrats managed large chunks of the economy, ranging from transportation to energy, stayed in place well into the 1970s.

Today the situation is fundamentally different; in the intervening decades (in the Western world) the role of the state has shrunk considerably. This is a situation that is set to change because it is hard to imagine how an exogenous shock of such magnitude as the one inflicted by COVID-19 could be addressed with purely market-based solutions. Already and almost overnight, the coronavirus succeeded in altering perceptions about the complex and delicate balance between the private and public realms in favour of the latter. It has revealed that social insurance is efficient and that offloading an ever-greater deal of responsibilities (like health and education) to individuals and the markets may not be in the best interest of society. In a surprising and sudden turnaround, the idea, which would have been an anathema just a few years ago, that governments can further the public good while run-away economies without supervision can wreak havoc on social welfare may now become the norm. On the dial that measures the continuum between the government and the markets, the needle has decisively moved towards the left.

For the first time since Margaret Thatcher captured the zeitgeist of an era when declaring that “there is no such thing as society”, governments have the upper hand. Everything that comes in the post-pandemic era will lead us to rethink governments’ role. Rather than simply fixing market failures when they arise, they should, as suggested by the economist Mariana Mazzucato: “move towards actively shaping and creating markets that deliver sustainable and inclusive growth. They should also ensure that partnerships with business involving government funds are driven by public interest, not profit”. [68]

How will this expanded role of governments manifest itself? A significant element of new “bigger” government is already in place with the vastly

increased and quasi-immediate government control of the economy. As detailed in Chapter 1, public economic intervention has happened very quickly and on an unprecedented scale. In April 2020, just as the pandemic began to engulf the world, governments across the globe had announced stimulus programmes amounting to several trillion dollars, as if eight or nine Marshall Plans had been put into place almost simultaneously to support the basic needs of the poorest people, preserve jobs whenever possible and help businesses to survive. Central banks decided to cut rates and committed to provide all the liquidity that was needed, while governments started to expand social-welfare benefits, make direct cash transfers, cover wages, and suspend loan and mortgage payments, among other responses. Only governments had the power, capability and reach to make such decisions, without which economic calamity and a complete social meltdown would have prevailed.

Looking to the future, governments will most likely, but with different degrees of intensity, decide that it's in the best interest of society to rewrite some of the rules of the game and permanently increase their role. As happened in the 1930s in the US when massive unemployment and economic insecurity were progressively addressed by a larger role for government, today a similar course of action is likely to characterize the foreseeable future. We review in other sub-chapters the form this will take (like in the next one on the new social contract), but let's briefly identify some of the most salient points.

Heath and unemployment insurance will either need to be created from scratch or be strengthened where it already exists. Social safety nets will need to be strengthened as well – in the Anglo-Saxon societies that are the most "market-oriented"; extended unemployment benefits, sick leave and many other social measures will have to be implemented to cushion the effect of the shock and will thereafter become the norm. In many countries, renewed trade union engagement will facilitate this process. Shareholder value will become a secondary consideration, bringing to the fore the primacy of stakeholder capitalism. The financialization of the world that gained so much traction in past years will probably go into reverse. Governments, particularly in the countries most affected by it – the US and the UK – will be forced to reconsider many features of this obsession with finance. They could decide on a broad range of measures, from making

share buy-backs illegal, to preventing banks from incentivizing consumer debt. The public scrutiny of private companies will increase, particularly (but not only) for all the businesses that benefited from public money. Some countries will nationalize, while others will prefer to take equity stakes or to provide loans. In general, there will be more regulation covering many different issues, such as workers' safety or domestic sourcing for certain goods. Businesses will also be held to account on social and environmental fractures for which they will be expected to be part of the solution. As an add-on, governments will strongly encourage public-private partnerships so that private companies get more involved in the mitigation of global risks. Irrespective of the details, the role of the state will increase and, in doing so, will materially affect the way business is conducted. To varying degrees, business executives in all industries and all countries will have to adapt to greater government intervention. Research and development for global public goods such as health and climate change solutions will be actively pursued. Taxation will increase, particularly for the most privileged, because governments will need to strengthen their resilience capabilities and wish to invest more heavily in them. As advocated by Joseph Stiglitz:

> The first priority is to (…) provide more funding for the public sector, especially for those parts of it that are designed to protect against the multitude of risks that a complex society faces, and to fund the advances in science and higher-quality education, on which our future prosperity depends. These are areas in which productive jobs – researchers, teachers, and those who help run the institutions that support them – can be created quickly. Even as we emerge from this crisis, we should be aware that some other crisis surely lurks around the corner. We can't predict what the next one will look like – other than it will look different from the last. [69]

Nowhere will this intrusion of governments, whose form may be benign or malign depending on the country and the culture in which it is taking place, manifest itself with greater vigour than in the redefinition of the social contract.

1.3.4. The social contract

It is almost inevitable that the pandemic will prompt many societies around the world to reconsider and redefine the terms of their social contract. We have already alluded to the fact that COVID-19 has acted as an amplifier of pre-existing conditions, bringing to the fore long-standing issues that resulted from deep structural frailties that had never been properly addressed. This dissonance and an emergent questioning of the status quo is finding expression in a loudening call to revise the social contracts by which we are all more or less bound.

Broadly defined, the “social contract” refers to the (often implicit) set of arrangements and expectations that govern the relations between individuals and institutions. Put simply, it is the “glue” that binds societies together; without it, the social fabric unravels. For decades, it has slowly and almost imperceptibly evolved in a direction that forced individuals to assume greater responsibility for their individual lives and economic outcomes, leading large parts of the population (most evidently in the low-income brackets) to conclude that the social contract was at best being eroded, if not in some cases breaking down entirely. The apparent illusion of low or no inflation is a practical and illustrative example of how this erosion plays out in real-life terms. For many years the world over, the rate of inflation has fallen for many goods and services, with the exception of the three things that matter the most to a great majority of us: housing, healthcare and education. For all three, prices have risen sharply, absorbing an ever-larger proportion of disposable incomes and, in some countries, even forcing families to go into debt to receive medical treatment. Similarly, in the pre-pandemic era, work opportunities had expanded in many countries, but the increase in employment rates often coincided with income stagnation and work polarization. This situation ended up eroding the economic and social welfare of a large majority of people whose revenue was no longer sufficient to guarantee a modestly decent lifestyle (including among the middle class in the rich world). Today, the fundamental reasons underpinning the loss of faith in our social contracts coalesce around issues of inequality, the ineffectiveness of most redistribution policies, a sense of exclusion and marginalization, and a general sentiment of unfairness. This is why many citizens have begun to denounce a breakdown of the social contract, expressing more and more forcefully a general loss of trust in institutions and leaders. [70] In some

countries, this widespread exasperation has taken the form of peaceful or violent demonstrations; in others, it has led to electoral victories for populist and extremist parties. Whichever form it takes, in almost all cases, the establishment's response has been left wanting – ill-prepared for the rebellion and out of ideas and policy levers to address the problem. Although they are complex, the policy solutions do exist and broadly consist in adapting the welfare state to today's world by empowering people and by responding to the demands for a fairer social contract. Over the past few years, several international organizations and think tanks have adjusted to this new reality and outlined proposals on how to make it happen. [71] The pandemic will mark a turning point by accelerating this transition. It has crystallized the issue and made a return to the pre-pandemic status quo impossible.

What form might the new social contract take? There are no off-the-shelf, ready to go models because each potential solution depends upon the history and culture of the country to which it applies. Inevitably and understandably, a "good" social contract for China will be different from one for the US, which in turn will not resemble that of Sweden or Nigeria. However, they could all share some common features and principles, the absolute necessity of which has been made ever-more obvious by the social and economic consequences of the pandemic crisis. Two in particular stand out:

1. A broader, if not universal, provision of social assistance, social insurance, healthcare and basic quality services
2. A move towards enhanced protection for workers and for those currently most vulnerable (like those employed in and fuelling the gig economy in which full-time employees are replaced by independent contractors and freelancers).

It is often said that a nation's response to a disaster speaks volumes about its strengths and dysfunctions, and first and foremost about the "quality" and robustness of its social contract. As we progressively move away from the most acute moments of the crisis and begin a thorough examination of what went right and what didn't, we should expect a lot of soul-searching that will ultimately lead to a redefinition of the terms of our social contract. In countries that were perceived as providing a sub-par response to the

pandemic, many citizens will start asking critical questions such as: Why is it that in the midst of the pandemic, my country often lacked masks, respirators and ventilators? Why wasn't it properly prepared? Does it have to do with the obsession with short-termism? Why are we so rich in GDP terms and so ineffective at delivering good healthcare to all those who need it? How can it be that a person who has spent more than 10 years' training to become a medical doctor and whose end-of-year "results" are measured in lives receives compensation that is meagre compared to that of a trader or a hedge fund manager?

The COVID-19 crisis has laid bare the inadequate state of most national health systems, both in terms of costs of lives of patients and of nurses and doctors. In rich countries where tax-funded health services have suffered for a long time from a lack of resources (the UK National Health Service being the most extreme example) due to political concerns about rising taxes, calls for more spending (and therefore higher taxes) will get louder, with a growing realization that "efficient management" cannot compensate for underinvestment.

COVID-19 has also revealed yawning gaps in most welfare systems. At first glance, the nations that reacted in the most inclusive manner are those with an elaborate welfare system, most notably the Scandinavian countries. To provide an example, as early as March 2020, Norway guaranteed 80% of self-employed workers' average incomes (based on the tax returns of the previous three years), while Denmark guaranteed 75%. At the other end of the spectrum, the most market-oriented economies played catch-up and showed indecisiveness in how to protect the most vulnerable segments of the labour market, particularly the gig workers, the independent contractors and on-call and temporary workers whose employment consists of income-earning activities that are outside the traditional employer–employee relationship.

An important topic that may have a decisive impact on the new social contract is sick leave. Economists tend to agree that the absence of paid sick leave makes it harder to contain the spread of an epidemic, the simple reason being that if employees are denied access to it, they may be tempted or forced to go to work while they are infected and thus spread the disease. This is particularly true for low-income and service workers (the two often

go hand in hand). When the swine flu (H1N1) pandemic occurred in 2009-2010, the American Public Health Association estimated that around 7 million people were infected and an additional 1,500 died because contagious employees could not afford not to go to work. Among the rich economies, only the US has a system that leaves it at the discretion of employers to decide whether to provide paid sick leave. In 2019, almost a quarter of all US workers (about 40 million, largely concentrated in low-wage positions) did not benefit from it. In March 2020, when the pandemic started to rage in the US, President Trump signed into law new legislation that temporarily required employers to provide two weeks of sick leave plus family leave at partial pay, but only for workers with childcare problems. It remains to be seen how this will feature in the redefinition of the social contract in the US. By contrast, almost all European countries require employers to provide paid sick leave for varying periods during which workers are also protected from dismissal. New laws that were promulgated at the beginning of the pandemic also meant that the state would compensate part of or the whole salary of people confined at home, including those working in the gig economy and freelancers. In Japan, all workers are entitled to up to 20 days of paid leave every year while, in China, they are entitled to sick pay that ranges from 60% to 100% of daily wages during any period of illness with the length of sick leave contractually agreed or defined between workers and employers. As we move forward, we should expect such issues to intrude more and more in the redefinition of our social contract.

Another aspect that is critical for social contracts in Western democracies pertains to liberties and freedom. There is currently growing concern that the fight against this pandemic and future ones will lead to the creation of permanent surveillance societies. This issue is explored in more detail in the chapter on the technological reset, but suffice to say that a state emergency can only be justified when a threat is public, universal and existential. In addition, political theorists often emphasize that extraordinary powers require authorization from the people and must be limited in time and proportion. One can agree with the former part of the assertion (public, universal and existential threat), but what about the latter? Expect it to be a prominent component of future discussions about what our social contract should look like.

Collectively redefining the terms of our social contracts is an epochal task that binds the substantial challenges of the present moment to the hopes of the future. As Henry Kissinger reminded us: “The historic challenge for leaders is to manage the crisis while building the future. Failure could set the world on fire”. [72] While reflecting on the contours we think a future social contract might follow, we ignore at our peril the opinion of the younger generation who will be asked to live with it. Their adherence is decisive and thus to better understand what they want, we must not forget to listen. This is made all the more significant by the fact that the younger generation is likely to be more radical than the older one in refashioning our social contract. The pandemic has upended their lives, and a whole generation across the globe will be defined by economic and often social insecurity, with millions due to enter the work force in the midst of a profound recession. They will bear these scars forever. Also, starting off in a deficit – many students have educational debts – is likely to have long-term effects. Already the millennials (at least in the Western world) are worse off than their parents in terms of earnings, assets and wealth. They are less likely to own a home or have children than their parents were. Now, another generation (Gen Z) is entering a system that it sees as failing and that will be beset by long-standing problems revealed and exacerbated by the pandemic. As a college junior, quoted in *The New York Times* , put it: “Young people have a deep desire for radical change because we see the broken path ahead.” [73]

How will this generation respond? By proposing radical solutions (and often radical action) in an attempt to prevent the next disaster from striking – whether it’s climate change or social inequalities. It will most likely demand a radical alternative to the present course because its members are frustrated and dogged by a nagging belief that the current system is fractured beyond repair.

Youth activism is increasing worldwide, [74] being revolutionized by social media that increases mobilization to an extent that would have been impossible before. [75] It takes many different forms, ranging from non-institutionalized political participation to demonstrations and protests, and addresses issues as diverse as climate change, economic reforms, gender equality and LGBTQ rights. The young generation is firmly at the vanguard

of social change. There is little doubt that it will be the catalyst for change and a source of critical momentum for the Great Reset.

1.4. Geopolitical reset

The connectivity between geopolitics and pandemics flows both ways. On the one hand, the chaotic end of multilateralism, a vacuum of global governance and the rise of various forms of nationalism [76] make it more difficult to deal with the outbreak. The coronavirus is spreading globally and sparing no one, while simultaneously the geopolitical fault lines that divide societies spur many leaders to focus on national responses – a situation that constrains collective effectiveness and reduces the ability to eradicate the pandemic. On the other hand, the pandemic is clearly exacerbating and accelerating geopolitical trends that were already apparent before the crisis erupted. What were they and what is the current state of geopolitical affairs?

The late economist Jean-Pierre Lehmann (who taught at IMD in Lausanne) summed up today's situation with great perspicacity when he said: "There is no new global order, just a chaotic transition to uncertainty." More recently, Kevin Rudd, President of the Asia Society Policy Institute and former Australian Prime Minister, expressed similar sentiments, worrying specifically about the "coming post-COVID-19 anarchy": "Various forms of rampant nationalism are taking the place of order and cooperation. The chaotic nature of national and global responses to the pandemic thus stands as a warning of what could come on an even broader scale." [77] This has been years in the making with multiple causes that intersect with each other, but the determining element of geopolitical instability is the progressive rebalancing from the West to the East – a transition that creates stresses and that, in the process, also generates global disorder. This is captured in the so-called Thucydides' trap – the structural stress that inevitably occurs when a rising power like China rivals a ruling power like the US. This confrontation will be a source of global messiness, disorder and uncertainty for years to come. Irrespective of whether one "likes" the US or not, its progressive disengagement (the equivalent of a "geopolitical taper", as the historian Niall Ferguson puts it) from the international scene is bound to increase international volatility. More and more, countries that tended to rely on global public goods provided by the US "hegemon" (for sea lane security, the fight against international terrorism, etc.) will now have to tend

their own backyards themselves. The 21st century will most likely be an era devoid of an absolute hegemon during which no one power gains absolute dominance – as a result, power and influence will be redistributed chaotically and in some cases grudgingly.

In this messy new world defined by a shift towards multipolarity and intense competition for influence, the conflicts or tensions will no longer be driven by ideology (with the partial and limited exception of radical Islam), but spurred by nationalism and the competition for resources. If no one power can enforce order, our world will suffer from a "global order deficit". Unless individual nations and international organizations succeed in finding solutions to better collaborate at the global level, we risk entering an "age of entropy" in which retrenchment, fragmentation, anger and parochialism will increasingly define our global landscape, making it less intelligible and more disorderly. The pandemic crisis has both exposed and exacerbated this sad state of affairs. The magnitude and consequence of the shock it has inflicted are such that no extreme scenario can now be taken off the table. The implosion of some failing states or petrostates, the possible unravelling of the EU, a breakdown between China and the US that leads to war: all these and many more have now become plausible (albeit hopefully unlikely) scenarios.

In the following pages, we review four main issues that will become more prevalent in the post-pandemic era and that conflate with each other: the erosion of globalization, the absence of global governance, the increasing rivalry between the US and China, and the fate of fragile and failing states.

1.4.1. Globalization and nationalism

Globalization – an all-purpose word – is a broad and vague notion that refers to the global exchange between nations of goods, services, people, capital and now even data. It has succeeded in lifting hundreds of millions of people out of poverty but, for quite a number of years now, it has been called into question and even started to recede. As highlighted previously, today's world is more interconnected than it has ever been but, for more than a decade, the economic and political impetus that made the case for and supported the increase of globalization has been on the wane. The global trade talks that started in the early 2000s failed to deliver an

agreement, while during that same period the political and societal backlash against globalization relentlessly gained strength. As the social costs provoked by the asymmetric effects of globalization rose (particularly in terms of manufacturing unemployment in high-income countries), the risks of financial globalization became ever-more apparent after the Great Financial Crisis that began in 2008. Thus combined, they triggered the rise of populist and right-wing parties around the world (most notably in the West), which, when they come to power, often retreat into nationalism and promote an isolationist agenda – two notions antithetical to globalization.

The global economy is so intricately intertwined that it is impossible to bring globalization to an end. However, it is possible to slow it down and even to put it into reverse. We anticipate that the pandemic will do just that. It has already re-erected borders with a vengeance, reinforcing to an extreme trends that were already in full glare before it erupted with full force in March 2020 (when it became a truly global pandemic, sparing no country), such as tougher border controls (mainly because of fears about immigration) and greater protectionism (mainly because of fears about globalization). Tighter border controls for the purpose of managing the progression of the pandemic make eminent sense, but the risk that the revival of the nation state leads progressively to much greater nationalism is real, a reality that the "globalization trilemma" framework offered by Dani Rodrik captured. In the early 2010s, when globalization was becoming a sensitive political and social issue, the Harvard economist explained why it would be the inevitable casualty if nationalism rises. The trilemma suggests that the three notions of economic globalization, political democracy and the nation state are mutually irreconcilable, based on the logic that only two can effectively co-exist at any given time. [78] Democracy and national sovereignty are only compatible if globalization is contained. By contrast, if both the nation state and globalization flourish, then democracy becomes untenable. And then, if both democracy and globalization expand, there is no place for the nation state. Therefore, one can only ever choose two out of the three – this is the essence of the trilemma. The European Union has often been used as an example to illustrate the pertinence of the conceptual framework offered by the trilemma. Combining economic integration (a proxy for globalization) with democracy implies that the important decisions have to be made at a supranational level, which somehow

weakens the sovereignty of the nation state. In the current environment, what the “political trilemma” framework suggests is that globalization must necessarily be contained if we are not to give up some national sovereignty or some democracy. Therefore, the rise of nationalism makes the retreat of globalization inevitable in most of the world – an impulse particularly notable in the West. The vote for Brexit and the election of President Trump on a protectionist platform are two momentous markers of the Western backlash against globalization. Subsequent studies not only validate Rodrik’s trilemma, but also show that the rejection of globalization by voters is a rational response when the economy is strong and inequality is high. [79]

The most visible form of progressive deglobalization will occur at the heart of its “nuclear reactor”: the global supply chain that has become emblematic of globalization. How and why will this play out? The shortening or relocalization of supply chains will be encouraged by: 1) businesses that see it as a risk mitigation measure against supply chain disruption (the resilience versus efficiency trade-off); and 2) political pressure from both the right and the left. Since 2008, the drive towards greater localization has been firmly on the political agenda in many countries (particularly in the West), but it will now be accelerated in the post-pandemic era. On the right, the pushback against globalization is driven by protectionists and national-security hawks who were already gathering force before the pandemic started. Now, they will create alliances and sometimes merge with other political forces that will see the benefit of embracing an antiglobalization agenda. On the left, activists and green parties that were already stigmatizing air travel and asking for a rollback against globalization will be emboldened by the positive effect the pandemic had on our environment (far fewer carbon emissions, much less air and water pollution). Even without pressure from the far right and the green activists, many governments will realize that some situations of trade dependency are no longer politically acceptable. How can the US administration, for example, accept that 97% of antibiotics supplied in the country come from China? [80]

This process of reversing globalization will not happen overnight; shortening supply chains will be both very challenging and very costly. For example, a thorough and all-encompassing decoupling from China would

require from companies making such a move an investment of hundreds of billions of dollars in newly located factories, and from governments equivalent amounts to fund new infrastructure, like airports, transportation links and housing, to serve the relocated supply chains. Notwithstanding that the political desire for decoupling may in some cases be stronger than the actual ability to do so, the direction of the trend is nonetheless clear. The Japanese government made this obvious when it set aside 243 billion of its 108 trillion Japanese yen rescue package to help Japanese companies pull their operations out of China. On multiple occasions, the US administration has hinted at similar measures.

The most likely outcome along the globalization–no globalization continuum lies in an in-between solution: regionalization. The success of the European Union as a free trade area or the new Regional Comprehensive Economic Partnership in Asia (a proposed free trade agreement among the 10 countries that compose ASEAN) are important illustrative cases of how regionalization may well become a new watered-down version of globalization. Even the three states that compose North America now trade more with each other than with China or Europe. As Parag Khanna points out: “Regionalism was clearly overtaking globalism before the pandemic exposed the vulnerabilities of our long-distance interdependence”. [81] For years, with the partial exception of direct trade between the US and China, globalization (as measured by the exchange of goods) was already becoming more intraregional than interregional. In the early 1990s, North America absorbed 35% of East Asia’s exports, while today this proportion is down to 20%, mainly because East Asia’s share of exports to itself grows every year – a natural situation as Asian countries move up the value chain, consuming more of what they produce. In 2019, as the US and China unleashed a trade war, US trade with Canada and Mexico rose while falling with China. At the same time, China’s trade with ASEAN rose for the first time to above $300 billion. In short, deglobalization in the form of greater regionalization was already happening.

COVID-19 will just accelerate this global divergence as North America, Europe and Asia focus increasingly on regional self-sufficiency rather than on the distant and intricate global supply chains that formerly epitomized the essence of globalization. What form might this take? It could resemble

the sequence of events that brought an earlier period of globalization to an end, but with a regional twist. Antiglobalization was strong in the run-up to 1914 and up to 1918, then less so during the 1920s, but it reignited in the 1930s as a result of the Great Depression, triggering an increase in tariff and non-tariff barriers that destroyed many businesses and inflicted much pain on the largest economies of that time. The same could happen again, with a strong impulse to reshore that spreads beyond healthcare and agriculture to include large categories of non-strategic products. Both the far right and the far left will take advantage of the crisis to promote a protectionist agenda with higher barriers to the free flow of capital goods and people. Several surveys conducted in the first few months of 2020 revealed that international companies fear a return and aggravation of protectionism in the US, not only on trade, but also in cross-border mergers and acquisitions and government procurement. [82] What happens in the US will inevitably ricochet elsewhere, with other advanced economies imposing more barriers to trade and investment, defying the appeals from experts and international organizations to refrain from protectionism.

This sombre scenario is not inevitable but, over the next few years, we should expect the tensions between the forces of nationalism and openness to play out across three critical dimensions: 1) global institutions; 2) trade; and 3) capital flows. Recently, global institutions and international organizations have been either enfeebled, like the World Trade Organization or the WHO, or not up to the task, the latter due more to being "underfinanced and over-governed" [83] than to inherent inadequacy.

Global trade, as we saw in the previous chapter, will almost certainly contract as companies shorten their supply chain and ensure that they no longer rely on a single country or business abroad for critical parts and components. In the case of particularly sensitive industries (like pharmaceuticals or healthcare materials) and sectors considered to be of national-security interest (like telecommunications or energy generation), there may even be an ongoing process of de-integration. This is already becoming a requirement in the US, and it would be surprising if this attitude does not spread to other countries and other sectors. Geopolitics is also inflicting some economic pain through the so-called weaponization of trade, triggering fear among global companies that they can no longer assume an

orderly and predictable resolution of trade conflicts through the international rule of law.

As for international capital flows, it seems already evident that national authorities and public defiance will constrain them. As already shown by so many countries and regions as different as Australia, India or the EU, protectionist considerations will become ever-more present in the post-pandemic era. Measures will range from national governments buying stakes in “strategic” companies to prevent foreign takeovers or imposing diverse restrictions on such takeovers, to foreign direct investment (FDI) being subjected to government approval. It is telling that, in April 2020, the US administration decided to block a publicly administered pension fund from investing in China.

In the coming years, it seems inevitable that some deglobalization will happen, spurred by the rise of nationalism and greater international fragmentation. There is no point in trying to restore the status quo ex ante (“hyper-globalization” has lost all its political and social capital, and defending it is no longer politically tenable), but it is important to limit the downside of a possible free fall that would precipitate major economic damage and social suffering. A hasty retreat from globalization would entail trade and currency wars, damaging every country’s economy, provoking social havoc and triggering ethno- or clan nationalism. The establishment of a much more inclusive and equitable form of globalization that makes it sustainable, both socially and environmentally, is the only viable way to manage retreat. This requires policy solutions addressed in the concluding chapter and some form of effective global governance. Progress is indeed possible in those global areas that have traditionally benefited from international cooperation, like environmental agreements, public health and tax havens.

This will only come about through improved global governance – the most “natural” and effective mitigating factor against protectionist tendencies. However, we do not yet know how its framework will evolve in the foreseeable future. At the moment, the signs are ominous that it is not going in the right direction. There is no time to waste. If we do not improve the functioning and legitimacy of our global institutions, the world will soon

become unmanageable and very dangerous. There cannot be a lasting recovery without a global strategic framework of governance.

1.4.2. Global governance

Global governance is commonly defined as the process of cooperation among transnational actors aimed at providing responses to global problems (those that affect more than one state or region). It encompasses the totality of institutions, policies, norms, procedures and initiatives through which nation states try to bring more predictability and stability to their responses to transnational challenges. This definition makes it clear that any global effort on any global issue or concern is bound to be toothless without the cooperation of national governments and their ability to act and legislate to support their aims. Nation states make global governance possible (one leads the other), which is why the UN says that “effective global governance can only be achieved with effective international cooperation”. [84] The two notions of global governance and international cooperation are so intertwined that it is nigh on impossible for global governance to flourish in a divided world that is retrenching and fragmenting. The more nationalism and isolationism pervade the global polity, the greater the chance that global governance loses its relevance and becomes ineffective. Sadly, we are now at this critical juncture. Put bluntly, we live in a world in which nobody is really in charge.

COVID-19 has reminded us that the biggest problems we face are global in nature. Whether it’s pandemics, climate change, terrorism or international trade, all are global issues that we can only address, and whose risks can only be mitigated, in a collective fashion. But the world has become, in the words of Ian Bremmer, a G0 world, or worse, a G-minus-2 world (the US and China), according to the Indian economist Arvind Subramanian [85] (to account for the absence of leadership of the two giants by opposition to the G7, the group of seven wealthiest nations – or the G20 – the G7 plus 13 other significant countries and organizations, which are supposed to lead). More and more often, the big problems besetting us take place beyond the control of even the most powerful nation states; the risks and issues to be confronted are increasingly globalized, interdependent and interconnected, while the global governance capacities to do so are failing perilously,

endangered by the resurgence of nationalism. Such disconnect signifies not only that the most critical global issues are being addressed in a highly fragmented, thus inadequate, manner, but also that they are actually being exacerbated by this failure to deal with them properly. Thus, far from remaining constant (in terms of the risk they pose), they inflate and end up increasing systemic fragility. This is shown in figure 1; strong interconnections exist between global governance failure, climate action failure, national government failure (with which it has a self-reinforcing effect), social instability and of course the ability to successfully deal with pandemics. In a nutshell, global governance is at the nexus of all these other issues. Therefore, the concern is that, without appropriate global governance, we will become paralysed in our attempts to address and respond to global challenges, particularly when there is such a strong dissonance between short-term, domestic imperatives and long-term, global challenges. This is a major worry, considering that today there is no "committee to save the world" (the expression was used more than 20 years ago, at the height of the Asian financial crisis). Pursuing the argument further, one could even claim that the "general institutional decay" that Fukuyama describes in *Political Order and Political Decay* [86] amplifies the problem of a world devoid of global governance. It sets in motion a vicious cycle in which nation states deal poorly with the major challenges that beset them, which then feeds into the public's distrust of the state, which in turn leads to the state's being starved of authority and resources, then leading to even poorer performance and the inability or unwillingness to deal with issues of global governance.

COVID-19 tells just such a story of failed global governance. From the very beginning, a vacuum in global governance, exacerbated by the strained relations between the US and China, undermined international efforts to respond to the pandemic. At the onset of the crisis, international cooperation was non-existent or limited and, even during the period when it was needed the most (in the acme of the crisis: during the second quarter of 2020), it remained conspicuous by its absence. Instead of triggering a set of measures coordinated globally, COVID-19 led to the opposite: a stream of border closures, restrictions in international travel and trade introduced almost without any coordination, the frequent interruption of medical supply distribution and the ensuing competition for resources, particularly

visible in various attempts by several nation states to source badly needed medical equipment by any means possible. Even in the EU, countries initially chose to go it alone, but that course of action subsequently changed, with practical assistance between member countries, an amended EU budget in support of healthcare systems, and pooled research funds to develop treatments and vaccines. (And there have now been ambitious measures, which would have seemed unimaginable in the pre-pandemic era, susceptible of pushing the EU towards further integration, in particular a €750 billion recovery fund put forward by the European Commission.) In a functioning global governance framework, nations should have come together to fight a global and coordinated "war" against the pandemic. Instead the "my country first" response prevailed and severely impaired attempts to contain the expansion of the first wave of the pandemic. It also placed constraints on the availability of protective equipment and treatment that in turn undermined the resilience of national healthcare systems. Furthermore, this fragmented approach went on to jeopardize attempts to coordinate exit policies aimed at "restarting" the global economic engine. In the case of the pandemic, in contrast with other recent global crises like 9/11 or the financial crisis of 2008, the global governance system failed, proving either non-existent or dysfunctional. The US went on to withdraw funding from the WHO but, no matter the underlying rationale of this decision, the fact remains that it is the only organization capable of coordinating a global response to the pandemic, which means that an albeit far from perfect WHO is infinitely preferable to a non-existent one, an argument that Bill Gates compellingly and succinctly made in a tweet: "Their work is slowing the spread of COVID-19 and if that work is stopped no other organization can replace them. The world needs @WHO now more than ever."

This failure is not the WHO's fault. The UN agency is merely the symptom, not the cause, of global governance failure. The WHO's deferential posture towards donor countries reflects its complete dependence on states agreeing to cooperate with it. The UN organization has no power to compel information sharing or enforce pandemic preparedness. Like other similar UN agencies, for example on human rights or climate change, the WHO is saddled with limited and dwindling resources: in 2018, it had an annual budget of $4.2 billion, miniscule in comparison to any health budget around

the world. In addition, it is at the perpetual mercy of member states and has effectively no tools at its disposal to directly monitor outbreaks, coordinate pandemic planning or ensure effective preparedness implementation at the country level, let alone allocate resources to those countries most in need. This dysfunctionality is symptomatic of a broken global governance system, and the jury is out as to whether existing global governance configurations like the UN and the WHO can be repurposed to address today's global risks. For the time being, the bottom line is this: in the face of such a vacuum in global governance, only nation states are cohesive enough to be capable of taking collective decisions, but this model doesn't work in the case of world risks that require concerted global decisions.

The world will be a very dangerous place if we do not fix multilateral institutions. Global coordination will be even more necessary in the aftermath of the epidemiological crisis, for it is inconceivable that the global economy could "restart" without sustained international cooperation. Without it, we'll be heading towards "a poorer, meaner and smaller world". [87]

1.4.3. The growing rivalry between China and the US

In the post-pandemic era, COVID-19 might be remembered as the turning point that ushered in a "new type of cold war" [88] between China and the US (the two words "new type" matter considerably: unlike the Soviet Union, China is not seeking to impose its ideology around the world). Prior to the pandemic, tensions between the two dominant powers were already building up in many different domains (trade, property rights, military bases in the South China Sea, and tech and investment in strategic industries in particular), but after 40 years of strategic engagement, the US and China now seem unable to bridge the ideological and political divides that separate them. Far from uniting the two geopolitical giants, the pandemic did the exact opposite by exacerbating their rivalry and intensifying competition between them.

Most analysts would concur that, during the COVID-19 crisis, the political and ideological fracture between the two giants grew. According to Wang Jisi, a renowned Chinese scholar and Dean of the School of International Studies at Peking University, the fallout from the pandemic has pushed

China–US relations to their worst level since 1979, when formal ties were established. In his opinion, the bilateral economic and technological decoupling is “already irreversible”, [89] and it could go as far as the “global system breaking into two parts” warns Wang Huiyao, President of the Center for China and Globalization in Beijing. [90] Even public figures have expressed publicly their concern. In an article published in June 2020, Lee Hsien Loong, Prime Minister of Singapore, warned against the perils of confrontation between the US and China, which, in his own words: “raises profound questions about Asia’s future and the shape of the emerging international order”. He added that: “Southeast Asian countries, including Singapore, are especially concerned, as they live at the intersection of the interests of various major powers and must avoid being caught in the middle or forced into invidious choices.” [91]

Views, of course, differ radically on which country is “right” or going to come out “on top” by benefiting from the perceived weaknesses and fragilities of the other. But it is essential to contextualize them. There isn’t a “right” view and a “wrong” view, but different and often diverging interpretations that frequently correlate with the origin, culture and personal history of those who profess them. Pursuing further the “quantum world” metaphor mentioned earlier, it could be inferred from quantum physic that objective reality does not exist. We think that observation and measurement define an “objective” opinion, but the micro-world of atoms and particles (like the macro-world of geopolitics) is governed by the strange rules of quantum mechanics in which two different observers are entitled to their own opinions (this is called a “superposition”: “particles can be in several places or states at once”). [92] In the world of international affairs, if two different observers are entitled to their own opinions, that makes them subjective, but no less real and no less valid. If an observer can only make sense of the “reality” through different idiosyncratic lenses, this forces us to rethink our notion of objectivity. It is evident that the representation of reality depends on the position of the observer. In that sense, a “Chinese” view and a “US” view can co-exist, together with multiple other views along that continuum – all of them real! To a considerable extent and for understandable reasons, the Chinese view of the world and its place in it is influenced by the humiliation suffered during the first Opium War in 1840 and the subsequent invasion in 1900 when the Eight Nation Alliance looted

Beijing and other Chinese cities before demanding compensation. [93] Conversely, how the US views the world and its place in it is largely based on the values and principles that have shaped American public life since the country's founding. [94] These have determined both its pre-eminent world position and its unique attractiveness for many immigrants for 250 years. The US perspective is also rooted in the unrivalled dominance it has enjoyed over the rest of the world for the past few decades and the inevitable doubts and insecurities that come with a relative loss of absolute supremacy. For understandable reasons, both China and the US have a rich history (China's goes back 5,000 years) of which they are proud, leading them, as Kishore Mahbubani observed, to overestimate their own strengths and underestimate the strengths of the other.

Vindicating the point above, all analysts and forecasters who specialize in China, the US, or both, have access to more or less the same data and information (now a global commodity), see, hear and read more or less the same things, but sometimes reach diametrically opposed conclusions. Some see the US as the ultimate winner, others argue that China has already won, and a third group states that there'll be no winners. Let's briefly review each of their arguments in turn.

China as a winner

The argument of those who claim that the pandemic crisis has benefited China while exposing the weaknesses of the US is threefold.

1. It has made the American strength as the world's most prominent military power irrelevant in the face of an invisible and microscopic enemy.
2. In the words of the American academic who coined the expression, it hurt the US soft power because of "the incompetence of its response". [95] (An important caveat: the issue of whether a public response to COVID-19 was "competent" or "incompetent" has given rise to a myriad of opinions and provoked much disagreement. Yet, it remains difficult to pass judgement. In the US, for example, the policy response was to a large extent the responsibility of states and even cities. Hence, in effect, there was no national US policy response as such. What we are discussing here are subjective opinions that shaped public attitudes.)

3. It has exposed aspects of American society that some may find shocking, like the deep inequalities in the face of the outbreak, the lack of universal medical coverage and the issue of systemic racism raised by the Black Lives Matter movement.

All these prompted Kishore Mahbubani, an influential analyst of the rivalry that opposes the US and China, [96] to argue that COVID-19 has reversed the roles of both countries in terms of dealing with disasters and supporting others. While in the past the US was always the first to arrive with aid where assistance was needed (like on 26 December 2004 when a major tsunami hit Indonesia), this role now belongs to China, he says. In March 2020, China sent to Italy 31 tons of medical equipment (ventilators, masks and protective suits) that the EU could not provide. In his opinion, the 6 billion people who compose "the rest of the world" and live in 191 countries have already begun preparing themselves for the US–China geopolitical contest. Mahbubani says that it is their choices that will determine who wins the rivalry contest and that these will be based on "the cold calculus of reason to work out cost–benefit analyses of what both the U.S. and China have to offer them". [97] Sentiments may not play much of a role because all these countries will base their choice on which, the US or China, will at the end of the day improve their citizens' living conditions, but a vast majority of them do not want to be caught in a geopolitical zero-sum game and would prefer to keep all their options open (i.e. not to be forced to choose between the US and China). However, as the example of Huawei has shown, even traditional US allies like France, Germany and the UK are being pressured by the US to do so. The decisions that countries make when facing such a stark choice will ultimately determine who emerges as the winner in the growing rivalry between the US and China.

The US as a winner

In the camp of America as the ultimate winner, arguments are centred on the inherent strengths of the US as well as the perceived structural weaknesses of China.

The "US as a winner" proponents think it is premature to call for an abrupt end of US supremacy in the post-pandemic era and offer the following argument: the country may be declining in relative terms, but it is still a

formidable hegemon in absolute terms and continues to possess a considerable amount of soft power; its appeal as a global destination may be waning somehow, but it nonetheless remains strong as shown by the success of American universities abroad and the appeal of its cultural industry. In addition, the dollar's domination as a global currency used in trade and perceived as a safe haven remains largely unchallenged for the moment. This translates into considerable geopolitical power, enabling the US authorities to exclude companies and even countries (like Iran or Venezuela) from the dollar system. As we saw in the preceding chapter, this may change in the future but, over the next few years, there is no alternative to the world's dominance of the US dollar. More fundamentally, proponents of US "irreducibility" will argue with Ruchir Sharma that: "US economic supremacy has repeatedly proved declinists wrong". [98] They will also agree with Winston Churchill, who once observed that the US has an innate capability to learn from its mistakes when he remarked that the US always did the right thing when all the alternatives have been exhausted.

Leaving aside the highly charged political argument (democracy versus autocracy), those who believe that the US will remain a "winner" for many more years also stress that China faces its own headwinds on its path to global superpower status. Those most frequently mentioned are the following: 1) it suffers from a demographic disadvantage, with a fast-ageing population and a working-age population that peaked in 2015; 2) its influence in Asia is constrained by existing territorial disputes with Brunei, India, Indonesia, Japan, Malaysia, the Philippines and Viet Nam; and 3) it is highly energy-dependent.

No winner

What do those who claim that "the pandemic bodes ill for both American and Chinese power – and for the global order" think? [99] They argue that, like almost all other countries around the world, both China and the US are certain to suffer massive economic damage that will limit their capacity to extend their reach and influence. China, whose trade sector represents more than a third of total GDP, will find it difficult to launch a sustained economic recovery when its large trading partners (like the US) are drastically retrenching. As for the US, its over-indebtedness will sooner or

later constrain post-recovery spending, with the ever-present risk that the current economic crisis metastasizes into a systemic financial crisis.

Referring in the case of both countries to the economic hit and domestic political difficulties, the doubters assert that both countries are likely to emerge from this crisis significantly diminished. “Neither a new Pax Sinica nor a renewed Pax Americana will rise from the ruins. Rather, both powers will be weakened, at home and abroad”.

An underlying reason for the “no winner” argument is an intriguing idea put forward by several academics, most notably Niall Ferguson. Essentially, it says that the corona crisis has exposed the failure of superpowers like the US and China by highlighting the success of small states. In the words of Ferguson: “The real lesson here is not that the U.S. is finished and China is going to be the dominant power of the 21st century. I think the reality is that all the superpowers – the United States, the People's Republic of China and the European Union – have been exposed as highly dysfunctional.” [100] Being big, as the proponents of this idea argue, entails diseconomies of scale: countries or empires have grown so large as to reach a threshold beyond which they cannot effectively govern themselves. This in turn is the reason why small economies like Singapore, Iceland, South Korea and Israel seem to have done better than the US in containing the pandemic and dealing with it.

Predicting is a guessing game for fools. The simple truth is that nobody can tell with any degree of reasonable confidence or certainty how the rivalry between the US and China will evolve – apart from saying that it will inevitably grow. The pandemic has exacerbated the rivalry that opposes the incumbent and the emerging power. The US has stumbled in the pandemic crisis and its influence has waned. Meanwhile, China may be trying to benefit from the crisis by expanding its reach abroad. We know very little about what the future holds in terms of strategic competition between China and the US. It will oscillate between two extremes: a contained and manageable deterioration tempered by business interests at one end of the spectrum, to permanent and all-out hostility at the other.

1.4.4. Fragile and failing states

The boundaries between state fragility, a failing state and a failed one are fluid and tenuous. In today's complex and adaptive world, the principle of non-linearity means that suddenly a fragile state can turn into a failed state and that, conversely, a failed state can see its situation improve with equal celerity thanks to the intermediation of international organizations or even an infusion of foreign capital. In the coming years, as the pandemic inflicts hardship globally, it is most likely that the dynamic will only go one way for the world's poorest and most fragile countries: from bad to worse. In short, many states that exhibit characteristics of fragility risk failing.

State fragility remains one of the most critical global challenges, particularly prevalent in Africa. Its causes are multiple and intertwined; they range from economic disparity, social issues, political corruption and inefficiencies, to external or internal conflicts and natural disasters. Today, it is estimated that around 1.8-2 billion people lived in fragile states, a number that will certainly increase in the post-pandemic era because fragile countries are particularly vulnerable to an outbreak of COVID-19. [101] The very essence of their fragility – weak state capacity and the associated inability to ensure the fundamental functions of basic public services and security – makes them less able to cope with the virus. The situation is even worse in failing and failed states that are almost always victims of extreme poverty and fractious violence and, as such, can barely or no longer perform basic public functions like education, security or governance. Within their power vacuum, helpless people fall victim to competing factions and crime, often compelling the UN or a neighbouring state (not always well intentioned) to intervene to prevent a humanitarian disaster. For many such states, the pandemic will be the exogenous shock that forces them to fail and fall even further.

For all these reasons, it is almost a tautology to state that the damage inflicted by the pandemic to fragile and failing states will be much deeper and longer-lasting than in the richer and most developed economies. It will devastate some of the world's most vulnerable communities. In many cases, economic disaster will trigger some form of political instability and outbreaks of violence because the world's poorest countries will suffer from two predicaments: first, the breakdown in trade and supply chains caused by the pandemic will provoke immediate devastation like no remittances or increased hunger; and, second, further down the line, they will endure a

prolonged and severe loss of employment and income. This is the reason why the global outbreak has such potential to wreak havoc in the world's poorest countries. It is there that economic decline will have an even more immediate effect on societies. Across large swathes of sub-Saharan Africa, in particular, but also in parts of Asia and Latin America, millions depend on a meagre daily income to feed their families. Any lockdown or health crisis caused by the coronavirus could rapidly create widespread desperation and disorder, potentially triggering massive unrest with global knock-on effects. The implications will be particularly damaging for all those countries caught in the midst of a conflict. For them, the pandemic will inevitably disrupt humanitarian assistance and aid flows. It will also limit peace operations and postpone diplomatic efforts to bring the conflicts to an end.

Geopolitical shocks have a propensity to take observers by surprise, with ripple and knock-on effects that create second-, third- and more-order consequences, but currently where are the risks most apparent?

All commodity-countries are at risk (Norway and a few others do not qualify). At the time of writing, they are being hit particularly hard by the collapse in energy and commodity prices that are exacerbating the problems posed by the pandemic and all the other issues with which they conflate (unemployment, inflation, inadequate health systems and, of course, poverty). For rich and relatively developed energy-dependent economies like the Russian Federation and Saudi Arabia, the collapse of oil prices "only" represents a considerable economic blow, putting strained budgets and foreign exchange reserves under strain, and posing acute medium- and long-term risks. But for lower-income countries like South Sudan where oil accounts for the quasi totality of exports (99%), the blow could simply be devastating. This is true for many other fragile commodity countries. Outright collapse is not an outlandish scenario for petrostates like Ecuador or Venezuela, where the virus could overwhelm the countries' few functioning hospitals very quickly. Meanwhile in Iran, US sanctions are compounding the problems associated with the high rate of COVID-19 infection.

Particularly at risk now are many countries in the Middle East and Maghreb, where the economic pain was increasingly apparent before the

pandemic and with restless, youthful populations and rampant unemployment. The triple blow of COVID-19, the collapse in oil prices (for some) and the freeze in tourism (a vital source of employment and foreign currency earnings) could trigger a wave of massive anti-government demonstrations reminiscent of the Arab Spring in 2011. In an ominous sign, at the end of April 2020 and in the midst of the lockdown, riots over joblessness concerns and soaring poverty took place in Lebanon.

The pandemic has brought the issue of food security back with a vengeance, and in many countries it could entail a humanitarian and food crisis catastrophe. Officials from the UN Food and Agriculture Organization predict that the number of people suffering from acute food insecurity could double in 2020 to 265 million. The combination of movement and trade restrictions caused by the pandemic with an increase in unemployment and limited or no access to food could trigger large-scale social unrest followed by mass movements of migration and refugees. In fragile and failing states, the pandemic exacerbates existing food shortages through barriers to trade and disruption in global food supply chains. It does so to such a considerable extent that on 21 April 2020, David Beasley, Executive Director of the UN World Food Programme, warned the UN Security Council that “multiple famines of biblical proportions” had become possible in about three dozen countries, most notably Yemen, Congo, Afghanistan, Venezuela, Ethiopia, South Sudan, Syria, Sudan, Nigeria and Haiti.

In the poorest countries of the world, the lockdowns and the economic recession happening in high-income countries will trigger major income losses for the working poor and all those who depend on them. The decrease in overseas remittances that account for such a large proportion of GDP (more than 30%) in some countries like Nepal, Tonga or Somalia is a case in point. It will inflict a devastating shock to their economies with dramatic social implications. According to the World Bank, the impact of lockdowns and the ensuing economic “hibernation” that happened in so many countries around the world will cause a 20% decline in remittance to low- and middle-income countries, from a $554 billion last year to $445 billion in 2020. [102] In larger countries like Egypt, India, Pakistan, Nigeria and the Philippines, for which remittances are a crucial source of external financing, this will create a lot of hardship and render their economic, social

and political situation even more fragile, with the very real possibility of destabilization. Then, there is tourism, one of the hardest-hit industries from the pandemic, which is an economic lifeline for many poor nations. In countries like Ethiopia where tourism revenues account for almost half (47%) of total exports, the corresponding loss of income and employment will inflict considerable economic and social pain. The same goes for the Maldives, Cambodia and several others.

Then, there are all the conflict zones where many armed groups are thinking about how to use the excuse of the pandemic to move their agenda forward (like in Afghanistan where the Taliban is asking that its prisoners be released from jail, or in Somalia where the al-Shabaab group presents COVID-19 as an attempt to destabilize them). The global ceasefire plea made on 23 March 2020 by the UN secretary-general has fallen on deaf ears. Of 43 countries with at least 50 reported events of organized violence in 2020, only 10 responded positively (most often with simple statements of support but no commitment to action). Among the other 31 countries with ongoing conflicts, the actors failed not only to take steps to meet the call, but many actually increased the level of organized violence. [103] The early hopes that concerns with the pandemic and the ensuing health emergency might curb long-running conflicts and catalyse peace negotiations have evaporated. This is yet another example of the pandemic not only failing to arrest a troubling or dangerous trend but in fact accelerating it.

Wealthier countries ignore the tragedy unfolding in fragile and failing countries at their peril. In one way or another, risks will reverberate through greater instability or even chaos. One of the most obvious knock-on effects for the richer parts of the world of economic misery, discontent and hunger in the most fragile and poorest states will consist in a new wave of mass migration in its direction, like those that occurred in Europe in 2016.

1.5. Environmental reset

At first glance, the pandemic and the environment might seem to be only distantly related cousins; but they are much closer and more intertwined than we think. Both have and will continue to interact in unpredictable and distinctive ways, ranging from the part played by diminished biodiversity in the behaviour of infectious diseases to the effect that COVID-19 might have on climate change, thus illustrating the perilously subtle balance and complex interactions between humankind and nature.

Furthermore, in global risk terms, it is with climate change and ecosystem collapse (the two key environmental risks) that the pandemic most easily equates. The three represent, by nature and to varying degrees, existential threats to humankind, and we could argue that COVID-19 has already given us a glimpse, or foretaste, of what a full-fledged climate crisis and ecosystem collapse could entail from an economic perspective: combined demand and supply shocks, and disruption to trade and supply chains with ripple and knock-on effects that amplify risks (and in some cases opportunities) in the other macro categories: geopolitics, societal issues and technology. If climate change, ecosystem collapse and pandemics look so similar as global risks, how do they really compare? They possess many common attributes while displaying strong dissimilarities.

The five main shared attributes are: 1) they are known (i.e. white swan) systemic risks that propagate very fast in our interconnected world and, in so doing, amplify other risks from different categories; 2) they are non-linear, meaning that beyond a certain threshold, or tipping point, they can exercise catastrophic effects (like “superspreading” in a particular location and then overwhelming the capabilities of the health system in the case of the pandemic); 3) the probabilities and distribution of their impacts are very hard, if not impossible, to measure – they are constantly shifting and having to be reconsidered under revised assumptions, which in turn makes them extremely difficult to manage from a policy perspective; 4) they are global in nature and therefore can only be properly addressed in a globally coordinated fashion; and 5) they affect disproportionately the already most vulnerable countries and segments of the population.

And what are their dissimilarities? There are several, most of which are of a conceptual and methodological nature (like a pandemic being a contagion risk while climate change and ecosystem collapse are accumulation risks), but the two that matter the most are: 1) the time-horizon difference (it has a critical bearing on policies and mitigating actions); and 2) the causality problem (it makes public acceptance of the mitigation strategies more difficult):

1. Pandemics are a quasi-instantaneous risk, whose imminence and danger are visible to all. An outbreak threatens our survival – as individuals or a species – and we therefore respond immediately and with determination when faced with the risk. By contrast, climate change and nature loss are gradual and cumulative, with effects that are discernible mostly in the medium and long term (and despite more and more climate related and "exceptional" nature loss events, there are still significant numbers who remain unconvinced of the immediacy of the climate crisis). This crucial difference between the respective time-horizons of a pandemic and that of climate change and nature loss means that a pandemic risk requires immediate action that will be followed by a rapid result, while climate change and nature loss also require immediate action, but the result (or "future reward", in the jargon of economists) will only follow with a certain time lag. Mark Carney, former Governor of the Bank of England who is now the UN Special Envoy for Climate Action and Finance, has observed that this problem of time asynchronicity generates a "tragedy of the horizon": contrary to immediate and observable risks, climate change risks may seem distant (in terms of time and geography), in which case they will not be responded to with the gravity they deserve and demand. As an example, the material risk that global warming and rising waters pose for a physical asset (like a beachside holiday resort) or a company (like a hotel group) will not necessarily be considered as material by investors and will therefore not be priced in by the markets.

2. The causality problem is easy to grasp, as are the reasons that make respective policies so much more difficult to implement. In the case of the pandemic, the causation link between the virus and the disease is obvious: SARS-CoV-2 causes COVID-19. Apart from a handful of

conspiracy theorists, nobody will dispute that. In the case of environmental risks, it is much more difficult to attribute direct causality to a specific event. Often, scientists cannot point to a direct link of causation between climate change and a specific weather event (like a drought or the severity of a hurricane). Similarly, they don't always agree about how a specific human activity affects particular species facing extinction. This makes it incredibly more difficult to mitigate climate change and nature loss risks. While for a pandemic, a majority of citizens will tend to agree with the necessity to impose coercive measures, they will resist constraining policies in the case of environmental risks where the evidence can be disputed. A more fundamental reason also exists: fighting a pandemic does not require a substantial change of the underlying socio-economic model and of our consumption habits. Fighting environmental risks does.

1.5.1. Coronavirus and the environment

1.5.1.1. Nature and zoonotic diseases

Zoonotic diseases are those that spread from animals to humans. Most experts and conservationists agree that they have drastically increased in recent years, particularly because of deforestation (a phenomenon also linked to an increase in carbon dioxide emissions), which augments the risk of close human–animal interaction and contamination. For many years, researchers thought that natural environments like tropical forests and their rich wildlife represented a threat to humans because this is where the pathogens and viruses at the origin of new diseases in humans such as dengue, Ebola and HIV could be found. Today, we know this is wrong because the causation goes the other way. As David Quammen, author of *Spillover: Animal Infections and the Next Human Pandemic* , argues: "We invade tropical forests and other wild landscapes, which harbor so many species of animals and plants – and within those creatures, so many unknown viruses. We cut the trees; we kill the animals or cage them and send them to markets. We disrupt ecosystems, and we shake viruses loose from their natural hosts. When that happens, they need a new host. Often, we are it." [104] By now, an increasing number of scientists have shown that it is in fact the destruction of biodiversity caused by humans that is the

source of new viruses like COVID-19. These researchers have coalesced around the new discipline of “planetary health” that studies the subtle and complex connections that exist between the well-being of humans, other living species and entire ecosystems, and their findings have made it clear that the destruction of biodiversity will increase the number of pandemics.

In a recent letter to the US Congress, 100 wildlife and environmental groups estimate that zoonotic diseases have quadrupled over the past 50 years. [105] Since 1970, land-use changes have had the largest relative negative impact on nature (and in the process caused a quarter of man-made emissions). Agriculture alone covers more than one-third of the terrestrial land surface and is the economic activity that disrupts nature the most. A recent academic review concludes that agriculture drivers are associated with more than 50% of zoonotic diseases. [106] As human activities like agriculture (with many others like mining, logging or tourism) encroach on natural ecosystems, they break down the barriers between human populations and animals, creating the conditions for infectious diseases to emerge by spilling from animals to humans. The loss of animals’ natural habitat and the wildlife trade are particularly relevant because when animals known as being linked to particular diseases (like bats and pangolins with the coronavirus) are taken out of the wild and moved into cities, a wildlife disease reservoir is simply transported into a densely populated area. This is what might have happened at the market in Wuhan where the novel coronavirus is believed to have originated (the Chinese authorities have since permanently banned wildlife trade and consumption). Nowadays, most scientists would agree that the greater population growth is, the more we disturb the environment, the more intensive farming becomes without adequate biosecurity, the higher the risk of new epidemics. The key antidote currently available to us to contain the progression of zoonotic diseases is the respect and preservation of the natural environment and the active protection of biodiversity. To do this effectively, it will be incumbent on us all to rethink our relationship with nature and question why we have become so alienated from it. In the concluding chapter, we offer specific recommendations on the form that a “nature-friendly” recovery may take.

1.5.1.2. Air pollution and pandemic risk

It’s been known for years that air pollution, largely caused by emissions that also contribute to global warming, is a silent killer, linked to various health conditions, ranging from diabetes and cancer to cardiovascular and respiratory diseases. According to the WHO, 90% of the world’s population breathes air that fails to meet its safety guidelines, causing the premature death of 7 million people each year and prompting the organization to qualify air pollution as a “public-health emergency”.

We now know that air pollution worsens the impact of any particular coronavirus (not only the current SARS-CoV-2) on our health. As early as 2003, a study published in the midst of the SARS epidemic suggested that air pollution might explain the variation in the level of lethality, [107] making it clear for the first time that the greater the level of air pollution, the greater the likelihood of death from the disease caused by a coronavirus. Since then, a growing body of research has shown how a lifetime of breathing dirtier air can make people more susceptible to the coronavirus. In the US, a recent medical paper concluded that those regions with more polluted air will experience higher risks of death from COVID-19, showing that US counties with higher pollution levels will suffer higher numbers of hospitalizations and numbers of deaths. [108] A consensus has formed in the medical and public community that there is a synergistic effect between air pollution exposure and the possible occurrence of COVID-19, and a worse outcome when the virus does strike. The research, still embryonic but expanding fast, hasn’t proved yet that a link of causation exists, but it unambiguously exposes a strong correlation between air pollution and the spread of the coronavirus and its severity. It seems that air pollution in general, and the concentration of particulate matter in particular, impair the airways – the lungs’ first line of defence – meaning that people (irrespective of their age) who live in highly polluted cities will face a greater risk of catching COVID-19 and dying from it. This may explain why people in Lombardy (one of Europe’s most polluted regions) who had contracted the virus were shown to be twice as likely to die from COVID-19 than people almost anywhere else in Italy.

1.5.1.3. Lockdown and carbon emissions

It is too early to define the amount by which global carbon dioxide emissions will fall in 2020, but the International Energy Agency (IEA) estimates in its *Global Energy Review 2020* that they will fall by 8%. [109] Even though this figure would correspond to the largest annual reduction on record, it is still miniscule compared to the size of the problem and it remains inferior to the annual reduction in emissions of 7.6% over the next decade that the UN thinks is necessary to hold the global rise in temperatures below 1.5°C. [110]

Considering the severity of the lockdowns, the 8% figure looks rather disappointing. It seems to suggest that small individual actions (consuming much less, not using our cars and not flying) are of little significance when compared to the size of emissions generated by electricity, agriculture and industry, the "big-ticket emitters" that continued to operate during the lockdowns (with the partial exception of some industries). What it also reveals is that the biggest "offenders" in terms of carbon emissions aren't always those often perceived as the obvious culprits. A recent sustainability report shows that the total carbon emissions generated by the electricity production required to power our electronic devices and transmit their data are roughly equivalent to that of the global airline industry. [111] The conclusion? Even unprecedented and draconian lockdowns with a third of the world population confined to their homes for more than a month came nowhere near to being a viable decarbonization strategy because, even so, the world economy kept emitting large amounts of carbon dioxide. What then might such a strategy look like? The considerable size and scope of the challenge can only be addressed by a combination of: 1) a radical and major systemic change in how we produce the energy we need to function; and 2) structural changes in our consumption behaviour. If, in the post-pandemic era, we decide to resume our lives just as before (by driving the same cars, by flying to the same destinations, by eating the same things, by heating our house the same way, and so on), the COVID-19 crisis will have gone to waste as far as climate policies are concerned. Conversely, if some of the habits we were forced to adopt during the pandemic translate into structural changes in behaviour, the climate outcome might be different. Commuting less, working remotely a bit more, bicycling and walking instead of driving to keep the air of our cities as clean as it was during the lockdowns, vacationing nearer to home: all these, if aggregated at scale, could lead to a

sustained reduction in carbon emissions. This brings us to the all-important question of whether the pandemic will eventually exercise a positive or negative effect on climate change policies.

1.5.2. Impact of the pandemic on climate change and other environmental policies

The pandemic is destined to dominate the policy landscape for years, with the serious risk that it could overshadow environmental concerns. In a telling anecdote, the convention centre in Glasgow where the UN COP-26 Climate Summit should have taken place in November 2020 was converted in April into a hospital for COVID-19 patients. Already, climate negotiations have been delayed and policy initiatives postponed, nourishing the narrative that, for a long while, governmental leaders will only be paying attention to the multifaceted range of immediate problems created by the pandemic crisis. Another narrative has also emerged, elaborated by some national leaders, senior business executives and prominent opinion-makers. It runs along these lines that the COVID-19 crisis cannot go to waste and that now is the time to enact sustainable environmental policies.

In reality, what happens with the fight against climate change in the post-pandemic era could go in two opposite directions. The first corresponds to the narrative above: the economic consequences of the pandemic are so painful, difficult to address and complex to implement that most governments around the world may decide to “temporarily” put aside concerns about global warming to focus on the economic recovery. If such is the case, policy decisions will support and stimulate fossil-fuel heavy and carbon-emitting industries by subsidizing them. They will also roll back stringent environmental standards seen as a stumbling block on the road to rapid economic recovery and will encourage companies and consumers to produce and consume as much “stuff” as possible. The second is spurred by a different narrative, in which businesses and governments are emboldened by a new social conscience among large segments of the general population that life can be different, and is pushed by activists: the moment must be seized to take advantage of this unique window of opportunity to redesign a more sustainable economy for the greater good of our societies.

Let’s examine both divergent possible outcomes in more detail. Needless to say, they are country and region (EU) dependent. No two countries will adopt the same policies nor move at the same speed but, ultimately, they should all embrace the direction of the less carbon-intensive trend.

Three key reasons could explain why this is not a given and why the focus on the environment could fade when the pandemic starts retreating:

1. Governments could decide that it is in the best collective interest to pursue growth at “any cost” in order to cushion the impact on unemployment.

2. Companies will be under such pressure to increase revenues that sustainability in general and climate considerations in particular will become secondary.

3. Low oil prices (if sustained, which is likely) could encourage both consumers and businesses to rely even more on carbon-intensive energy.

These three reasons are cogent enough to make them compelling, but there are others that might just succeed in pushing the trend in the other direction. Four in particular could succeed in making the world cleaner and more sustainable:

1. **Enlightened leadership** . Some leaders and decision-makers who were already at the forefront of the fight against climate change may want to take advantage of the shock inflicted by the pandemic to implement long-lasting and wider environmental changes. They will, in effect, make “good use” of the pandemic by not letting the crisis go to waste. The exhortation of different leaders ranging from HRH the Prince of Wales to Andrew Cuomo to “build it back better” goes in that direction. So does a dual declaration made by the IEA with Dan Jørgensen, Minister for Climate, Energy and Utilities of Denmark, suggesting that clean energy transitions could help kick-start economies: “Around the world, leaders are getting ready now, drawing up massive economic stimulus packages. Some of these plans will provide short-term boosts, others will shape infrastructure for decades to come. We believe that by making clean energy an integral

part of their plans, governments can deliver jobs and economic growth while also ensuring that their energy systems are modernised, more resilient and less polluting." [112] Governments led by enlightened leaders will make their stimulus packages conditional upon green commitments. They will, for example, provide more generous financial conditions for companies with low-carbon business models.

2. **Risk-awareness** . The pandemic played the role of a great "risk-awakening", making us much more aware of the risks we collectively face and reminding us that our world is tightly interconnected. COVID-19 made it clear that we ignore science and expertise at our peril, and that the consequences of our collective actions can be considerable. Hopefully, some of these lessons that offer us a better understanding of what an existential risk really means and entails will now be transferred to climate risks. As Nicholas Stern, Chair of the Grantham Research Institute on Climate Change and the Environment, stated: "What we have seen from all of this, is that we can make changes (…). We have to recognise there will be other pandemics and be better prepared. [But] we must also recognise that climate change is a deeper and bigger threat that doesn't go away, and is just as urgent." [113] Having worried for months about the pandemic and its effect on our lungs, we'll become obsessed about clean air; during the lockdowns, a significant number of us saw and smelled for ourselves the benefits of reduced air pollution, possibly prompting a collective realization that we just have a few years to address the worst consequences of global warming and climate change. If this is the case, societal (collective and individual) changes will follow.

3. **Change in behaviour** . As a consequence of the point above, societal attitudes and demands may evolve towards greater sustainability to a greater degree than commonly assumed. Our consumption patterns changed dramatically during the lockdowns by forcing us to focus on the essential and giving us no choice but to adopt "greener living". This may last, prompting us to disregard everything that we do not really need, and putting into motion a virtuous circle for the environment. Likewise, we may decide that working from home (when possible) is good for both the environment and our individual well-being (commuting is a "destroyer" of well-being – the longer it

is, the more detrimental it becomes to our physical and mental health). These structural changes in how we work, consume and invest may take a little while before they become widespread enough to make a real difference but, as we argued before, what matters is the direction and the strength of the trend. The poet and philosopher Lao Tzu was right in saying: “A journey of a thousand miles begins with a single step.” We are just at the beginning of a long and painful recovery and, for many of us, thinking about sustainability may seem like a luxury but when things start to improve we’ll collectively remember that a relation of causality exists between air pollution and COVID-19. Then sustainability will cease to be secondary and climate change (so closely correlated with air pollution) will move to the forefront of our preoccupations. What social scientists call “behavioural contagion” (the way in which attitudes, ideas and behaviour spread throughout the population) might then work its magic!

4. **Activism** . Some analysts ventured that the pandemic would provoke the obsolescence of activism, but the exact opposite may well prove to be true. According to a group of American and European academics, the coronavirus has emboldened the motivation for change and triggered new tools and strategies in terms of social activism. Over the course of just several weeks, this group of researchers collected data on various forms of social activism and identified almost 100 distinct methods of non-violent action, including physical, virtual and hybrid actions. Their conclusion: “Emergencies often prove to be the forge in which new ideas and opportunities are hammered out. While it is impossible to predict what the long-term effects of such growing skill and awareness may be, it’s clear that people power has not diminished. Instead, movements around the world are adapting to remote organizing, building their bases, sharpening their messaging, and planning strategies for what comes next”. [114] If their assessment is correct, social activism, repressed by necessity during the lockdowns and their various measures of physical and social distancing, may re-emerge with renewed vigour once the periods of confinement are over. Emboldened by what they saw during the lockdowns (no air pollution), climate activists will redouble their efforts, imposing further pressure on companies and investors. As we

will see in Chapter 2, investors' activism will also be a force to be reckoned with. It will strengthen the cause of social activists by adding an extra and powerful dimension to it. Let's imagine the following situation to illustrate the point: a group of green activists could demonstrate in front of a coal-fired power plant to demand greater enforcement of pollution regulations, while a group of investors does the same in the boardroom by depriving the plant access to capital.

Across the four reasons, scattered factual evidence gives us hope that the green trend will eventually prevail. It comes from different domains but converges towards the conclusion that the future could be greener than we commonly assume. To corroborate this conviction, four observations intersect with the four reasons provided:

1. In June 2020, BP, one of the world's oil and gas "supermajors", slashed the value of its assets by $17.5 billion, having come to the conclusion that the pandemic will accelerate a global shift towards cleaner forms of energy. Other energy companies are about to make a similar move. [115] In the same spirit, major global companies like Microsoft have committed to becoming carbon negative by 2030.

2. The European Green Deal launched by the European Commission is a massive endeavour and the most tangible manifestation yet of public authorities deciding not to let the COVID-19 crisis go to waste. [116] The plan commits €1 trillion for lowering emissions and investing in the circular economy, with the aim of making the EU the first carbon-neutral continent by 2050 (in terms of net emissions) and decoupling economic growth from resource use.

3. Various international surveys show that a large majority of citizens around the world want the economic recovery from the corona crisis to prioritize climate change. [117] In the countries that compose the G20, a sizeable majority of 65% of citizens support a green recovery. [118]

4. Some cities like Seoul are furthering their commitment to climate and environment policies by implementing their own "Green New Deal", framed as one way to mitigate the pandemic fallout. [119]

The direction of the trend is clear but, ultimately, systemic change will come from policy-makers and business leaders willing to take advantage of COVID stimulus packages to kick-start the nature-positive economy. This will not only be about public investments. The key to crowding private capital into new sources of nature-positive economic value will be to shift key policy levers and public finance incentives as part of a wider economic reset. There is a strong case for acting more forcefully on spatial planning and land-use regulations, public finance and subsidy reform, innovation policies that help to drive expansion and deployment in addition to R&D, blended finance and better measurement of natural capital as a key economic asset. Many governments are starting to act, but much more is needed to tip the system towards a nature-positive new norm and make a majority of people all over the world realize this is not only an imperious necessity but also a considerable opportunity. A policy paper prepared by Systemiq in collaboration with the World Economic Forum [120] estimates that building the nature-positive economy could represent more than $10 trillion per year by 2030 – in terms of new economic opportunities as well as avoided economic costs. In the short term, deploying around $250 billion of stimulus funding could generate up to 37 million nature-positive jobs in a highly cost-effective manner. Resetting the environment should not be seen as a cost, but rather as an investment that will generate economic activity and employment opportunities.

Hopefully, the threat from COVID-19 won’t last. One day, it will be behind us. By contrast, the threat from climate change and its associated extreme weather events will be with us for the foreseeable future and beyond. The climate risk is unfolding more slowly than the pandemic did, but it will have even more severe consequences. To a great extent, its severity will depend on the policy response to the pandemic. Every measure destined to revive economic activity will have an immediate effect on how we live, but will also have an impact on carbon emissions that will in turn have an environmental impact across the globe and measured across generations. As we’ve argued in this book, these choices are ours to make.

1.6. Technological reset

When it was published in 2016, *The Fourth Industrial Revolution* made the case that “Technology and digitization will revolutionize everything, making the overused and often ill-used adage ‘this time is different’ apt. Simply put, major technological innovations are on the brink of fueling momentous change throughout the world.” [121] In the four short years since, technological progress has moved impressively fast. AI is now all around us, from drones and voice recognition to virtual assistants and translation software. Our mobile devices have become a permanent and integral part of our personal and professional lives, helping us on many different fronts, anticipating our needs, listening to us and locating us, even when not asked to do so… Automation and robots are reconfiguring the way businesses operate with staggering speed and returns on scale inconceivable just a few years ago. Innovation in genetics, with synthetic biology now on the horizon, is also exciting, paving the way for developments in healthcare that are groundbreaking. Biotechnology still falls short of stopping, let alone preventing, a disease outbreak, but recent innovations have allowed the identification and sequencing of the coronavirus’ genome much faster than in the past, as well as the elaboration of more effective diagnostics. In addition, the most recent biotechnology techniques using RNA and DNA platforms make it possible to develop vaccines faster than ever. They might also help with the development of new bioengineered treatments.

To sum up, the speed and breadth of the Fourth Industrial Revolution have been and continue to be remarkable. This chapter argues that the pandemic will accelerate innovation even more, catalysing technological changes already under way (comparable to the exacerbation effect it has had on other underlying global and domestic issues) and “turbocharging” any digital business or the digital dimension of any business. It will also accentuate one of the greatest societal and individual challenges posed by tech: privacy. We will see how contact tracing has an unequalled capacity and a quasi-essential place in the armoury needed to combat COVID-19, while at the same time being positioned to become an enabler of mass surveillance.

1.6.1. Accelerating the digital transformation

With the pandemic, the “digital transformation” that so many analysts have been referring to for years, without being exactly sure what it meant, has found its catalyst. One major effect of confinement will be the expansion and progression of the digital world in a decisive and often permanent manner. This is noticeable not only in its most mundane and anecdotal aspects (more online conversations, more streaming to entertain, more digital content in general), but also in terms of forcing more profound changes in how companies operate, something that is explored in more depth in the next chapter. In April 2020, several tech leaders observed how quickly and radically the necessities created by the health crisis had precipitated the adoption of a wide range of technologies. In the space of just one month, it appeared that many companies in terms of tech take-up fast-forwarded by several years. For the digitally savvy, this meant good things, while, for the others, a very poor outlook (sometimes catastrophically so). Satya Nadella, CEO of Microsoft, observed that social- and physical-distancing requirements created “a remote everything”, bringing forward the adoption of a wide range of technologies by two years, while Sundar Pichai, Google’s CEO, marvelled at the impressive leap in digital activity, forecasting a “significant and lasting” effect on sectors as different as online work, education, shopping, medicine and entertainment. [122]

1.6.1.1. The consumer

During the lockdowns, many consumers previously reluctant to rely too heavily on digital applications and services were forced to change their habits almost overnight: watching movies online instead of going to the cinema, having meals delivered instead of going out to restaurants, talking to friends remotely instead of meeting them in the flesh, talking to colleagues on a screen instead of chit-chatting at the coffee machine, exercising online instead of going to the gym, and so on. Thus, almost instantly, most things became “e-things”: e-learning, e-commerce, e-gaming, e-books, e-attendance. Some of the old habits will certainly return (the joy and pleasure of personal contacts can’t be matched – we are social animals after all!), but many of the tech behaviours that we were forced to

adopt during confinement will through familiarity become more natural. As social and physical distancing persist, relying more on digital platforms to communicate, or work, or seek advice, or order something will, little by little, gain ground on formerly ingrained habits. In addition, the pros and cons of online versus offline will be under constant scrutiny through a variety of lenses. If health considerations become paramount, we may decide, for example, that a cycling class in front of a screen at home doesn't match the conviviality and fun of doing it with a group in a live class but is in fact safer (and cheaper!). The same reasoning applies to many different domains like flying to a meeting (Zoom is safer, cheaper, greener and much more convenient), driving to a distant family gathering for the weekend (the WhatsApp family group is not as fun but, again, safer, cheaper and greener) or even attending an academic course (not as fulfilling, but cheaper and more convenient).

1.6.1.2. The regulator

This transition towards more digital "of everything" in our professional and personal lives will also be supported and accelerated by regulators. To date governments have often slowed the pace of adoption of new technologies by lengthy ponderings about what the best regulatory framework should look like but, as the example of telemedicine and drone delivery is now showing, a dramatic acceleration forced by necessity is possible. During the lockdowns, a quasi-global relaxation of regulations that had previously hampered progress in domains where the technology had been available for years suddenly happened because there was no better or other choice available. What was until recently unthinkable suddenly became possible, and we can be certain that neither those patients who experienced how easy and convenient telemedicine was nor the regulators who made it possible will want to see it go into reverse. New regulations will stay in place. In the same vein, a similar story is unfolding in the US with the Federal Aviation Authority, but also in other countries, related to fast-tracking regulation pertaining to drone delivery. The current imperative to propel, no matter what, the "contactless economy" and the subsequent willingness of regulators to speed it up means that there are no holds barred. What is true for until-recently sensitive domains like telemedicine and drone delivery is also true for more mundane and well-covered regulatory fields, like mobile

payments. Just to provide a banal example, in the midst of the lockdown (in April 2020), European banking regulators decided to increase the amount that shoppers could pay using their mobile devices while also reducing the authentication requirements that made it previously difficult to make payments using platforms like PayPal or Venmo. Such moves will only accelerate the digital “prevalence” in our daily lives, albeit not without contingent cybersecurity issues.

1.6.1.3. The firm

In one form or another, social- and physical-distancing measures are likely to persist after the pandemic itself subsides, justifying the decision in many companies from different industries to accelerate automation. After a while, the enduring concerns about technological unemployment will recede as societies emphasize the need to restructure the workplace in a way that minimizes close human contact. Indeed, automation technologies are particularly well suited to a world in which human beings can’t get too close to each other or are willing to reduce their interactions. Our lingering and possibly lasting fear of being infected with a virus (COVID-19 or another) will thus speed the relentless march of automation, particularly in the fields most susceptible to automation. In 2016, two academics from Oxford University came to the conclusion that up to 86% of jobs in restaurants, 75% of jobs in retail and 59% of jobs in entertainment could be automatized by 2035. [123] These three industries are among those the hardest hit by the pandemic and in which automating for reasons of hygiene and cleanliness will be a necessity that in turn will further accelerate the transition towards more tech and more digital. There is an additional phenomenon set to support the expansion of automation: when “economic distancing” might follow social distancing. As countries turn inward and global companies shorten their super-efficient but highly fragile supply chains, automation and robots that enable more local production, while keeping costs down, will be in great demand.

The process of automation was set in motion many years ago, but the critical issue once again relates to the accelerating pace of change and transition: the pandemic will fast-forward the adoption of automation in the workplace and the introduction of more robots in our personal and

professional lives. From the onset of the lockdowns, it became apparent that robots and AI were a “natural” alternative when human labour was not available. Furthermore, they were used whenever possible to reduce the health risks to human employees. At a time when physical distancing became an obligation, robots were deployed in places as different as warehouses, supermarkets and hospitals in a broad range of activities, from shelf scanning (an area in which AI has made tremendous forays) to cleaning and of course robotic delivery – a soon-to-be important component of healthcare supply chains that will in turn lead to the “contactless” delivery of groceries and other essentials. As for many other technologies that were on the distant horizon in terms of adoption (like telemedicine), businesses, consumers and public authorities are now rushing to turbocharge the speed of adoption. In cities as varied as Hangzhou, Washington DC and Tel Aviv, efforts are under way to move from pilot programmes to large-scale operations capable of putting an army of delivery robots on the road and in the air. Chinese e-commerce giants like Alibaba and jd.com are confident that, in the coming 12-18 months, autonomous delivery could become widespread in China – much earlier than anticipated prior to the pandemic.

Maximum attention is often focused on industrial robots as they are the most visible face of automation, but radical acceleration is also coming in workplace automation via software and machine learning. So-called Robotic Process Automation (RPA) makes businesses more efficient by installing computer software that rivals and replaces the actions of a human worker. This can take multiple forms, ranging from Microsoft’s finance group consolidating and simplifying disparate reports, tools and content into an automated, role-based personalized portal, to an oil company installing software that sends pictures of a pipeline to an AI engine, to compare the pictures with an existing database and alert the relevant employees to potential problems. In all cases, RPA helps to reduce the time spent compiling and validating data, and therefore cuts costs (at the expense of a likely increase in unemployment, as mentioned in the “Economic reset” section). During the peak of the pandemic, RPA won its spurs by proving its efficiency at handling surges in volume; thus ratified, in the post-pandemic era the process will be rolled out and fast-tracked. Two examples prove this point. RPA solutions helped some hospitals to disseminate COVID-19 test

results, saving nurses as much as three hours' work per day. In a similar vein, an AI digital device normally used to respond to customer requests online was adapted to help medical digital platforms screen patients online for COVID-19 symptoms. For all these reasons, Bain & Company (a consultancy) estimates that the number of companies implementing this automation of business processes will double over the next two years, a timeline that the pandemic may shorten still further. [124]

1.6.2. Contact tracing, contact tracking and surveillance

An important lesson can be learned from the countries that were more effective in dealing with the pandemic (in particular Asian nations): technology in general and digital in particular help. Successful contact tracing proved to be a key component of a successful strategy against COVID-19. While lockdowns are effective at reducing the reproduction rate of the coronavirus, they don't eliminate the threat posed by the pandemic. In addition, they come at injuriously high economic and societal cost. It will be very hard to fight COVID-19 without an effective treatment or a vaccine and, until then, the most effective way to curtail or stop transmission of the virus is by widespread testing followed by the isolation of cases, contact tracing and the quarantine of contacts exposed to the people infected. As we will see below, in this process technology can be a formidable shortcut, allowing public-health officials to identify infected people very rapidly, thus containing an outbreak before it starts to spread.

Contact tracing and tracking are therefore essential components of our public-health response to COVID-19. Both terms are often used interchangeably, yet they have slightly different meanings. A tracking app gains insights in real time by, for example, determining a person's current location through geodata via GPS coordinates or radio cell location. By contrast, tracing consists in gaining insights in retrospect, like identifying physical contacts between people using Bluetooth. Neither offer a miracle solution that can stop in its entirety the spread of the pandemic, but they make it possible to almost immediately sound the alarm, permitting early intervention, thus limiting or containing the outbreak, particularly when it occurs in superspreading environments (like a community or family

gathering). For reasons of convenience and ease of reading, we'll merge the two and will use them interchangeably (as articles in the press often do).

The most effective form of tracking or tracing is obviously the one powered by technology: it not only allows backtracking all the contacts with whom the user of a mobile phone has been in touch, but also tracking the user's real-time movements, which in turn affords the possibility to better enforce a lockdown and to warn other mobile users in the proximity of the carrier that they have been exposed to someone infected.

It comes as no surprise that digital tracing has become one of the most sensitive issues in terms of public health, raising acute concerns about privacy around the world. In the early phases of the pandemic, many countries (mostly in East Asia but also others like Israel) decided to implement digital tracing under different forms. They shifted from the retroactive tracing of chains of past contagion to the real-time tracking of movements in order to confine a person infected by COVID-19 and to enforce subsequent quarantines or partial lockdowns. From the outset, China, Hong Kong SAR and South Korea implemented coercive and intrusive measures of digital tracing. They took the decision to track individuals without their consent, through their mobile and credit card data, and even employed video surveillance (in South Korea). In addition, some economies required the mandatory wearing of electronic bracelets for travel arrivals and people in quarantine (in Hong Kong SAR) to alert those individuals susceptible of being infected. Others opted for "middle-ground" solutions, where individuals placed in quarantine are equipped with a mobile phone to monitor their location and be publicly identified should they breach the rules.

The digital tracing solution most lauded and talked about was the TraceTogether app run by Singapore's Ministry of Health. It seems to offer the "ideal" balance between efficiency and privacy concerns by keeping user data on the phone rather than on a server, and by assigning the login anonymously. The contact detection only works with the latest versions of Bluetooth (an obvious limitation in many less digitally advanced countries where a large percentage of mobiles do not have sufficient Bluetooth capability for effective detection). Bluetooth identifies the user's physical contacts with another user of the application accurately to within about two

metres and, if a risk of COVID-19 transmission is incurred, the app will warn the contact, at which point the transmission of stored data to the ministry of health becomes mandatory (but the contact's anonymity is maintained). TraceTogether is therefore non-intrusive in terms of privacy, and its code, available in open source, makes it usable by any country anywhere in the world, yet privacy advocates object that there are still risks. If the entire population of a country downloaded the application, and if there were a sharp increase in COVID-19 infections, then the app could end up identifying most citizens. Cyber intrusions, issues of trust in the operator of the system and the timing of data retention pose additional privacy concerns.

Other options exist. These are mainly related to the availability of open and verifiable source codes, and to guarantees pertaining to data supervision and the length of conservation. Common standards and norms could be adopted, particularly in the EU where many citizens fear that the pandemic will force a trade-off between privacy and health. But as Margrethe Vestager, the EU Commissioner for Competition, observed:

> I think that is a false dilemma, because you can do so many things with technology that are not invasive of your privacy. I think that, very often, when people say it's only doable in one way, it's because they want the data for their own purposes. We have made a set of guidelines, and with member states we have translated that into a toolbox, so that you can do a voluntary app with decentralized storage, with Bluetooth technology. You can use technology to track the virus, but you can still give people the freedom of choice, and, in doing that, people trust that the technology is for virus tracking and not for any other purposes. I think it is essential that we show that we really mean it when we say that you should be able to trust technology when you use it, that this is not a start of a new era of surveillance. This is for virus tracking, and this can help us open our societies. [125]

Again, we want to emphasize that this is a fast-moving and highly volatile situation. The announcement made in April by Apple and Google that they are collaborating to develop an app that health officials could use to reverse-engineer the movements and connections of a person infected by

the virus points to a possible way out for societies most concerned about data privacy and that fear digital surveillance above anything else. The person who carries the mobile would have to voluntarily download the app and would have to agree to share the data, and the two companies made it clear that their technology would not be provided to public-health agencies that do not abide by their privacy guidelines. But voluntary contact-tracing apps have a problem: they do preserve the privacy of their users but are only effective when the level of participation is sufficiently high – a collective-action problem that underlines once again the profoundly interconnected nature of modern life beneath the individualist façade of rights and contractual obligations. No voluntary contract-tracing app will work if people are unwilling to provide their own personal data to the governmental agency that monitors the system; if any individual refuses to download the app (and therefore to withhold information about a possible infection, movements and contacts), everyone will be adversely affected. In the end, citizens will only use the app if they regard it as trustworthy, which is itself dependent upon trust in the government and public authorities. At the end of June 2020, the experience with tracing apps was recent and mixed. Fewer than 30 countries had put them in place. [126] In Europe, some countries like Germany and Italy rolled out apps based on the system developed by Apple and Google, while other countries, like France, decided to develop their own app, raising issues of interoperability. In general, technical problems and concerns with privacy seemed to affect the app's use and rate of adoption. Just to offer some examples: the UK, following technical glitches and criticism from privacy activists, made a U-turn and decided to replace its domestically-developed contact-tracing app with the model offered by Apple and Google. Norway suspended the use of its app due to privacy concerns while, in France, just three weeks after being launched, the StopCovid app had simply failed to take off, with a very low rate of adoption (1.9 million people) followed by frequent decisions to uninstall it.

Today, about 5.2 billion smartphones exist in the world, each with the potential to help identify who is infected, where and often by whom. This unprecedented opportunity may explain why different surveys conducted in the US and Europe during their lockdowns indicated that a growing number of citizens seemed to favour smartphone tracking from public authorities

(within very specific boundaries). But as always, the devil is in the detail of the policy and its execution. Questions like whether the digital tracking should be mandatory or voluntary, whether the data should be collected on an anonymized or personal basis and whether the information should be collected privately or publicly disclosed contain many different shades of black and white, making it exceedingly difficult to agree upon a unified model of digital tracing in a collective fashion. All these questions, and the unease they can provoke, were exacerbated by the rise of corporations tracking employees' health that emerged in the early phases of national reopenings. They will continuously grow in relevance as the corona pandemic lingers on and fears about other possible pandemics surface.

As the coronavirus crisis recedes and people start returning to the workplace, the corporate move will be towards greater surveillance; for better or for worse, companies will be watching and sometimes recording what their workforce does. The trend could take many different forms, from measuring body temperatures with thermal cameras to monitoring via an app how employees comply with social distancing. This is bound to raise profound regulatory and privacy issues, which many companies will reject by arguing that, unless they increase digital surveillance, they won't be able to reopen and function without risking new infections (and being, in some cases, liable). They will cite health and safety as justification for increased surveillance.

The perennial concern expressed by legislators, academics and trade unionists is that the surveillance tools are likely to remain in place after the crisis and even when a vaccine is finally found, simply because employers don't have any incentive to remove a surveillance system once it's been installed, particularly if one of the indirect benefits of surveillance is to check on employees' productivity.

This is what happened after the terrorist attacks of 11 September 2001. All around the world, new security measures like employing widespread cameras, requiring electronic ID cards and logging employees or visitors in and out became the norm. At that time, these measures were deemed extreme, but today they are used everywhere and considered "normal". An increasing number of analysts, policy-makers and security specialists fear

the same will now happen with the tech solutions put into place to contain the pandemic. They foresee a dystopian world ahead of us.

1.6.3. The risk of dystopia

Now that information and communication technologies permeate almost every aspect of our lives and forms of social participation, any digital experience that we have can be turned into a “product” destined to monitor and anticipate our behaviour. The risk of possible dystopia stems from this observation. Over the past few years, it has nourished countless works of arts, ranging from novels like *The Handmaid’s Tale* to the TV series “Black Mirror”. In academia, it finds its expression in the research undertaken by scholars like Shoshana Zuboff. Her book *Surveillance Capitalism* warns about customers being reinvented as data sources, with “surveillance capitalism” transforming our economy, politics, society and our own lives by producing deeply anti-democratic asymmetries of knowledge and the power that accrues to knowledge.

Over the coming months and years, the trade-off between public-health benefits and loss of privacy will be carefully weighed, becoming the topic of many animated conversations and heated debates. Most people, fearful of the danger posed by COVID-19, will ask: Isn’t it foolish not to leverage the power of technology to come to our rescue when we are victims of an outbreak and facing a life-or-death kind of situation? They will then be willing to give up a lot of privacy and will agree that in such circumstances public power can rightfully override individual rights. Then, when the crisis is over, some may realize that their country has suddenly been transformed into a place where they no longer wish to live. This thought process is nothing new. Over the last few years, both governments and firms have been using increasingly sophisticated technologies to monitor and sometimes manipulate citizens and employees; if we are not vigilant, warn the privacy advocates, the pandemic will mark an important watershed in the history of surveillance. [127] The argument put forward by those who above all fear the grip of technology on personal freedom is plain and simple: in the name of public health, some elements of personal privacy will be abandoned for the benefit of containing an epidemic, just as the terrorist attacks of 9/11 triggered greater and permanent security in the

name of protecting public safety. Then, without realizing it, we will fall victims of new surveillance powers that will never recede and that could be repurposed as a political means for more sinister ends.

As the last few pages have exposed beyond a reasonable doubt, the pandemic could open an era of active health surveillance made possible by location-detecting smartphones, facial-recognition cameras and other technologies that identify sources of infection and track the spread of a disease in quasi real time.

Despite all the precautions certain countries take to control the power of tech and limit surveillance (others are not so concerned), some thinkers worry about how some of the quick choices we make today will influence our societies for years to come. The historian Yuval Noah Harari is one of them. In a recent article, he argues that we'll have a fundamental choice to make between totalitarian surveillance and citizen empowerment. It's worth exposing his argument in detail:

> Surveillance technology is developing at breakneck speed, and what seemed science-fiction 10 years ago is today old news. As a thought experiment, consider a hypothetical government that demands that every citizen wears a biometric bracelet that monitors body temperature and heart-rate 24 hours a day. The resulting data is hoarded and analysed by government algorithms. The algorithms will know that you are sick even before you know it, and they will also know where you have been, and who you have met. The chains of infection could be drastically shortened, and even cut altogether. Such a system could arguably stop the epidemic in its tracks within days. Sounds wonderful, right? The downside is, of course, that this would give legitimacy to a terrifying new surveillance system. If you know, for example, that I clicked on a Fox News link rather than a CNN link, that can teach you something about my political views and perhaps even my personality. But if you can monitor what happens to my body temperature, blood pressure and heart-rate as I watch the video clip, you can learn what makes me laugh, what makes me cry, and what makes me really, really angry. It is crucial to remember that anger, joy, boredom

> and love are biological phenomena just like fever and a cough. The same technology that identifies coughs could also identify laughs. If corporations and governments start harvesting our biometric data en masse, they can get to know us far better than we know ourselves, and they can then not just predict our feelings but also manipulate our feelings and sell us anything they want — be it a product or a politician. Biometric monitoring would make Cambridge Analytica's data hacking tactics look like something from the Stone Age. Imagine North Korea in 2030, when every citizen has to wear a biometric bracelet 24 hours a day. If you listen to a speech by the Great Leader and the bracelet picks up the tell-tale signs of anger, you are done for. [128]

We will have been warned! Some social commentators like Evgeny Morozov go even further, convinced that the pandemic heralds a dark future of techno-totalitarian state surveillance. His argument, premised upon the concept of "technological solutionism" put forward in a book written in 2012, posits that the tech "solutions" offered to contain the pandemic will necessarily take the surveillance state to the next level. He sees evidence of this in two distinct strands of "solutionism" in government responses to the pandemic that he has identified. On the one hand, there are "progressive solutionists" who believe that the appropriate exposure through an app to the right information about infection could make people behave in the public interest. On the other hand, there are "punitive solutionists" determined to use the vast digital surveillance infrastructure to curb our daily activities and punish any transgressions. What Morozov perceives as the greatest and ultimate danger to our political systems and liberties is that the "successful" example of tech in monitoring and containing the pandemic will then "entrench the solutionist toolkit as the default option for addressing all other existential problems – from inequality to climate change. After all, it is much easier to deploy solutionist tech to influence individual behaviour than it is to ask difficult political questions about the root causes of these crises". [129]

****

Spinoza, the 17th century philosopher who resisted oppressive authority all his life, famously said: “Fear cannot be without hope nor hope without fear.” This is a good guiding principle to conclude this chapter, along with the thought that nothing is inevitable and that we must be symmetrically aware of both good and bad outcomes. Dystopian scenarios are not a fatality. It is true that in the post-pandemic era, personal health and well-being will become a much greater priority for society, which is why the genie of tech surveillance will not be put back into the bottle. But it is for those who govern and each of us personally to control and harness the benefits of technology without sacrificing our individual and collective values and freedoms.

2. MICRO RESET (INDUSTRY AND BUSINESS)

At the micro level, that of industries and companies, the Great Reset will entail a long and complex series of changes and adaptation. When confronted with it, some industry leaders and senior executives may be tempted to equate reset with restart, hoping to go back to the old normal and restore what worked in the past: traditions, tested procedures and familiar ways of doing things – in short, a return to business as usual. This won't happen because it can't happen. For the most part "business as usual" died from (or at the very least was infected by) COVID-19. Some industries have been devastated by the economic hibernation triggered by the lockdowns and social-distancing measures. Others will have a hard time recovering lost revenues before navigating an ever-narrower path to profitability caused by the economic recession engulfing the world. However, for the majority of businesses stepping into the post-coronavirus future, the key issue will be to find the apposite balance between what functioned before and what is needed now to prosper in the new normal. For these companies, the pandemic is a unique opportunity to rethink their organization and enact positive, sustainable and lasting change.

What will define the new normal of a post-coronavirus business landscape? How will companies be able to find the best possible equilibrium between past success and the fundamentals now needed to succeed in the post-pandemic era? The response is obviously dependent upon and specific to each industry and the severity with which it was hit by the pandemic. In the post-COVID-19 era, apart from those few sectors in which companies will benefit on average from strong tailwinds (most notably tech, health and wellness), the journey will be challenging and sometimes treacherous. For some, like entertainment, travel or hospitality, a return to a pre-pandemic environment is unimaginable in the foreseeable future (and maybe never in some cases…). For others, namely manufacturing or food, it is more about

finding ways to adjust to the shock and capitalize on some new trends (like digital) to thrive in the post-pandemic era. Size also makes a difference. The difficulties tend to be greater for small businesses that, on average, operate on smaller cash reserves and thinner profit margins than large companies. Moving forward, most of them will be dealing with cost–revenue ratios that put them at a disadvantage compared to bigger rivals. But being small can offer some advantages in today's world where flexibility and celerity can make all the difference in terms of adaptation. Being nimble is easier for a small structure than for an industrial behemoth.

All this said, and irrespective of their industry and the specific situation they find themselves in, almost every single company decision-maker around the world will face similar issues and will have to respond to some common questions and challenges. The most obvious ones are the following:

1. Shall I encourage remote working for those who can do it (about 30% of the total workforce in the US)?
2. Will I reduce air travel in my business, and how many face-to-face meetings can I meaningfully replace by virtual interactions?
3. How can I transform the business and our decision-making process to become more agile and to move faster and more decisively?
4. How can I accelerate the digitization and adoption of digital solutions?

The macro reset discussed in Chapter 1 will translate into a myriad of micro consequences at the industry and company level. We review below some of these main trends before turning to the issue of who are the "winners and losers" from the pandemic and its effects on specific industries.

2.1. Micro trends

We are still in the early days of the post-pandemic era, but powerful new or accelerating trends are already at work. For some industries, these will prove a boon, for others a major challenge. However, across all sectors, it will be up to each company to make the most of these new trends by adapting with celerity and decisiveness. The businesses that prove the most agile and flexible will be those that emerge stronger.

2.1.1. Acceleration of digitization

In the pre-pandemic era, the buzz of “digital transformation” was the mantra of most boards and executive committees. Digital was “key”, it had to be “resolutely” implemented and was seen as a “precondition to success”! Since then, in the space of just a few months, the mantra has become a must – even, in the case of some companies, a question of life or death. This is explicable and understandable. During confinement, we depended entirely on the Net for most things: from work and education to socialization. It is the online services that allowed us to keep a semblance of normalcy, and it is only natural that “online” should be the largest beneficiary of the pandemic, giving a tremendous boost to technologies and processes that enable us to do things remotely: universal broadband internet, mobile and remote payments, and workable e-government services, among others. As a direct consequence, businesses that were already operating online are bound to benefit from a lasting competitive advantage. As more and diverse things and services are brought to us via our mobiles and computers, companies in sectors as disparate as e-commerce, contactless operations, digital content, robots and drone deliveries (to name just a few) will thrive. It is not by accident that firms like Alibaba, Amazon, Netflix or Zoom emerged as “winners” from the lockdowns.

By and large, the consumer sector moved first and fastest. From the necessary contactless experience imposed upon many food and retail companies during the lockdowns to the virtual show rooms in the manufacturing industry allowing clients to browse and choose the products

they like best, most business-to-consumer companies rapidly understood the need to offer their clients a “beginning-to-end” digital journey.

As some lockdowns came to an end and certain economies crept back to life, similar opportunities emerged in business-to-business applications, particularly in manufacturing where physical-distancing rules had to be put into place at short notice often in challenging environments (e.g. on assembly lines). As a direct result, the IoT made impressive inroads. Some companies that had been slow in the recent pre-lockdown past to adopt IoT are now embracing it en masse with the specific objective of doing as many things as possible remotely. Equipment maintenance, management inventory, supplier relations or safety strategies: all of these different activities can now be performed (to a large extent) via a computer. IoT offers companies not only the means to execute and uphold social-distancing rules, but also to reduce costs and implement more agile operations.

During the peak of the pandemic, O2O – online to offline – gained major traction, highlighting the importance of having both an online and offline presence, and opening the door (or perhaps even the floodgates) to eversion. This phenomenon of blurring the distinction between online and offline as identified by the famous science fiction writer William Gibson who stated “Our world is everting” [130] with the cyberspace relentlessly opening out has emerged as one of the most potent trends of the post-COVID-19 era. The pandemic crisis accelerated this phenomenon of eversion because it both forced and encouraged us towards a digital, “weightless” world faster than ever, as more and more economic activity had no choice but to take place digitally: education, consulting, publishing and many others. We could go as far as to say that, for a little while, teleportation supplanted transportation: most executive committee meetings, board meetings, team meetings, brainstorm exercises and other forms of personal or social interaction had to take place remotely. This new reality is captured in the market capitalization of Zoom (the videoconferencing company) that skyrocketed to $70 billion in June 2020, higher (at that time) than that of any US airline. Concurrently, large online companies like Amazon and Alibaba expanded decisively in the O2O business, particularly in food retailing and logistics.

Trends like telemedicine or remote working that expanded extensively during the confinement are unlikely to retreat – for them there will be no return to the status quo that prevailed prior to the pandemic. Telemedicine, in particular, will benefit considerably. For obvious reasons, healthcare is one of the most heavily regulated industries in the world, a fact that inevitably slows the pace of innovation. But the necessity to address the pandemic with any means available (plus, during the outbreak, the need to protect health workers by allowing them to work remotely) removed some of the regulatory and legislative impediments related to the adoption of telemedicine. In the future, it is certain that more medical care will be delivered remotely. It will in turn accelerate the trend towards more wearable and at-home diagnostics, like smart toilets capable of tracking health data and performing health analyses. Equally, the pandemic may prove to be a boon for online education. In Asia, the shift to online education has been particularly notable, with a sharp increase in students' digital enrolments, much higher valuation for online education businesses and more capital available for "ed-tech" start-ups. The flipside of this particular coin will be an increase in pressure on institutions offering more traditional methods of education to validate their worth and justify their fees (as we expand upon a little later).

The speed of expansion has been nothing short of breathtaking. "In Britain, less than 1 percent of initial medical consultations took place via video link in 2019; under lockdown, 100 percent are occurring remotely. In another example, a leading US retailer in 2019 wanted to launch a curbside-delivery business; its plan envisaged taking 18 months. During the lockdown, it went live in less than a week – allowing it to serve its customers while maintaining the livelihoods of its workforce. Online banking interactions have risen to 90 percent during the crisis, from 10 percent, with no drop-off in quality and an increase in compliance while providing a customer experience that isn't just about online banking." [131] Similar examples abound.

The social mitigation response to the pandemic and the physical-distancing measures imposed during the confinement will also result in e-commerce emerging as an ever-more powerful industry trend. Consumers need products and, if they can't shop, they will inevitably resort to purchasing them online. As the habit kicks in, people who had never shopped online

before will become comfortable with doing so, while people who were part-time online shoppers before will presumably rely on it more. This was made evident during the lockdowns. In the US, Amazon and Walmart hired a combined 250,000 workers to keep up with the increase in demand and built massive infrastructure to deliver online. This accelerating growth of e-commerce means that the giants of the online retail industry are likely to emerge from the crisis even stronger than they were in the pre-pandemic era. There are always two sides to a story: as the habit of shopping online becomes more prevalent, it will depress bricks-and-mortar (high street and mall) retail still further – a phenomenon explored in more detail in the next sections.

2.1.2. Resilient supply chains

The very nature of global supply chains and their innate fragility means that arguments about shortening them have been brewing for years. They tend to be intricate and complex to manage. They are also difficult to monitor in terms of compliance with environmental standards and labour laws, potentially exposing companies to reputation risk and damage to their brands. In light of this troubled past, the pandemic has placed the last nail in the coffin of the principle that companies should optimize supply chains based on individual component costs and depending on a single supply source for critical materials, summed up as favouring efficiency over resilience. In the post-pandemic era, it is “end-to-end value optimization”, an idea that includes both resilience and efficiency alongside cost, that will prevail. It is epitomized in the formula that “just-in-case” will eventually replace “just-in-time”.

The shocks to global supply chains analysed in the macro section will affect global businesses and smaller companies alike. But what does “just-in-case” mean in practice? The model of globalization developed at the end of the last century, conceived and constructed by global manufacturing companies that were on the prowl for cheap labour, products and components, has found its limits. It fragmented international production into ever-more intricate bits and pieces and resulted in a system run on a just-in-time basis that has proven to be extremely lean and efficient, but also exceedingly complex and, as such, very vulnerable (complexity brings

fragility and often results in instability). Simplification is therefore the antidote, which should in turn generate more resilience. This means that the "global value chains" that represent roughly three-quarters of all global trade will inevitably decline. This decline will be compounded by the new reality that companies dependent upon complex just-in-time supply chains can no longer take it for granted that tariff commitments enshrined by the World Trade Organization will protect them from a sudden surge in protectionism somewhere. As a result, they will be forced to prepare accordingly by reducing or localizing their supply chain, and elaborating alternative production or procurement plans to guard against a prolonged disruption. Every business whose profitability is contingent upon the principle of just-in-time global supply chain will have to rethink how it operates and probably sacrifice the idea of maximizing efficiency and profits for the sake of "supply security" and resilience. Resilience will therefore become the primary consideration for any business serious about hedging against disruption – be it disruption to a particular supplier, to a possible change in trade policy or to a particular country or region. In practice, this will force companies to diversify their supplier base, even at the cost of holding inventories and building in redundancy. It will also compel these companies to ensure that the same is true within their own supply chain: they will assess resilience along their entire supply chain, all the way down to their ultimate supplier and, possibly, even the suppliers of their suppliers. The costs of production will inevitably rise, but this will be the price to pay for building resilience. At first glance, the industries that will be the most affected because they will be the first to shift production patterns are automotive, electronics and industrial machinery.

2.1.3. Governments and business

For all the reasons expanded upon in the first chapter, COVID-19 has rewritten many of the rules of the game between the public and private sectors. In the post-pandemic era, business will be subject to much greater government interference than in the past. The benevolent (or otherwise) greater intrusion of governments in the life of companies and the conduct of their business will be country- and industry-dependent, therefore taking many different guises. Outlined below are three notable forms of impact

that will emerge with force in the early months of the post-pandemic period: conditional bailouts, public procurement and labour market regulations.

For a start, all the stimulus packages being put together in Western economies to support ailing industries and individual companies will have covenants constraining in particular the borrowers' ability to fire employees, buy back shares and pay executive bonuses. In the same vein, governments (encouraged, supported and sometimes "pushed" by activists and public sentiments) will target suspiciously low corporate tax bills and generously high executive rewards. They will show little patience for senior executives and investors who push companies to spend more on buy-backs, minimize their tax payments and pay huge dividends. US airlines, pilloried for seeking government assistance, having recently and consistently used large amounts of company cash to pay shareholder dividends, are a prime example of how this change in public attitude will be enacted by governments. In addition, in the coming months and years, a "regime change" might occur when policy-makers take on a substantial portion of private-sector default risk. When this happens, governments will want something in return. Germany's bailout of Lufthansa epitomizes this sort of situation: the government injected liquidity into the national carrier, but only on the condition that the company constrains executive pay (including stock options) and commits to not paying dividends.

Better alignment between public policy and corporate planning will be a particular focus of attention in terms of greater government interference. The scramble for ventilators during the peak of the pandemic epitomizes why. In 2010 in the US, 40,000 ventilators had been ordered through a government contract but were never delivered, largely explaining the country's shortage that became so apparent in March 2020. What led to this situation of scarcity? In 2012, the original company that had won the bid was bought (in somewhat dubious and obscure circumstances) by a much larger manufacturer (a publicly traded company also producing ventilators): it later emerged that the purchasing company wanted to prevent the original bidder from building a cheaper ventilator that would have undermined the profitability of its own business. This company dragged its feet before eventually cancelling the contract and ultimately being acquired by a rival. None of the 40,000 ventilators were ever delivered to the US government. [132] It is unlikely that this sort of situation will reoccur in the post-pandemic

era, as public authorities will think twice about outsourcing projects that have critical public-health implications (or indeed critical public implications, security or otherwise) to private companies. The bottom line: the maximization of profit and the short-termism that often goes with it is rarely or, at least, not always consistent with the public goal of preparing for a future crisis.

Around the world, the pressure to improve the social protection and salary level of low-paid employees will increase. Most likely, in our post-pandemic world increases in the minimum wage will become a central issue that will be addressed via the greater regulation of minimum standards and a more thorough enforcement of the rules that already exist. Most probably, companies will have to pay higher taxes and various forms of government funding (like services for social care). The gig economy will feel the impact of such a policy more than any other sector. Prior to the pandemic, it was already in the cross hairs of government scrutiny. In the post-pandemic era, for reasons related to the redefinition of the social contract, this scrutiny will intensify. Companies that rely on gig workers to operate will also feel the effect of more government interference, possibly even to a degree capable of undermining their financial viability. As the pandemic will radically alter social and political attitudes towards gig workers, governments will force those companies that employ them to offer proper contracts with benefits such as social insurance and health coverage. The labour issue will loom large for them and, if they have to employ gig workers as normal employees, they will cease to be profitable. Their *raison d'être* might even vanish.

2.1.4. Stakeholder capitalism and ESG

Over the past 10 years or so, the fundamental changes that have taken place in each of the five macro categories reviewed in Chapter 1 have profoundly altered the environment in which companies operate. They have made stakeholder capitalism and environmental, social and governance (ESG) considerations increasingly relevant to sustainable value creation (ESG can be considered as the yardstick for stakeholder capitalism).

The pandemic struck at a time when many different issues, ranging from climate change activism and rising inequalities to gender diversity and

#MeToo scandals, had already begun to raise awareness and heighten the criticality of stakeholder capitalism and ESG considerations in today's interdependent world. Whether espoused openly or not, nobody would now deny that companies' fundamental purpose can no longer simply be the unbridle pursuit of financial profit; it is now incumbent upon them to serve all their stakeholders, not only those who hold shares. This is corroborated by early anecdotal evidence pointing to an even more positive outlook for ESG in the post-pandemic era. This can be explained on three fronts:

1. The crisis will have created, or reinforced, an acute sense of responsibility and urgency on most issues pertaining to ESG strategies – the most important being climate change. But others, such as consumer behaviour, the future of work and mobility, and supply-chain responsibility, will move to the forefront of the investment process and will become an integral component of due diligence.

2. The pandemic leaves no doubt in boardrooms that the absence of ESG considerations has the potential to destroy substantial value and even threaten the viability of a business. ESG will therefore become more fully integrated and internalized into the core strategy and governance of a company. It will also alter the way in which investors assess corporate governance. Tax records, dividend payments and remunerations will become increasingly scrutinized for fear of incurring a reputational cost when a problem arises or is made public.

3. Fostering employee and community goodwill will be key to enhancing a brand's reputation. More and more, companies will have to prove that they treat their workers well, by welcoming improved labour practices and paying attention to health and safety as well as well-being in the workplace. Companies will not necessarily adhere to these measures because they are genuinely "good", but rather because the "price" of not doing so will be too high in terms of the wrath of activists, both activist investors and social activists.

The conviction that ESG strategies benefited from the pandemic and are most likely to benefit further is corroborated by various surveys and reports. Early data shows that the sustainability sector outperformed conventional funds during the first quarter of 2020. According to Morningstar, which compared first-quarter returns for more than 200 sustainability equity funds

and exchange traded funds, the sustainable funds performed better by one percentage point or two, on a relative basis. A report from BlackRock offers further evidence that companies with strong ESG ratings outperformed their peers during the pandemic. [133] Several analysts suggested that this outperformance might simply have reflected the reduced exposure to fossil fuels of ESG funds and strategies, but BlackRock asserts that ESG compliant companies (another way to say that they adhere to the principle of stakeholder capitalism) tend to be more resilient because of their holistic understanding of risk management. It seems that the more susceptible the world becomes to a broad set of macro risks and issues, the greater the necessity to embrace stakeholder capitalism and ESG strategies.

The debate between those who believe that stakeholder capitalism will be sacrificed on the altar of the recovery and those who argue that it is now time to "build back better" is far from resolved. For every Michael O'Leary (the CEO of Ryanair) who thinks that COVID-19 will put ESG considerations "on the back burner for a few years", there is a Brian Chesky (CEO of Airbnb) who is committed to transforming his business into a "stakeholder company". [134] However, irrespective of anybody's opinion about the merits of stakeholder capitalism and ESG strategies and their future role in the post-pandemic era, activism will make a difference by reinforcing the trend. Social activists and many activist investors will scrutinize closely how companies behaved during the pandemic crisis. It is likely that the markets or the consumers, or both, will punish those companies that performed poorly on social issues. An essay co-written in April 2020 by Leo Strine, an influential judge in corporate America, hammers home this point about a necessary change in corporate governance: "We are again paying the price for a corporate governance system that lacks focus on financial soundness, sustainable wealth creation and the fair treatment of workers. For too long, the stock market's power over our economy has grown at the expense of other stakeholders, particularly workers. Although overall wealth has grown, it has done so in a skewed way that is unfair to the bulk of the American workers who are primarily responsible for that increase. The shift toward satisfying insatiable stock market demands has also led to increasing levels of corporate debt and economic risk". [135]

For activists, the decency exhibited (or not) by companies during the crisis will be paramount. Businesses will be judged for years to come by their actions – critically not just in a narrow commercial sense but viewed through a broader social lens. Few will forget, for example, that over the past 10 years, US airlines spent 96% of their cash flow on share buy-backs and that, in March 2020, EasyJet paid a £174 million dividend pay-out to its shareholders (including £60 million to its founder). [136]

The activism to which companies may now be subjected is going beyond the traditional confines of social activism (by outsiders) and investor activism; with employee activism, it is expanding internally. In May 2020, just as the epicentre of the pandemic was moving from the US to Latin America, Google employees, emboldened by a report published by Greenpeace, succeeded in convincing the company to no longer build custom AI and machine learning algorithms for upstream extraction in the oil and gas industry. [137] . Several such examples in the recent past illustrate rising employee activism, ranging from environmental issues to social and inclusivity concerns. They provide a telling example of how different types of activists are learning to work together to further the goals to achieve a more sustainable future.

Concomitantly, a sharp increase has taken place in the oldest form of activism: industrial action. In the US in particular, while many white-collar workers were riding out the pandemic while working from home, many low-wage essential workers “out in the trenches” who had no choice but to go to work staged a wave of walkouts, strikes and protests. [138] As issues of worker safety, pay and benefits become more central, the agenda of stakeholder capitalism will gain in relevance and strength.

2.2. Industry reset

As a result of the lockdowns, the pandemic had immediate effect on every possible industry around the world. This impact is ongoing and will continue to be felt in the coming years. As global supply chains are reconfigured, as consumer demands change, as governments intervene more, as market conditions evolve and as technology disrupts, companies will be forced to continuously adapt and reinvent themselves. The purpose of this section is not to offer a precise account of how each particular industry might evolve, but rather to illustrate with impressionist brush strokes how some of the main features and trends associated with the pandemic will impact specific industries.

2.2.1. Social interaction and de-densification

Effects on travel and tourism, hospitality, entertainment, retail, aerospace and even the automotive industry

The ways in which consumers interact with each other as well as what and how they consume have been significantly affected by the pandemic. Consequently, the ensuing reset in different industries will vary fundamentally depending on the nature of the economic transaction involved. In those industries where consumers transact socially and in person, the first months and possibly years of the post-pandemic era will be much tougher than for those where the transaction can be at a greater physical distance or even virtual. In modern economies, a large amount of what we consume happens through social interaction: travel and vacations, bars and restaurants, sporting events and retail, cinemas and theatres, concerts and festivals, conventions and conferences, museums and libraries, education: they all correspond to social forms of consumption that represent a significant portion of total economic activity and employment (services represent about 80% of total jobs in the US, most of which are “social” by nature). They cannot take place in the virtual world or, when they can, only in a truncated and often suboptimal form (like a live orchestra performance on a screen). Industries that have social interaction at their core have been hit the hardest by the lockdowns. Among them are many sectors that add up to a very significant proportion of total economic activity and employment:

travel and tourism, leisure, sport, events and entertainment. For months and possibly years, they will be forced to operate at reduced capacity, hit by the double whammy of fears about the virus restraining consumption and the imposition of regulations aimed at countering these fears by creating more physical space between consumers. Public pressure for physical distancing will endure until a vaccine is developed and commercialized at scale (which, again, according to most experts, is most unlikely to happen before the first or second quarter of 2021 at the earliest). In the intervening period, it is likely that people may travel much less for both vacation and/or business, they may go less frequently to restaurants, cinemas and theatres, and may decide that it is safer to buy online rather than physically go to the shops. For these fundamental reasons, the industries hit the hardest by the pandemic will also be the slowest to recover. Hotels, restaurants, airlines, shops and cultural venues in particular will be forced to make expensive alterations in the way they deliver their offerings in order to adapt to a post-pandemic new normal that will demand the implementation of drastic changes involving introducing extra space, regular cleaning, protections for staff and technology that limits customers' interactions with workers.

In many of these industries, but particularly in hospitality and retail, small businesses will suffer disproportionately, having to walk a very fine line between surviving the closures imposed by the lockdowns (or sharply reduced business) and bankruptcy. Operating at reduced capacity with even tighter margins means that many will not survive. The fallout from their failure will have hard-felt ramifications both for national economies and local communities. Small businesses are the main engine of employment growth and account in most advanced economies for half of all private-sector jobs. If significant numbers of them go to the wall, if there are fewer shops, restaurants and bars in a particular neighbourhood, the whole community will be impacted as unemployment rises and demand dries up, setting in motion a vicious and downward spiral and affecting ever greater numbers of small businesses in a particular community. The ripples will eventually spread beyond the confines of the local community, affecting, albeit hopefully to a lesser extent, other more distant areas. The highly interdependent and interconnected nature of today's economy, industries and businesses, comparable to the dynamic linking the macro categories, means that each has a rapid knock-on effect on the others in a myriad of

different manners. Take restaurants. This sector of activity has been hit by the pandemic to such a dramatic extent that it is not even sure how the restaurant business will ever come back. As one restaurateur put it: “I, like hundreds of other chefs across the city and thousands around the country, am now staring down the question of what our restaurants, our careers, our lives, might look like if we can even get them back.” [139] In France and the UK, several industry voices estimate that up to 75% of independent restaurants might not survive the lockdowns and subsequent social-distancing measures. The large chains and fast-food giants will. This in turn suggests that big businesses will get bigger while the smallest shrink or disappear. A large restaurant chain, for example, has a better chance of staying operational as it benefits from more resources and, ultimately, less competition in the wake of bankruptcies among smaller outfits. The small restaurants that survive the crisis will have to reinvent themselves entirely. In the meantime, in the cases of those that close their doors forever, the closure will impact not only the restaurant and its immediate staff but also all the businesses that operate in its orbit: the suppliers, the farmers and the truck drivers.

At the other end of the size spectrum, some very large companies will fall victim to the same predicament as the very small ones. Airline companies, in particular, will face similar constraints in terms of consumer demand and social-distancing rules. The three-month shutdown has left carriers around the world with a cataclysmic situation of virtually zero revenues and the prospect of tens of thousands of job cuts. British Airways, for one, has announced that it will cut up to 30% of its current workforce of 42,000 employees. At the time of writing (mid-June 2020), the restart may be just about to begin. It will prove extremely challenging, with a recovery expected to take years. The improvement will begin in leisure travel, with corporate travel to follow. However, as discussed in the next section, consumption habits may change permanently. If many businesses decide to travel less to reduce costs and to replace physical meetings by virtual ones whenever possible, the impact on the recovery and ultimate profitability of airlines may be dramatic and lasting. Prior to the pandemic, corporate travel accounted for 30% of airline volumes but 50% of revenues (thanks to higher priced seats and last-minute bookings). In the future, this is set to change, making the profitability outcome of some individual airlines highly

uncertain, and forcing the entire industry to reconsider the long-term structure of the global aviation market.

When assessing the ultimate effect on a particular industry, the complete chain of consequences needs to take into account what happens in adjacent industries, whose fate largely depends on what happens in the one upstream, or “at the top”. To illustrate this, we take a brief look at three industries that entirely depend on the aviation sector: airports (infrastructure and retail), planes (aerospace) and car rentals (automotive).

Airports face the same challenges as airlines: the less people fly, the less they transit via airports. This in turn affects the level of consumption in the various shops and restaurants that make up the ecosystem of all international airports throughout the world. Furthermore, the experience of airports in a post-COVID-19 world, involving longer waiting times, highly restricted or even no hand luggage and other potentially inconvenient social-distancing measures, could erode the consumer desire to travel by air for pleasure and leisure. Various trade associations warn that the implementation of social-distancing policies would not only limit airport capacity to 20-40% but would also likely render the whole experience so disagreeable as to become a deterrent.

Dramatically affected by the lockdowns, airlines began to cancel or defer orders for new aircraft and to change their choice of particular model, in so doing severely impacting the aerospace industry. As a direct consequence and for the foreseeable future, the major civil aircraft assembly plants will operate at reduced capacity, with cascading effects on the entirety of their value chain and supplier network. In the longer term, changes in demand by airline companies that re-evaluate their needs will lead to a complete reassessment of the production of civilian aircraft. This makes the defence aerospace sector an exception and a relatively safe haven. For nation states, the uncertain geopolitical outlook makes it imperative to maintain orders and procurement, but cash-constrained governments will demand better payment terms.

Like airports, car rental companies depend almost entirely on aviation volumes. Hertz, a highly indebted company with a fleet of 700,000 cars overwhelmingly idled during the lockdowns, filed for bankruptcy in May.

Like for so many companies, COVID-19 proved to be the proverbial last straw.

2.2.2. Behavioural changes – permanent vs transient

Effects on retail, real estate and education

Some behavioural changes observed during the lockdowns are unlikely to be entirely reversed in the post-pandemic era and some may even become permanent. How exactly this will play out remains very uncertain. A few consumption patterns may revert to long-term trend lines (comparable to air travel after 9/11), albeit at an altered pace. Others will undoubtedly accelerate, like online services. Some may be postponed, like buying a car, while new permanent patterns of consumption may emerge, like purchases associated with greener mobility.

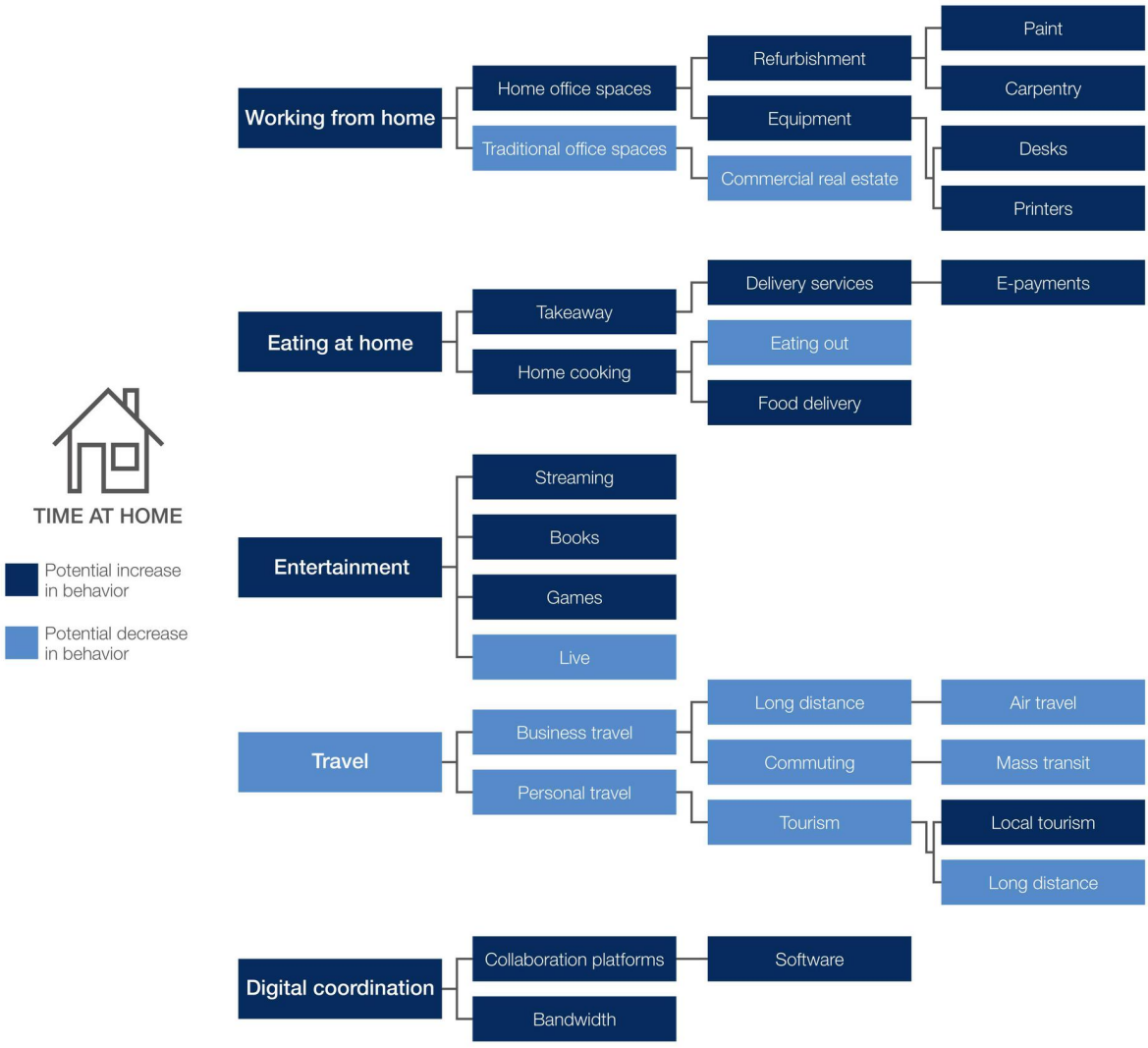
Much of this is still unknown. During the lockdowns, a lot of consumers were forced to learn to do things for themselves (bake their bread, cook from scratch, cut their own hair, etc.) and felt the need to spend cautiously. How entrenched will these new habits and forms of “do it yourself” and auto-consumption become in the post-pandemic era? The same could apply to students who in some countries pay exorbitant fees for higher education. After a trimester spent watching their professors on their screens, will they start questioning the high cost of education?

To grasp the extreme complexity and uncertainty of this evolution in consumer behaviour, let us revert to the example of online shopping versus in-person retail. As stated, it is very likely that bricks-and-mortar stores will lose out severely in favour of online shopping. Consumers may be willing to pay a bit extra to have heavy and bulky products, like bottles and household goods, delivered to them. Supermarket retail space will therefore shrink, coming to resemble convenience stores where shoppers go to buy relatively small quantities of specific food products. But it could also be the case that less money will be spent in restaurants, suggesting that in places where a high percentage of people’s food budget traditionally went to restaurants (60% in New York City for example), these funds could be diverted to and benefit urban supermarkets as city dwellers rediscover the pleasure of cooking at home. The same phenomenon may happen with the entertainment business. The pandemic may increase our anxiety about

sitting in an enclosed space with complete strangers, and many people may decide that staying home to watch the latest movie or opera is the wisest option. Such a decision will benefit local supermarkets to the detriment of bars and restaurants (although the option of online takeout meal delivery services could be a lifeline for the latter). There were numerous examples of this happening in an ad hoc fashion in cities across the world during lockdowns. Could it perhaps become an important element of some restaurants' new post-COVID-19 business-survival plan? There are other first-round effects that are much easier to anticipate. Cleanliness is one of them. The pandemic will certainly heighten our focus on hygiene. A new obsession with cleanliness will particularly entail the creation of new forms of packaging. We will be encouraged not to touch the products we buy. Simple pleasures like smelling a melon or squeezing a fruit will be frowned upon and may even become a thing of the past.

A single attitudinal change will have many different ramifications, each having a particular effect on one specific industry, but in the end impacting many different industries through ripple effects. The following figure illustrates this point for just one change: spending more time at home:

Figure 2: Potential implications of spending more time at home



Source: Reeves, Martin, et al., “Sensing and Shaping the Post-COVID Era”, BCG Henderson Institute, 3 April 2020, https://www.bcg.com/publications/2020/8-ways-companies-can-shape-reality-post-covid-19.aspx

The heated debate over whether (or to what extent) we will work remotely in the future, and as a result spend more time at home, has been taking place since the pandemic started. Some analysts argue that the fundamental appeal of cities (particularly the largest ones) as vibrant centres of economic activity, social life and creativity will endure. Others fear that the coronavirus has triggered a fundamental shift in attitudes. They claim that COVID-19 has been an inflection point and predict that, all around the world, urbanites of all ages who are confronted with the shortcomings of city pollution and undersized, overpriced accommodation will decide to move to places with more greenery, more space, less pollution and lower prices. It is too early to tell which camp will be proven right, but it is certain that even a relatively small percentage of people moving away from the biggest hubs (like New York, Hong Kong SAR, London or Singapore) would exercise an outsized effect on many diverse industries (profits are always made at the margin). Nowhere is this reality more apparent than in the real estate industry and, in particular, in commercial real estate.

The commercial real estate industry is an essential driver of global growth. Its total market value exceeds that of all stocks and bonds combined globally. Prior to the pandemic crisis, it was already suffering from an excess of supply. If the emergency practice of working remotely becomes an established and widespread habit, it is hard to imagine what companies (if any) will absorb this oversupply by rushing to lease excess office space. Perhaps there will be few investments funds ready to do so, but they will be the exception, suggesting that commercial real estate still has much further to fall. The pandemic will do to commercial real estate what it has done to so many other issues (both macro and micro): it will accelerate and amplify the pre-existing trend. The combination of an increase in the number of “zombie” companies (those that use debt to finance more debt and that have not generated enough cash over the past few years to cover their interest costs) going bankrupt and an increase in the number of people working remotely means that there will be far fewer tenants to rent empty office buildings. Property developers (for the most part highly leveraged themselves) will then start experiencing a wave of bankruptcies, with the largest and systemically important ones having to be bailed out by their respective governments. In many prime cities around the world, property prices will therefore fall over a long period of time, puncturing the global

real estate bubble that had been years in the making. To some extent, the same logic applies to residential real estate in large cities. If the trend of working remotely takes off, the combination of commuting not being a consideration any longer and the absence of job growth means that the younger generation will no longer chose to afford residential renting or buying in expensive cities. Inevitably, prices will then fall. In addition, many will have realized that working from home is more climate-friendly and less stressful than having to commute to an office.

The possibility of working remotely means that the biggest hubs that have benefited from higher economic growth than other cities or regions in their vicinity may start losing workers to the next tier of rising cities. This phenomenon could in turn create a wave of rising-star cities or regions attracting people looking for a better quality of life thanks to more space at more affordable prices.

Notwithstanding all the above, perhaps the notion of widespread remote working becoming the norm is too far-fetched to happen in any meaningful manner. Haven't we so often heard that optimizing "knowledge work" (in reality the simplest sector to go remote) depends on carefully designed office environments? The technology industry that has resisted such a move for so long by massively investing in sophisticated campuses is now changing its mind in light of the lockdown experience. Twitter was the first company to commit to remote work. In May, Jack Dorsey, its CEO, informed employees that many of them would be allowed to work from home even after the COVID-19 pandemic subsides, in other words – permanently. Other tech companies like Google and Facebook have also committed to allowing their staff to continue working remotely at least through the end of 2020. Anecdotal evidence suggests that other global firms from various industries will make similar decisions, letting part of their staff work remotely part of the time. The pandemic has made possible something that seemed unimaginable on such a scale just a few months ago.

Could something similar, and equally disruptive, happen with higher education? Might it be possible to imagine a world in which far fewer students will receive their education on a campus? In May or June of 2020, in the midst of lockdowns, students were forced to study and graduate remotely, many wondering at the end of the term if they will physically

return to their campus in September. At the same time, universities started to slash their budgets, pondering what this unprecedented situation might entail for their business model. Should they go online or should they not? In the pre-pandemic era, most universities offered some courses online but always refrained from fully embracing online education. The most renowned universities refused to offer virtual degrees, fearful that this might dilute their exclusive offering, make some of their faculty redundant and even threaten the very existence of the physical campus. In the post-pandemic era, this will change. Most universities – particularly the expensive ones in the Anglo-Saxon world – will have to alter their business model or go bankrupt because COVID-19 has made it obsolete. If online teaching were to continue in September (and possibly beyond), many students would not tolerate paying the same high tuition for virtual education, demanding a reduction in fees or deferring their enrolment. In addition, many potential students would question the pertinence of disbursing prohibitive costs for higher education in a world marred by high levels of unemployment. A potential solution could lie in a hybrid model. Universities would then massively expand online education while maintaining an on-campus presence for a different population of students. In a few instances, this has already been done with success, notably at Georgia Tech for an online master's degree in Computer Science. [140] By going down this hybrid route, universities would expand access while reducing costs. The question, though, is whether this hybrid model is scalable and reproducible for universities that do not have the resources to invest in technology and in an exclusive library of top-notch content. But the hybrid character of online education can also take a different form, by combining in-person and online study within one curriculum through online chats and the use of apps for tutoring and other forms of support and help. This has the advantage of streamlining the learning experience, but the disadvantage of erasing a large aspect of social life and personal interactions on a campus. In the summer of 2020, the direction of the trend seems clear: the world of education, like for so many other industries, will become partly virtual.

2.2.3. Resilience

Effects on big tech, health and well-being, banking and insurance, the automotive industry, electricity

During the pandemic, the quality of resilience, or the ability to thrive in difficult circumstances, gained “must have” appeal, and became the go-to buzzword – everywhere! Understandably. For those fortunate enough to find themselves in industries “naturally” resilient to the pandemic, the crisis was not only more bearable, but even a source of profitable opportunities at a time of distress for the majority. Three industries in particular will flourish (in aggregate) in the post-pandemic era: big tech, health and wellness. In other industries that have been hit hard by the crisis, proving resilient is what will make the difference between bouncing back from the COVID-19 sudden exogenous shock or falling victim to it. The banking, insurance and automotive sectors are three different examples of industries that have to build greater resilience to pass through the deep and prolonged recession caused by the health crisis.

By and large, big tech was the resilient industry *par excellence* , for it emerged from this period of radical change as the biggest beneficiary. During the pandemic, as companies and their customers alike were forced to go digital, accelerate online plans, take up new networking tools and start working from home, tech became an absolute necessity, even among traditionally reluctant customers. For this reason, the combined market value of the leading tech companies hit record after record during the lockdowns, even rising back above levels before the outbreak started. For reasons expanded on elsewhere in this book, this phenomenon is unlikely to abate any time soon, quite the opposite.

Resilience like all good practice begins at home with us, so we can fairly assume that, in the post-pandemic era, we will become collectively more aware of the importance of our own physical and mental resilience. The desire, driven by greater necessity, to feel physically and mentally well and the need to strengthen our immune system mean that well-being and those sectors of the wellness industry positioned to help deliver them will emerge as strong winners. Also, the role of public health will evolve and expand. Well-being has to be addressed holistically; we cannot be individually well in a world that is unwell. Therefore, planetary care will be as important as personal care, an equivalence that strongly supports the promotion of principles we previously discussed, like stakeholder capitalism, the circular economy and ESG strategies. At the company level where the health effects of environmental degradation are increasingly clear, issues like air

pollution, water management and respect for biodiversity will become paramount. Being “clean” will be an industry imperative as well as an imperious necessity imposed by the consumer.

Like for any other industry, digital will play a significant role in shaping the future of wellness. The combination of AI, the IoT and sensors and wearable technology will produce new insights into personal well-being. They will monitor how we are and feel, and will progressively blur the boundaries between public healthcare systems and personalized health creation systems – a distinction that will eventually break down. Streams of data in many separate domains ranging from our environments to our personal conditions will give us much greater control over our own health and well-being. In the post-COVID-19 world, precise information on our carbon footprints, our impact on biodiversity, on the toxicity of all the ingredients we consume and the environments or spatial contexts in which we evolve will generate significant progress in terms of our awareness of collective and individual well-being. Industries will have to take note.

The collective quest for resilience also favours the sports industry, closely related to well-being. As it is now well understood that physical activity greatly contributes to health, sport will be increasingly recognized as a low-cost tool for a healthier society. Therefore, governments will encourage their practice, acknowledging the added benefit that sports constitute one of the best tools available for inclusivity and social integration. For a while, social distancing may constrain the practice of certain sports, which will in turn benefit the ever-more powerful expansion of e-sports. Tech and digital are never far away!

Four industries that have been grappling with a host of particular challenges posed by the pandemic crisis illustrate the diverse nature of resilience. In banking, it is about being prepared for the digital transformation. In insurance, it is about being prepared for the litigations that are coming. In automotive, it is about being prepared for the coming shortening of supply chains. In the electricity sector, it is about being prepared for the inevitable energy transition. The challenges are the same within each industry, and only the most resilient and better prepared companies within each will be capable of “engineering” a successful outcome.

Because of the nature of their activity when an economic crisis happens, banks tend to find themselves in the epicentre of the storm. With COVID-19, the risk doubled in intensity. First, banks have to prepare for the possibility that the consumer liquidity crisis morphs into a major corporate solvency crisis, in which case their resilience will be severely tested. Second, they have to adjust to the way in which the pandemic is challenging traditional banking habits, a different form of resilience that requires further capacities of adaptation. The first risk belongs to the category of "traditional" financial risks for which banks have had years to prepare. It is being dealt with through capital and liquidity buffers that have to be robust enough to withstand a major shock. In the case of the COVID-19 crisis, the test of resilience will come when the volume of non-performing loans starts rising. The situation is entirely different for the second category of risks. Almost overnight, retail, commercial and investment banks were faced with an (often) unexpected situation of having to move online. The impossibility to meet colleagues, clients or fellow traders in person, the necessity to use contactless payment and the exhortation from regulators to use online banking and online trading in conditions of remote working all meant that the entire banking industry had to move towards digital banking at the stroke of a pen. COVID-19 has forced all the banks to accelerate a digital transformation that is now here to stay and that has intensified cybersecurity risks (which could in turn raise systemic stability implications if they are not properly mitigated). Those that have lagged behind and missed the high-speed digital train will find it very hard to adapt and to survive.

In the insurance industry, many different COVID-19 related claims have been made under various types of household and commercial insurance, which include commercial property and business interruption, travel, life, health and liability (like workers' compensation and employment practices liability). The pandemic poses a particular risk to the insurance industry because its existence and functioning are based upon the principle of risk diversification, which was effectively suppressed when governments decided to impose a lockdown. For this reason, hundreds of thousands of businesses around the world have been unable to successfully file claims and are either facing months (if not years) of litigation, or ruin. In May 2020, the insurance industry estimated that the pandemic could potentially

cost more than $200 billion, making it one of the most expensive events in the history of the insurance industry (the cost will rise if the lockdowns go beyond the period under consideration when the forecast was made). For the insurance industry, the post-COVID-19 challenge consists in meeting the evolving protection needs of its customers by building greater resilience to a broad range of potentially “uninsurable” catastrophic shocks like pandemics, extreme weather events, cyberattacks and terrorism. It has to do so while navigating an environment of exceedingly low interest rates while preparing for anticipated litigation and the possibility of unprecedented claims and losses.

In the last few years, the automotive industry has been engulfed in a rising storm of challenges, ranging from trade and geopolitical uncertainty, declining sales and CO_2 penalties to fast-changing customer demand and the multifaceted nature of the rising competition in mobility (electric vehicles, autonomous cars, shared mobility). The pandemic has exacerbated these challenges by adding to the considerable uncertainty the industry is facing, in particular with respect to supply chains. In the early stages of the outbreak, the shortage of Chinese components had a detrimental impact on global automotive production. In the coming months and years, the industry will have to rethink its whole organization and ways of operating against the backdrop of reduced supply chains and a likely drop in vehicle sales.

Throughout the successive stages of the pandemic, and in particular during the lockdowns, the electricity sector played an essential role in allowing most of the world to carry on digitally, the hospitals to run and all essential industries to operate normally. Despite the considerable challenges posed by cyberthreats and changes in demand patterns, electricity held on, proving its resilience to shocks. Moving forward, the electricity sector has to embrace the challenge of accelerating its energy transition. The combination of investments in progressive energy infrastructure (like in renewables, hydrogen pipelines and electric vehicle charging networks) and industrial cluster redevelopment (like the electrification of the energy required for chemical production) has the potential to support the economic recovery (by creating employment and economic activity) while increasing the overall resilience of the energy sector in terms of clean energy production.

*****

The micro reset will force every company in every industry to experiment new ways of doing business, working and operating. Those tempted to revert to the old way of doing things will fail. Those that adapt with agility and imagination will eventually turn the COVID-19 crisis to their advantage.

3. INDIVIDUAL RESET

Like for macro and micro effects, the pandemic will have profound and diverse consequences for all of us as individuals. For many, it has already been life-shattering. To date, COVID-19 has forced a majority of people the world over to self-isolate from families and friends, has thrown into complete disarray personal and professional plans, and has deeply undermined their sense of economic and sometimes psychological and physical security. We have all been reminded of our innate human fragility, our frailties and our flaws. This realization combined with the stress engendered by the lockdowns and the concurrent deep sense of uncertainty about what is coming next could, albeit surreptitiously, change us and the way we relate to other people and to our world. For some, what starts as a change may end up as an individual reset.

3.1. Redefining our humanness

3.1.1. The better angels in our nature… or not

Psychologists point out that the pandemic, like most transformative events, has the ability to bring out the best and the worst in us. Angels or devils: what is the evidence so far?

At first glance, it seems the pandemic may have brought people together. In March 2020, images from Italy, the country hit hardest at that time, conveyed the impression that the collective “war effort” was one of the only unexpected upsides of the COVID-19 catastrophe that was engulfing the country. As the whole population went into lockdown at home, innumerable examples showed that, as a result, people not only had more time for each other but also seemed to be kinder to one another. The outlets for this enhanced collective sensitivity ranged from famous opera singers performing for their neighbours from their balcony, to a nightly ritual of the population singing health workers' praises (a phenomenon that extended to almost the whole of Europe) plus diverse acts of mutual help and support for those in need. Italy in a sense led the way, and since, throughout the period of confinement and throughout the world, there have been comparable widespread examples of remarkable, personal and social solidarity. Everywhere, simple acts of kindness, generosity and altruism appear to be becoming the norm. In terms of what we value, the notions of cooperation, communitarian ideas, the sacrifice of self-interest for the common good and caring came to the fore. Conversely, manifestations of individual power, popularity and prestige were frowned upon, even eclipsing the appeal of the “rich and famous” that faded as the pandemic progressed. One commentator observed that the coronavirus had the effect of swiftly “dismantling the cult of celebrity” – a key feature of our modernity – noting: “The dream of class mobility dissipates when society locks down, the economy stalls, the death count mounts and everyone’s future is frozen inside their own crowded apartment or palatial mansion. The difference between the two has never been more obvious.” [141] A variety of such observations have prompted not only social commentators but also the general public itself to ponder whether the pandemic succeeded

in bringing the best out of us and in so doing triggering a search for higher meaning. Many questions came to mind, like: Might the pandemic give birth to better selves and to a better world? Will it be followed by a shift of values? Will we become more willing to nurture our human bonds and more intentional about maintaining our social connections? Simply put: will we become more caring and compassionate?

If history is any guide, natural disasters, like hurricanes and earthquakes, bring people together, while pandemics do the opposite: they drive them apart. The reason could be the following: confronted with a sudden, violent and often brief natural disaster, populations bond together and tend to recover relatively fast. By contrast, pandemics are longer-lasting, prolonged events that often elicit ongoing feelings of distrust (vis-à-vis others) rooted in a primal fear of dying. Psychologically, the most important consequence of the pandemic is to generate a phenomenal amount of uncertainty that often becomes a source of angst. We do not know what tomorrow will bring (Will there be another wave of COVID-19? Will it affect people I love? Will I keep my job?) and such a lack of surety makes us uneasy and troubled. As human beings, we crave certainty, hence the need for "cognitive closure", anything that can help erase the uncertainty and ambiguity that paralyse our ability to function "normally". In the context of a pandemic, the risks are complex, difficult to grasp and largely unknown. Thus confronted, we are more likely to retrench rather than look to the needs of others as tends to happen with sudden natural (or not) disasters (and in fact contrary to the prevailing first impressions conveyed by the media). This in turn becomes a profound source of shame, a key sentiment that drives people's attitudes and reactions during pandemics. Shame is a moral emotion that equates with feeling bad: an uncomfortable sentiment that mixes regret, self-hate and a vague sense of "dishonour" of not doing the "right" thing. Shame has been described and analysed in countless novels and literary texts written about historical outbreaks. It can take forms as radical and horrendous as parents abandoning their children to their fate. At the beginning of *The Decameron* , a series of novellas that tell the tale of a group of men and women sheltered in a villa as the Black Death ravaged Florence in 1348, Boccaccio writes that: "fathers and mothers were found to abandon their own children, untended, unvisited, to their fate". In the same vein, numerous literary accounts of past pandemics, from Defoe's *A*

Journal of The Plague Year to Manzoni's' *The Betrothed* , relate how, so often, fear of death ends up overriding all other human emotions. In every situation, individuals are forced to make decisions about saving their own lives that result in profound shame because of the selfishness of their ultimate choice. Thankfully, there are always exceptions, as we saw most poignantly during COVID-19, such as among the nurses and doctors whose multiple acts of compassion and courage on so many occasions went well beyond the call of their professional duty. But they seem to be just that – exceptions! In *The Great Influenza* , [142] a book that analyses the Spanish flu's effects on the US at the end of World War I, the historian John Barry recounts that health workers could not find enough volunteers to help. The more virulent the flu became, the less people were willing to volunteer. The collective sense of shame that ensued might be one of the reasons why our general knowledge about the 1918-1919 pandemic is so scant, despite the fact that, in the US alone, it killed 12 times more people than the war itself. This, perhaps, also explains why to date so few books or plays have been written about it.

Psychologists tell us that cognitive closure often calls for black-and-white thinking and simplistic solutions [143] – a terrain propitious for conspiracy theories and the propagation of rumours, fake news, mistruths and other pernicious ideas. In such a context, we look for leadership, authority and clarity, meaning that the question as to whom we trust (within our immediate community and among our leaders) becomes critical. In consequence, so too does the countervailing issue of whom we distrust. In conditions of stress, the appeal of cohesion and unity increases, which leads us to coalesce around our clan or our group, and to generally become more sociable within it, but not behind it. It seems only natural that our sense of vulnerability and fragility increases, as does our dependence on those around us, as for a baby or a frail person. Our attachment to those close to us strengthens, with a renewed sense of appreciation for all those we love: family and friends. But there is a darker side to this. It also triggers a rise in patriotic and nationalist sentiments, with troubling religious and ethnic considerations also coming into the picture. In the end, this toxic mix gets the worst of us as a social group. Orhan Pamuk (the Turkish author who was awarded the Nobel Prize in Literature in 2006 and whose latest novel, *Nights of Plague* , is due to be published at the end of 2020) recounts how

people have always responded to epidemics by spreading rumours and false information and portraying the disease as foreign and brought in with malicious intent. This attitude leads us to look for a scapegoat – the commonality of all outbreaks throughout history – and is the reason why "unexpected and uncontrollable outbursts of violence, hearsay, panic and rebellion are common in accounts of plague epidemics from the Renaissance on". [144] Pamuk adds: "The history and literature of plagues shows us that the intensity of the suffering, of the fear of death, of the metaphysical dread, and of the sense of the uncanny experienced by the stricken populace will also determine the depth of their anger and political discontent."

The COVID-19 pandemic has unequivocally shown us all that we live in a world that is interconnected and yet largely bereft of solidarity between nations and often even within nations. Throughout the periods of confinement, remarkable examples of personal solidarity have surfaced, along with counterexamples of selfish behaviour. At the global level, the virtue of helping each other has been conspicuous by its absence – this despite the anthropological evidence that what sets us apart as humans is the ability to cooperate with each other and form in the process something bigger and greater than ourselves. Will COVID-19 result in people withdrawing into themselves, or will it nourish their innate sense of empathy and collaboration, encouraging them towards greater solidarity? The examples of previous pandemics are not very encouraging, but this time there is a fundamental difference: we are all collectively aware that without greater collaboration, we will be unable to address the global challenges that we collectively face. Put in the simplest possible terms: if, as human beings, we do not collaborate to confront our existential challenges (the environment and the global governance free fall, among others), we are doomed. Thus, we have no choice but to summon up the better angels of our nature.

3.1.2. Moral choices

The pandemic has forced all of us, citizens and policy-makers alike, willingly or not, to enter into a philosophical debate about how to maximize the common good in the least damaging way possible. First and foremost, it

prompted us to think more deeply about what the common good really means. Common good is that which benefits society as a whole, but how do we decide collectively what is best for us as a community? Is it about preserving GDP growth and economic activity at any cost to try to prevent unemployment rising? Is it about caring for the most fragile members of our community and making sacrifices for one another? Is it something in between and, if it is, what trade-offs are involved? Some schools of philosophical thought, like libertarianism (for which individual freedom matters the most) and utilitarianism (for which the pursuit of the best outcome for the greatest number makes more sense) may even dispute that the common good is a cause worth pursuing, but can conflicts between competing moral theories be resolved? The pandemic brought them to a boil, with furious arguments between opposing camps. Many decisions framed as “cold” and rational, driven exclusively by economic, political and social considerations, are in fact deeply influenced by moral philosophy – the endeavour to find a theory that is capable of explaining what we should do. Actually, almost every single decision related to how best to deal with the pandemic could be reframed as an ethical choice, reflecting that, in almost all instances, human practices labour under moral considerations. Shall I give to those who have nothing and show empathy to those whose opinion differs from mine? Is it all right to lie to the public for some greater good? Is it acceptable not to help my neighbours who are infected with COVID-19? Shall I lay off a number of employees in the hope of keeping my business afloat for the others? Is it okay to escape to my holiday home for my own enhanced safety and comfort or should I offer it to someone whose need exceeds mine? Shall I ignore the confinement order to assist a friend or family member? Every single decision, big or small, has an ethical component, and the way in which we respond to all these questions is what eventually enables us to aspire to a better life.

Like all notions of moral philosophy, the idea of common good is elusive and contestable. Since the pandemic started, it has provoked furious debates about whether to use a utilitarian calculus when trying to tame the pandemic or to stick to the sacrosanct principle of sanctity of life.

Nothing crystallizes the issue of ethical choice more than the debate that raged during the initial lockdowns about the trade-off between public health and the hit to growth. As we said earlier, almost all economists have

debunked the myth that sacrificing a few lives will save the economy but, irrespective of these experts' judgement, the debate and arguments went on. In the US in particular but not exclusively, some policy-makers took the line that it was justifiable to value the economy over life, endorsing a policy choice that would have been unimaginable in Asia or Europe, where such pronouncements would have been tantamount to committing political suicide. (This realization probably explains UK Prime Minister Johnson's hasty retreat from an initial policy advocating herd immunity, often portrayed by experts and the media as an example of social Darwinism). The prioritization of business over life has a long tradition, running from the merchants of Siena during the Great Plague to those of Hamburg who tried to conceal the cholera outbreak of 1892. However, it seems almost incongruous that it would remain alive today, with all the medical knowledge and scientific data we have at our disposal. The argument put forward by some groups like "Americans for Prosperity" is that recessions kill people. This, while undoubtedly true, is a fact that is itself rooted in policy choices informed by ethical considerations. In the US, recessions do indeed kill a lot of people because the absence or limited nature of any social safety net makes them life-threatening. How? When people lose their jobs with no state support and no health insurance, they tend to "die of despair" through suicides, drug overdoses and alcoholism, as shown and extensively analysed by Anne Case and Angus Deaton. [145] Economic recessions also provoke deaths outside of the US, but policy choices in terms of health insurance and worker protection can ensure that there are considerably fewer. This is ultimately a moral choice about whether to prioritize the qualities of individualism or those that favour the destiny of the community. It is an individual as well as a collective choice (that can be expressed through elections), but the example of the pandemic shows that highly individualistic societies are not very good at expressing solidarity. [146]

In the immediate post-pandemic era, following the first wave in early 2020 and at a time when many economies around the world are sliding into deep recessions, the perspective of more severe lockdowns seems politically inconceivable. Even the richest countries cannot "afford" to endure a lockdown indefinitely, not even a year or so. The consequences, particularly in terms of unemployment, would be horrific, resulting in a dramatic fallout

for society's poorest, and individual well-being in general. As the economist and philosopher Amartya Sen put it: "The presence of disease kills people, and the absence of livelihood also kills people." [147] Therefore, now that testing and contact-tracing capacities are widely available, many individual and collective decisions will of necessity involve complex cost–benefit analyses and even sometimes a "cruel" utilitarian calculus. Every policy decision will become an exceedingly delicate compromise between saving as many lives as possible and permitting the economy to run as fully as possible. Bioethicists and moral philosophers often argue among themselves about counting life years lost or saved rather than just the number of deaths that occurred or that could have been avoided. Peter Singer, a professor of bioethics and author of *The Life You Can Save* , is a prominent voice among those who adhere to the theory that we should take into account the number of life years lost, not just the number of lives lost. He gives the following example: in Italy, the average age of those dying of COVID-19 is almost 80 years, which could prompt us to ask the following question: how many years of life were lost in Italy, considering that many of the people who died from the virus were not only elderly but also had underlying medical conditions? Some economists roughly estimate that Italians lost perhaps an average of three years of life, a very different outcome as compared to the 40 or 60 years of life lost when numerous young people perish as the result of war. [148]

The purpose of this example is this: today, almost everyone the world over has an opinion as to whether the lockdown in her or his country was too severe or not severe enough, whether it should have been shortened or extended, whether it was appropriately put into place or not, whether it was properly enforced or not, often framing the issue as an "objective fact". In reality, all these judgements and pronouncements that we constantly make are determined by underlying ethical considerations that are eminently personal. Simply put, what we expose as facts or opinions are moral choices that the pandemic has laid bare. They are made in the name of what we think is right or wrong and therefore define us as who we are. Just one simple example to illustrate the point: the WHO and most national health authorities recommend that we wear a mask in public. What has been framed as an epidemiological necessity and an easy risk-mitigating measure has turned into a political battlefield. In the US and, also, but less so, in a

few other countries, the decision to wear a mask or not has become politically charged since it is considered as an infringement to personal freedom. But behind the political declaration, refusing to wear a mask in public is a moral choice, as indeed is the decision to wear one. Does this tell us something about the moral principles that underpin our choices and decisions? Probably yes.

The pandemic also compelled us to (re)consider the critical importance of fairness, a highly subjective notion, yet essential to societal harmony. Taking fairness into consideration reminds us that some of the most basic assumptions we make in economics have a moral element embedded in them. Should, for example, fairness or justice be considered when looking at the laws of supply and demand? And what does the response tell us about ourselves? This quintessential moral issue came to the fore during the most acute phase of the pandemic in early 2020 when shortages of some basic necessities (like oil and toilet paper) and critical supplies for dealing with COVID-19 (like masks and ventilators) started to occur. What was the right response? Let the laws of supply and demand work their magic so that prices rise high enough and clear the market? Or, rather, regulate demand or even prices for a little while? In a famous paper written in 1986, Daniel Kahneman and Richard Thaler (who were subsequently awarded the Nobel Prize in Economics) explored this issue and concluded that rising prices in an emergency is simply unacceptable from a societal standpoint because it will be perceived as unfair. Some economists may argue that higher prices triggered by supply and demand are effective in so far as they discourage panic buying, but most people would consider this is an issue that has little to do with economics and more to do with a sentiment of fairness, hence of moral judgement. Most companies understand this: raising the price of a good that is needed in an extreme situation like a pandemic, particularly if it is a mask or hand sanitizer, is not only offensive but flies in the face of what is considered morally and socially acceptable. For this reason, Amazon prohibited price gouging on its site, and large retail chains responded to the shortages not by raising the price of the goods but by limiting the quantity that each customer could buy.

It is hard to tell whether these moral considerations constitute a reset, and whether they will have a long-lasting, post-coronavirus effect on our attitudes and behaviours. At the very least, we could assume that we are

now more individually aware of the fact that our decisions are infused with values and informed by moral choices. It might follow that, if (but it is a big "if") in the future we abandon the posture of self-interest that pollutes so many of our social interactions, we may be able to pay more attention to issues like inclusivity and fairness. Oscar Wilde had already highlighted this problem in 1892 when depicting a cynic as "a man who knows the price of everything and the value of nothing".

3.2. Mental health and well-being

For years now, an epidemic of mental health has engulfed much of the world. The pandemic has already made it worse and will continue to do so. Most psychologists (and certainly all those we talked to) seem to concur with the judgement expressed in May 2020 by one of their peers: “The pandemic has had a devastating effect on mental health.” [149]

Unlike physical illness, people with mental health issues often have wounds that are invisible to a non-professional’s naked eye. Yet, in the past decade, mental health specialists report an explosion of mental health problems ranging from depression and suicide to psychosis and addictive disorders. In 2017, an estimated 350 million people around the globe were suffering from depression. At that time, the WHO predicted that depression would become the second main cause of disease burden globally by 2020 and that it would overtake ischemic heart disease as the leading cause of disease burden by 2030. In the US, the CDC estimated in 2017 that depression affected more than 26% of adults. Approximately 1 in 20 report moderate to severe symptoms. At that time, it also predicted that 25% of American adults would suffer from mental illness during the year and almost 50% would develop at least one mental illness during their lifetime. [150] Similar figures (but maybe not as severe) and trends exist in most countries around the world. In the workplace, the issue of mental health has become one of the big elephants in the corporate room. The epidemic of work-related stress, depression and anxiety seems to be continuously getting worse. As a revealing example, in 2017-2018 in the UK, stress, depression and anxiety accounted for more than half (57%) of total working days lost due to ill health. [151]

For many people, traversing the COVID-19 pandemic will be defined as living a personal trauma. The scars inflicted may last for years. To start with, in the early months of the outbreak, it was all too easy to fall victim to the biases of availability and salience. These two mental shortcuts caused us to obsess and ruminate about the pandemic and its dangers (availability makes us rely on immediate examples that come to mind when evaluating something and salience predisposes us to focus on things that are more prominent or emotionally striking). For months, COVID-19 became almost

the only news, news that was inevitably almost exclusively bad. Relentless reports of deaths, infectious cases and all the other things that might go wrong, together with emotionally charged images, allowed our collective imaginations to run riot in terms of worry about ourselves and our closest loved ones. Such an alarming atmosphere had disastrous effects on our mental well-being. Furthermore, media-amplified anxiety can be very contagious. All this fed into a reality that for so many amounted to personal tragedy, whether defined by the economic impact of income loss and job losses and/or the emotional impact of domestic violence, acute isolation and loneliness or the inability to properly grieve for deceased loved ones.

Humans are inherently social beings. Companionship and social interactions are a vital component of our humanness. If deprived of them, we find our lives turned upside down. Social relations are, to a significant extent, obliterated by confinement measures and physical or social distancing and, in the case of the COVID-19 lockdowns, this occurred at a time of heightened anxiety when we needed them most. Rituals that are inherent to our human condition – handshakes, hugs, kisses and many others – were suppressed. Loneliness and isolation resulted. For now, we know neither whether nor when we might return completely to our old way of life. At any stage of the pandemic, but particularly towards the end of lockdowns, mental discomfort remains a risk, even after the period of acute stress has passed, something that psychologists have called the “third-quarter phenomenon” [152] in reference to people who live in isolation for a protracted period of time (like polar explorers or astronauts): they tend to experience problems and tensions towards the end of their mission. Like these people, but on a planetary scale, our collective sense of mental well-being has taken a very severe knock. Having dealt with the first wave, we are now anticipating another that may or may not come, and this toxic emotional mix risks producing a collective state of anguish. The inability to make plans or engage in specific activities that used to be intrinsic parts of our normal life and vital sources of pleasure (like visiting family and friends abroad, planning ahead for the next term at university, applying for a new job) has the potential to leave us confused and demoralized. For many people, the strains and stresses of the immediate dilemmas that followed the end of lockdowns will last for months. Is it safe to go on public transport? Is it too risky to go to a favourite restaurant? Is it

appropriate to visit this elderly family member or friend? For a long time to come, these very banal decisions will be tainted with a sense of dread – particularly for those who are vulnerable because of their age or health condition.

At the time of writing (June 2020), the impact of the pandemic in terms of mental health cannot be quantified or assessed in a generalized way, but the broad contours are known. In a nutshell: 1) individuals with pre-existing mental health conditions like depression will increasingly suffer from anxiety disorders; 2) social-distancing measures, even after they've been rolled back, will have worsened mental health issues; 3) in many families, the loss of income consecutive to unemployment will plunge people into the "death of despair" phenomenon; 4) domestic violence and abuse, particularly against women and children, will increase as long as the pandemic endures; and 5) "vulnerable" people and children – those in care, the socio-economically disadvantaged and the disabled in need of an above-average level of support – will be particularly at risk of increased mental distress. Let us review below some of these in greater detail.

For many, an explosion of mental problems occurred during the first months of the pandemic and will continue to progress in the post-pandemic era. In March 2020 (at the onset of the pandemic), a group of researchers published a study in *The Lancet* that found that confinement measures produced a range of severe mental health outcomes, such as trauma, confusion and anger. [153] Although avoiding the most severe mental health issues, a large portion of the world population is bound to have suffered stress to various degrees. First and foremost, it is among those already prone to mental health issues that the challenges inherent in the response to the coronavirus (lockdowns, isolation, anguish) will be exacerbated. Some will weather the storm, but for certain individuals, a diagnostic of depression or anxiety could escalate into an acute clinical episode. There are also significant numbers of people who for the first time presented symptoms of serious mood disorder like mania, signs of depression and various psychotic experiences. These were all triggered by events directly or indirectly associated with the pandemic and the lockdowns, such as isolation and loneliness, fear of catching the disease, losing a job, bereavement and concerns about family members and friends. In May 2020, the National Health Service England's clinical director for mental health

told a Parliamentary committee that the “demand for mental healthcare would increase ‘significantly’ once the lockdown ended and would see people needing treatment for trauma for years to come”. [154] There is no reason to believe that the situation will be very different elsewhere.

Domestic violence has risen during the pandemic. It remains difficult to measure the precise increase because of the high number of cases that remain unreported, but it is nonetheless clear that the rise in incidences was fuelled by a combination of anxiety and economic uncertainty. With the lockdowns, all the requisite ingredients for an increase in domestic violence coalesced: isolation from friends, family and employment, the occasion for constant surveillance by and physical proximity to an abusive partner (often themselves under more stress), and limited or no options for escape. The conditions of lockdown magnified existing abusive behaviours, leaving little or no respite for victims and their children outside of the home. Projections from the United Nations Population Fund indicate that if domestic violence increases by 20% during periods of lockdown, there would be an additional 15 million cases of intimate partner violence in 2020 for an average lockdown duration of three months, 31 million cases for an average lockdown of six months, 45 million for an average lockdown of nine months, and 61 million if the average lockdown period were to last one year. These are global projections, inclusive of all 193 UN Member States, and represent the high levels of underreporting characteristic of gender-based violence. All told, they total an additional 15 million cases of gender-based violence for every three months a lockdown continues. [155] It is hard to predict how domestic violence will evolve in the post-pandemic era. Conditions of hardship will make it more likely, but much will depend on how individual countries control the two pathways through which domestic violence occurs: 1) the reduction in prevention and protection efforts, social services and care; and 2) the concomitant increase in the incidence of violence.

This sub-chapter concludes with a point that may seem anecdotal but that has gained some relevance in an era of relentless online meetings that could expand in the foreseeable future: are video conversations and mental well-being bad bedfellows? During the lockdowns, video conversations were for many a personal and professional lifesaver, allowing us to maintain human connections, long-distance relationships and connections with our

colleagues. But they have also generated a phenomenon of mental exhaustion, popularized as “Zoom fatigue”: a condition that applies to the use of any video interface. During the lockdowns, screens and videos were so widely solicited for communication purposes that this equated to a new social experiment conducted at scale. The conclusion: our brains find it difficult and sometimes unsettling to conduct virtual interactions especially if and when such interactions account for the quasi-totality of our professional and personal exchanges. We are social animals for whom the many minor and often nonverbal cues that normally occur during physical social interactions are vital in terms of communication and mutual understanding. When we talk to someone in the flesh, we don’t only concentrate on the words they are saying but also focus on a multitude of infra-language signals that help us make sense of the exchange we are having: is the lower body of the person facing us or turned away? What are their hands doing? What’s the tone of their general body language? How is the person breathing? A video conversation makes the interpretation of these nonverbal cues charged with subtle meaning impossible, and it forces us to concentrate exclusively on words and facial expressions sometimes altered by the quality of the video. On a virtual conversation, we have nothing other than intense, prolonged eye contact, which can easily become intimidating or even threatening, particularly when a hierarchical relationship exists. This problem is magnified by the “gallery” view, when the central vision of our brains risks being challenged by the sheer number of people on view. There is a threshold beyond which we cannot decode so many people at once. Psychologists have a word for this: “continuous partial attention”. It is as if our brain were trying to multitask, in vain of course. At the end of the call, the constant search for nonverbal cues that cannot be found simply overwhelms our brain. We get the feeling of being drained of energy and left with a sense of profound dissatisfaction. This in turn negatively affects our sense of mental well-being.

The impact of the COVID-19 has given rise to a wider and deeper array of mental health problems affecting greater numbers of the population, many of whom might have been spared in the immediate future had it not been for the pandemic. Viewed in these terms, the coronavirus has reinforced not reset mental health issues. However, what the pandemic has achieved with respect to mental health, as in so many other domains, is the acceleration of

a pre-existing trend; with this has come heightened public awareness of the severity of the problem. Mental health, the most significant single factor affecting people's level of satisfaction with their lives, [156] was already on the radar screen of policy-makers. In the post-pandemic era, these issues may now be given the priority they deserve. This indeed would constitute a vital reset.

3.3. Changing priorities

Much has already been written about the way in which the pandemic might change us –how we think about things and how we do things. Yet, we are still in the very early days (we don't even know yet whether the pandemic is behind us) and, in the absence of data and research, all conjectures about our future selves are highly speculative. Nonetheless, we can foresee some possible changes that dovetail with the macro and micro issues reviewed in this book. COVID-19 may compel us to address our inner problems in ways we would not have previously considered. We may start asking ourselves some fundamental questions that would never have arisen without the crisis and the lockdowns, and by doing so reset our mental map.

Existential crises like the pandemic confront us with our own fears and anxieties and afford great opportunities for introspection. They force us to ask the questions that truly matter and can also make us more creative in our response. History shows that new forms of individual and collective organization often emerge after economic and social depressions. We have already provided examples of past pandemics that radically changed the course of history. In times of adversity, innovation often thrives – necessity has long been recognized as the mother of invention. This may prove to be particularly true for the COVID-19 pandemic that forced many of us to slow down and gave us more time to reflect, away from the pace and frenzy of our "normal" world (with the very significant exception, of course, of the dozens of millions of heroic workers in healthcare, grocery stores and supermarkets, and parents with young children or people caring for elderly or handicapped relatives needing constant attention). Offering as it did the gifts of more time, greater stillness, more solitude (even if an excess of the latter sometimes resulted in loneliness), the pandemic provided an opportunity to think more deeply about who we are, what really matters and what we want, both as individuals and as a society. This period of enforced collective reflection could give rise to a change in behaviour that will in turn trigger a more profound reconsideration of our beliefs and convictions. This could result in a shift in our priorities that would in turn affect our approach to many aspects of our everyday lives: how we socialize, take care of our family members and friends, exercise, manage our health, shop,

educate our children, and even how we see our position in the world. Increasingly, obvious questions may come to the fore, like: Do we know what is important? Are we too selfish and overfocused on ourselves? Do we give too great a priority and excessive time to our career? Are we slaves to consumerism? In the post-pandemic era, thanks to the pause for thought it offered some of us, our responses may well have evolved as compared to what our pre-pandemic selves might have answered.

Let us consider, in an arbitrary and non-exclusive fashion, some of these potential changes whose likelihood of occurrence, it seems to us, even if not very high, is nonetheless greater than commonly assumed.

3.3.1. Creativity

It may be a cliché to say that “what doesn’t kill us makes us stronger”, but Friedrich Nietzsche had a point. Not everybody who survives a pandemic emerges from it stronger, far from it. However, a few individuals do, with actions and achievements that may sound marginal at the time but with hindsight are seen to have made a tremendous impact. Being creatively minded helps. So does being in the right place (like the right industry) at the right time. There is little doubt, for example, that in the next few years we will witness an explosion of creativity among start-ups and new ventures in the digital and biotechnological spaces. The pandemic has blown following winds into the sails of both, suggesting that we will see a good deal of progress and much innovation on the part of the most creative and original individuals in these sectors. The most gifted entrepreneurs will have a field day!

The same may well happen in the realms of science and the arts. Illustrious past episodes corroborate that creative characters thrive in lockdown. Isaac Newton, for one, flourished during the plague. When Cambridge University had to shut down in the summer of 1665 after an outbreak, Newton went back to his family home in Lincolnshire where he stayed for more than a year. During this period of forced isolation described as *annus mirabilis* (a “remarkable year”), he had an outpouring of creative energy that formed the foundation for his theories of gravity and optics and, in particular, the development of the inverse-square law of gravitation (there was an apple

tree beside the house and the idea came to him as he compared the fall of an apple to the motion of the orbital moon). [157]

A similar principle of creativity under duress applies to literature and is at the origin of some of the most famous literary works in the Western world. Scholars argue that the closure of theatres in London forced by the plague of 1593 helped Shakespeare turn to poetry. This is when he published "Venus and Adonis", a popular narrative poem in which the goddess implores a kiss from a boy "to drive infection from the dangerous year". A few years later, at the beginning of the 17th century, theatres in London were more often closed than open because of the bubonic plague. An official rule stipulated that theatre performances would have to be cancelled when the deaths caused by the plague exceeded 30 people per week. In 1606, Shakespeare was very prolific precisely because theatres were closed by the epidemic and his troupe couldn't play. In just one year he wrote "King Lear", "Macbeth" and "Antony and Cleopatra". [158] The Russian author Alexander Pushkin had a similar experience. In 1830, following a cholera epidemic that had reached Nizhny Novgorod, he found himself in lockdown in a provincial estate. Suddenly, after years of personal turmoil, he felt relieved, free and happy. The three months he spent in quarantine were the most creative and productive of his life. He finished *Eugene Onegin* – his masterpiece – and wrote a series of sketches, one of which was called "A Feast During the Plague".

We cite these historical examples of flourishing personal creativity in some of our greatest artists during a plague or pandemic not to minimize or distract from the catastrophic financial impact that the COVID-19 crisis is having on the world of culture and entertainment, but instead to provide a glimmer of hope and a source of inspiration. Creativity is at its most abundant in the cultural and artistic sectors of our societies and history has shown that this very creativity can prove a major source of resilience.

A multitude of such examples exist. This is an unusual form of reset, but it should not surprise us. When devastating things happen, creativity and ingenuity often thrive.

3.3.2. Time

In Joshua Ferris' novel (2007) *Then We Came to the End* , one character observes: "Some days felt longer than other days. Some days felt like two whole days." This happened on a worldwide scale as a result of the pandemic: it altered our sense of time. In the midst of their respective lockdowns, many people made reference to the fact that the days in confinement seemed to last an eternity, and yet the weeks went by surprisingly fast. With, again, the fundamental exception of those who were in the "trenches" (all the essential workers we have already mentioned), many people in lockdown felt the sameness of the days, with every day similar to the previous and to the next, and barely any distinction between the working days and the weekend. It is as if time had become amorphous and undifferentiated, with all the markers and normal divisions gone. In a fundamentally different context but within a similar type of experience, prisoners who face the harshest and most radical form of confinement confirm this. "The days drag and then you wake up and a month has passed and you think, 'Where the hell has that gone?'" Victor Serge, a Russian revolutionary who was repeatedly jailed, said the same: "There are swift hours and very long seconds." [159] Could these observations compel some of us to reconsider our relationship with time, to better recognize how precious it is and not let it slip by unnoticed? We live in an era of extreme velocity, where everything goes much faster than ever because technology has created a culture of immediacy. In this "real-time" society where everything is needed and wanted right away, we constantly feel pressed for time and have the nagging feeling that the pace of life is ever increasing. Might the experience of the lockdowns alter this? Could we experience at our own individual level the equivalent of what "just-in-time" supply chains will do in the post-pandemic era – a suppression of time acceleration for the benefit of greater resilience and peace of mind? Might the need to become more psychologically resilient force us to slow down and become more mindful of the passing time? Maybe. This could be one of the unexpected upsides of COVID-19 and the lockdowns. It made us more aware and sensitive about the great markers of time: the precious moments spent with friends and our families, the seasons and nature, the myriads of small things that require a bit of time (like talking to a stranger, listening to a bird or admiring a piece of art) but that contribute to well-being. The reset: in the post-pandemic era, we might have a different appreciation of time, pursuing it for greater happiness. [160]

3.3.3. Consumption

Ever since the pandemic took hold, many column inches and analyses have been dedicated to the impact that COVID-19 will have on our consumption patterns. A substantial number of them state that in the post-pandemic era, we will become more conscious of the consequences of our choices and habits and will decide to repress some forms of consumption. At the other end of the spectrum, a few analysts forecast “revenge consumption”, taking the form of a surge in spending after the lockdowns end, predicting a strong revival of our animal spirits and a return to the situation that prevailed before the pandemic. Revenge consumption hasn’t happened yet. Maybe it won’t happen at all if a sentiment of self-restraint kicks in first.

The underlying argument supporting this hypothesis is the one to which we referred in the chapter on the environmental reset: the pandemic has acted as a dramatic eye-opener to the public at large on the severity of the risks related to environmental degradation and climate change.

Heightened awareness of and acute concerns about inequality, combined with the realization that the threat of social unrest is real, immediate and on our doorstep, might have the same effect. When a tipping point is reached, extreme inequality begins to erode the social contract and increasingly results in antisocial (even criminal) behaviour often directed at property. In response, consumption patterns must be seen to be changing. How might this play out? Conspicuous consumption could fall from favour. Having the latest, most up-to-date model of whatever will no longer be a sign of status but will be thought of as, at best, out of touch, and, at worst, downright obscene. Positional signalling will be turned upside down. Projecting a message about oneself through a purchase and flaunting expensive “stuff” may simply become passé. Put in simple terms, in a post-pandemic world beset by unemployment, insufferable inequalities and angst about the environment, the ostentatious display of wealth will no longer be acceptable.

The way forward may be inspired by the example of Japan together with a few other countries. Economists constantly worry about the possible Japanification of the world (to which we referred in the macro section), but there is a much more positive Japanification story that gives us a sense of

where we may want to go with respect to consumption. Japan possesses two distinctive features that are intertwined: it has one of the lowest levels of inequality among high-income countries, and it has since the burst of the speculative bubble in the late 1980s had a lower level of conspicuous consumption that sets it apart. Today, the positive value of minimalism (made viral by the Marie Kondo series), the lifelong pursuit of finding meaning and purpose in life (*ikigai*) and the importance of nature and the practice of forest bathing (*shirin-yoku*) are being emulated in many parts of the world, even though they all espouse a relatively more “frugal” Japanese lifestyle as compared to more consumerist societies. A similar phenomenon can be observed in Nordic countries, where conspicuous consumption is frowned upon and repressed. But none of this makes them less happy, quite the opposite. [161] As psychologists and behavioural economists keep reminding us, overconsumption does not equate to happiness. This might be another personal reset: the understanding that conspicuous consumption or excessive consumption of any kind is neither good for us nor for our planet, and the subsequent realization that a sense of personal fulfilment and satisfaction need not be reliant on relentless consumption – perhaps quite the opposite.

3.3.4. Nature and well-being

The pandemic has proven to be a real-time exercise in how to manage our anxiety and fears during a period of extraordinary confusion and uncertainty. One clear message has emerged from this: nature is a formidable antidote to many of today’s ills. Recent and abundant research explains incontrovertibly why it is so. Neuroscientists, psychologists, medical doctors, biologists and microbiologists, specialists of physical performance, economists, social scientists: all in their respective fields can now explain why nature makes us feel good, how it eases physical and psychological pain and why it is associated with so many benefits in terms of physical and mental well-being. Conversely, they can also show why being separated from nature in all its richness and variety – wildlife, trees, animals and plants – negatively affects our minds, our bodies, our emotional lives and our mental health. [162]

COVID-19 and the health authorities' constant reminders to walk or exercise every day to keep in shape place these considerations front and centre. So did the myriads of individual testimonies during the lockdowns, showing how much people in cities were longing for greenery: a forest, a park, a garden or just a tree. Even in the countries with the strictest lockdown regimes like France, health authorities insisted on the need to spend some time outside every day. In the post-pandemic era, far fewer people will ignore the centrality and the essential role of nature in their lives. The pandemic made this awareness possible at scale (since now almost everybody in the world knows about this). This will create more profound and personal connections at an individual level with the macro points we made earlier about the preservation of our ecosystems and the need to produce and consume in ways that are respectful of the environment. We now know that without access to nature and all it has to offer in terms of biodiversity, our potential for physical and mental well-being is gravely impaired.

Throughout the pandemic, we were reminded that rules of social distancing, hand washing and mask wearing (plus self-isolation for the most vulnerable people) are the standard tools to protect ourselves from COVID-19. Yet, two other essential factors that are strongly contingent upon our exposure to nature also play a vital role in our physical resilience to the virus: immunity and inflammation. Both contribute to protecting us, but immunity decreases with age, while inflammation increases. To improve our chances of resisting the virus, immunity must be boosted and inflammation suppressed. What part does nature play in this scenario? She is the leading lady, the science now tells us! The low-level of constant inflammation experienced by our bodies leads to all sorts of diseases and disorders, ranging from cardiovascular conditions to depression and reduced immune capabilities. This residual inflammation is more prevalent among people who live in cities, urban environments and industrialized areas. It is now established that a lack of connection with nature is a contributing factor to greater inflammation, with studies showing that just two hours spent in a forest can alleviate inflammation by lowering cytokine levels (a marker of inflammation). [163]

All this boils down to lifestyle choices: not only the time we spend in nature, but also what we eat, how we sleep, how much we exercise. These

are choices that point to an encouraging observation: age does not have to be a fatality. Ample research shows that together with nature, diet and physical exercise can slow, even sometimes reverse, our biological decline. There is nothing fatalistic about it! Exercise, nature, unprocessed food… They all have the dual benefit of improving immunity and suppressing inflammation. [164] This dovetails with the point we just made about consumption habits. It would be surprising if all this newly found evidence does not lead to greater awareness about responsible consumption. At the very least, the direction of the trend – less depredation, more sustainability – seems clear.

The reset for individuals: the pandemic has drawn our attention to the importance of nature. Going forward, paying more attention to our natural assets will progressively become paramount.

CONCLUSION

In June 2020, barely six months since the pandemic started, the world is in a different place. Within this short time frame, COVID-19 has both triggered momentous changes and magnified the fault lines that already beset our economies and societies. Rising inequalities, a widespread sense of unfairness, deepening geopolitical divides, political polarization, rising public deficits and high levels of debt, ineffective or non-existent global governance, excessive financialization, environmental degradation: these are some of the major challenges that existed before the pandemic. The corona crisis has exacerbated them all. Could the COVID-19 debacle be the lightning before the thunder? Could it have the force to ignite a series of profound changes? We cannot know what the world will be like in 10 months' time, even less what it will resemble in 10 years from now, but what we do know is that unless we do something to reset today's world, tomorrow's will be profoundly stricken. In Gabriel Garcia Marquez's *Chronicle of a Death Foretold* , an entire village foresees a looming catastrophe, and yet none of the villagers seem able or willing to act to prevent it, until it's too late. We do not want to be that village. To avoid such a fate, without delay we need to set in motion the Great Reset. This is not a "nice-to-have" but an absolute necessity. Failing to address and fix the deep-rooted ills of our societies and economies could heighten the risk that, as throughout history, ultimately a reset will be imposed by violent shocks like conflicts and even revolutions. It is incumbent upon us to take the bull by the horns. The pandemic gives us this chance: it "represents a rare but narrow window of opportunity to reflect, reimagine and reset our world". [165]

The deep crisis provoked by the pandemic has given us plenty of opportunities to reflect on how our economies and societies work and the ways in which they don't. The verdict seems clear: we need to change; we should change. But can we? Will we learn from the mistakes we made in the past? Will the pandemic open the door to a better future? Will we get

our global house in order? Simply put, will we put into motion the Great Reset? Resetting is an ambitious task, perhaps too ambitious, but we have no choice but to try our utmost to achieve it. It's about making the world less divisive, less polluting, less destructive, more inclusive, more equitable and fairer than we left it in the pre-pandemic era. Doing nothing, or too little, is to sleepwalk towards ever-more social inequality, economic imbalances, injustice and environmental degradation. Failing to act would equate to letting our world become meaner, more divided, more dangerous, more selfish and simply unbearable for large segments of the globe's population. To do nothing is not a viable option.

That said, the Great Reset is far from a done deal. Some may resist the necessity to engage in it, fearful of the magnitude of the task and hopeful that the sense of urgency will subside and the situation will soon get back to "normal". The argument for passivity goes like this: we have been through similar shocks – pandemics, harsh recessions, geopolitical divides and social tensions – before and we will get through them again. As always, societies will rebuild, and so will our economies. Life goes on! The rationale for not resetting is also predicated on the conviction that the state of the world is not that bad and that we just need to fix a few things around the edges to make it better. It is true that the state of the world today is on average considerably better than in the past. We must acknowledge that, as human beings, we never had it so good. Almost all the key indicators that measure our collective welfare (like the number of people living in poverty or dying in conflicts, the GDP per capita, life expectancy or literacy rates, and even the number of deaths caused by pandemics) have been continuously improving over pas centuries, impressively so in the last few decades. But they have been improving "on average" – a statistical reality that is meaningless for those who feel (and so often are) excluded. Therefore, the conviction that today's world is better than it has ever been, while correct, cannot serve as an excuse for taking comfort in the status quo and failing to fix the many ills that continue to afflict it.

The tragic death of George Floyd (an African American killed by a police officer in May 2020) vividly illustrates this point. It was the first domino or the last straw that marked a momentous tipping point at which an accumulated and profound sentiment of unfairness felt by the US African-American community finally exploded into massive protests. Would

pointing out to them that on “average” their lot is better today than in the past have appeased their anger? Of course not! What matters to African Americans is their situation *today* , not how much their condition has “improved” compared to 150 years ago when many of their ancestors lived in slavery (it was abolished in the US in 1865), or even 50 years ago when marrying a white American was illegal (interracial marriage only became legal in all states in 1967). Two points are pertinent to the Great Reset in this: 1) our human actions and reactions are not rooted in statistical data but are determined instead by emotions and sentiments – narratives drive our behaviour; and 2) as our human condition improves, our standards of living increase and so do our expectations for a better and fairer life.

In that sense, the widespread social protests that took place in June 2020 reflect the urgent necessity to embark on the Great Reset. By connecting an epidemiological risk (COVID-19) with a societal risk (protests), they made it clear that, in today’s world, it is the systemic connectivity between risks, issues, challenges and also opportunities that matters and determines the future. In the first months of the pandemic, public attention has understandably been focused on the epidemiological and health effects of COVID-19. But, moving forward, the most consequential problems lie in the concatenation of the economic, geopolitical, societal, environmental and technological risks that will ensue from the pandemic, and their ongoing impact on companies and individuals.

There is no denying that the COVID-19 virus has more often than not been a personal catastrophe for the millions infected by it, and for their families and communities. However, at a global level, if viewed in terms of the percentage of the global population effected, the corona crisis is (so far) one of the least deadly pandemics the world has experience over the last 2000 years. In all likelihood, unless the pandemic evolves in an unforeseen way, the consequences of COVID-19 in terms of health and mortality will be mild compared to previous pandemics. At the end of June 2020 (at a time when the outbreak is still raging in Latin America, South Asia and much of the US), COVID-19 has killed less than 0.006% of the world population. To put this low figure into context in terms of lethality, the Spanish flu killed 2.7% of the world’s population and HIV/AIDS 0.6% (from 1981 to today). The Plague of Justinian from its onset in 541 until it finally disappeared in 750 killed almost one-third of the population of Byzantium according to

various estimates, and the Black Death (1347-1351) is considered to have killed between 30% and 40% of the world population at the time. The corona pandemic is different. It does not constitute an existential threat, or a shock that will leave its imprint on the world's population for decades. However, it does entail worrisome perspectives for all the reasons already mentioned; in today's interdependent world, risks conflate with each other, amplifying their reciprocal effects and magnifying their consequences. Much of what's coming is unknown, but we can be sure of the following: in the post-pandemic world, questions of fairness will come to the fore, ranging from stagnating real incomes for a vast majority to the redefinition of our social contracts. Similarly, deep concerns about the environment or questions about how technology can be deployed and governed for the benefit of society will force their way onto the political agenda. All these issues predated the pandemic, but COVID-19 has both laid them bare for all to see and amplified them. The direction of the trends hasn't changed but, in the wake of COVID-19, it got a lot faster.

The absolute prerequisite for a proper reset is greater collaboration and cooperation within and between countries. Cooperation – a "supremely human cognitive ability" that put our species on its unique and extraordinary trajectory – can be summed up as "shared intentionality" to act together towards a common goal. [166] We simply cannot progress without it. Will the post-pandemic era be characterized by more or less cooperation? A very real risk exists that tomorrow the world will be even more divided, nationalistic and prone to conflicts than it is today. Many of the trends reviewed in the macro section suggest that, moving into the future, our world will be less open and less cooperative than before the pandemic. But an alternative scenario is possible, one in which collective action within communities and greater collaboration between nations enable a more rapid and peaceful exit from the corona crisis. As economies restart, there is an opportunity to embed greater societal equality and sustainability into the recovery, accelerating rather than delaying progress towards the 2030 Sustainable Development Goals and unleashing a new era of prosperity. [167] What could make this possible and raise the probability odds in favour of such an outcome?

Seeing the failures and fault lines in the cruel light of day cast by the corona crisis may compel us to act faster by replacing failed ideas, institutions,

processes and rules with new ones better suited to current and future needs. This is the essence of the Great Reset. Could the globally shared experience of the pandemic help alleviate some of the problems we faced as the crisis started? Can a better society emerge from the lockdowns? Amartya Sen, laureate of the Nobel Prize in Economics, thinks so, believing that: “The need to act together can certainly generate an appreciation of the constructive role of public action,” [168] citing as proof some examples like World War II having made people realize the importance of international cooperation, and convincing countries like the UK of the benefit of better-shared food and healthcare (and the eventual creation of the welfare state). Jared Diamond, the author of *Upheaval: How Nations Cope with Crisis and Change* , is of a similar opinion, hoping that the corona crisis will compel us to address four existential risks that we collectively face: 1) nuclear threats; 2) climate change; 3) the unsustainable use of essential resources like forests, seafood, topsoil and fresh water; and 4) the consequences of the enormous differences in standards of living between the world’s peoples: “Strange as it may seem, the successful resolution of the pandemic crisis may motivate us to deal with those bigger issues that we have until now balked at confronting. If the pandemic does at last prepare us to deal with those existential threats, there may be a silver lining to the virus’s black cloud. Among the virus’s consequences, it could prove to be the biggest, the most lasting – and our great cause for hope”. [169]

These expressions of individual hope are supported by a multitude of surveys concluding that we collectively desire change. They range from a poll in the UK showing that a majority of people want to fundamentally alter the economy as it recovers, in contrast to one-fourth wanting it to return to how it was, [170] to international surveys finding that a large majority of citizens around the world want the economic recovery from the corona crisis to prioritize climate change [171] and to support a green recovery. [172] Worldwide, movements demanding a “better future” and calling for a shift to an economic system that prioritizes our collective well-being over mere GDP growth are proliferating.

*****

We are now at a crossroads. One path will take us to a better world: more inclusive, more equitable and more respectful of Mother Nature. The other

will take us to a world that resembles the one we just left behind – but worse and constantly dogged by nasty surprises. We must therefore get it right. The looming challenges could be more consequential than we have until now chosen to imagine, but our capacity to reset could also be greater than we had previously dared to hope.

ACKNOWLEDGEMENTS

The authors would like to thank Mary Anne Malleret for her invaluable contribution to the manuscript and for greatly enhancing its overall style, thanks to her “pen”, and Hilde Schwab, for acting as a critical reader. They would also like to thank Camille Martin at Monthly Barometer for providing research assistance, and Fabienne Stassen, who edited the book diligently and with an eye for detail, despite obvious time constraints. Thanks also go to the many colleagues at the World Economic Forum who advised on, read, reviewed, formatted, designed, published and promoted this book. They include colleagues in the San Francisco, New York, Geneva, Beijing and Tokyo offices, and specialists in economics, society, technology, public health and public policy. Special thanks go out to Kelly Ommundsen and Peter Vanham in the Chairman’s Office. Finally, the feedback that came in from Forum constituents from all over the world and from people with very different backgrounds helped make this book what it hopefully is: a timely, well-balanced and informative book on the most important public-health challenge in a century that the world continues to face, and ways to address it and alleviate its impact going forward.

Klaus Schwab and Thierry Malleret
Geneva, July 2020

ENDNOTES

[1] Snowden, Frank, *Epidemics and Society: From the Black Death to the Present* , Yale University Press, 2019.
[2] Tuchman, Barbara, *A Distant Mirror – The Calamitous 14th Century* , Random House Trade Paperbacks; Reissue edition, 1987.
[3] Solana, Javier, "Our Finest Hour", Project Syndicate, 28 March 2020, https://www.project-syndicate.org/commentary/global-socioeconomic-landscape-after-covid19-pandemic-by-javier-solana-2020-03 .
[4] Camus, Albert, *The Plague* , Stuart Gilbert translation, Alfred A. Knopf, Inc., 1948, p. 80.
[5] Mahbubani, Kishore, *The Great Convergence: Asia, the West, and the Logic of One World* , PublicAffairs, Perseus Books Group, 2013.
[6] World Economic Forum, *The Global Risks Report 2020* , Insight Report, 15th Edition, http://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf .
[7] Wharton University of Pennsylvania, Risk Management and Decision Processes Center, "The Ostrich Paradox: Why We Underprepare for Disasters", Issue Brief, May 2018, https://riskcenter.wharton.upenn.edu/wp-content/uploads/2019/03/Ostrich-Paradox-issue-brief.pdf .
[8] Wagenaar, William A. and Sabato D. Sagaria, "Misperception of exponential growth", *Perception & Psychophysics* , vol. 18, 1975, pp. 416–422, https://link.springer.com/article/10.3758/BF03204114 .
[9] CDC, "2019-2020 U.S. Flu Season: Preliminary Burden Estimates", https://www.cdc.gov/flu/about/burden/preliminary-in-season-estimates.htm
[10] Johns Hopkins University & Medicine, Coronavirus Resource Center, "COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)", 24 June 2020.
[11] Simon, Herbert, "The Architecture of Complexity", *Proceedings of the American Philosophical Society*, vol. 106, no. 6, 1962, pp. 467-482.
[12] Malleret, Thierry, *Disequilibrium: A World Out of Kilter* , BookBaby, 2012.
[13] Contrary to white-swan events, which are certain, black-swan events are very rare, hard to predict (non-probabilistic) and have outsized consequences. They are called "black swans" in reference to the fact that

such swans were presumed not to exist until Dutch explorers discovered them in Western Australia at the end of the 17th century.

[14] Webb, Richard, “Quantum physics”, *New Scientist* , n.d., https://www.newscientist.com/term/quantum-physics/# .

[15] Project Gutenberg, “A Journal of the Plague Year by Daniel Defoe”, http://www.gutenberg.org/ebooks/376 .

[16] Jordison, Sam, “Defoe’s Plague Year was written in 1722 but speaks clearly to our time”, *The Guardian* , 5 May 2020, https://www.theguardian.com/books/booksblog/2020/may/05/defoe-a-journal-of-the-plague-year-1722-our-time .

[17] Schama, Simon, “Plague time: Simon Schama on what history tells us”, *Financial Times* , 10 April 2020, https://www.ft.com/content/279dee4a-740b-11ea-95fe-fcd274e920ca .

[18] Jordà, Òscar, Sanjay R. Singh and Alan M. Taylor, “Longer-Run Economic Consequences of Pandemics”, Federal Reserve Bank of San Francisco, Working Paper 2020-09, 2020, https://www.frbsf.org/economic-research/files/wp2020-09.pdf .

[19] Bloomberg, “Coronavirus Is Likely to Become a Seasonal Infection Like the Flu, Top Chinese Scientists Warn”, *Time* , 28 April 2020, https://time.com/5828325/coronavirus-covid19-seasonal-asymptomatic-carriers .

[20] Kristof, Nicholas, “Let’s Remember That the Coronavirus Is Still a Mystery”, *The New York Times* , 20 May 2020, https://www.nytimes.com/2020/05/20/opinion/us-coronavirus-reopening.html .

[21] Draulans, Dirk, “‘Finally, a virus got me.’ Scientist who fought Ebola and HIV reflects on facing death from COVID-19”, *Science* , 8 May 2020, https://www.sciencemag.org/news/2020/05/finally-virus-got-me-scientist-who-fought-ebola-and-hiv-reflects-facing-death-covid-19# .

[22] Moore, Kristine, et al., *COVID-19: The CIDRAP Viewpoint* , Center for Infectious Disease Research and Policy (CIDRAP), 2020, https://www.cidrap.umn.edu/sites/default/files/public/downloads/cidrap-covid19-viewpoint-part1_0.pdf .

[23] Cherukupalli, Rajeev and Tom Frieden, “Only Saving Lives Will Save Livelihoods”, *Foreign Affairs* , 13 May 2020, https://www.foreignaffairs.com/articles/united-states/2020-05-13/only-saving-lives-will-save-livelihoods .

[24] Badger, Emily and Alicia Parlapiano, “Government Orders Alone Didn’t Close the Economy. They Probably Can’t Reopen It”, *The New York Times* , 9 May 2020 update, https://www.nytimes.com/2020/05/07/upshot/pandemic-economy-government-orders.html .
[25] Wighton, Kate, “Lockdown and school closures in Europe may have prevented 3.1m deaths”, Imperial College London, 8 June 2020, https://www.imperial.ac.uk/news/198074/lockdown-school-closures-europe-have-prevented .
[26] Hsiang, Solomon, et al., “The effect of large-scale anti-contagion policies on the COVID-19 pandemic”, *Nature* , 8 June 2020, https://www.nature.com/articles/s41586-020-2404-8 .
[27] Goodman, Peter S., “ Why the Global Recession Could Last a Long Time”, *The New York Times* , 1 April 2020, https://www.nytimes.com/2020/04/01/business/economy/coronavirus-recession.html .
[28] Organisation for Economic Co-operation and Development (OECD), “Evaluating the initial impact ofCOVID-19 containment measures on economic activity”, 10 June 2020, https://read.oecd-ilibrary.org/view/?ref=126_126496-evgsi2gmqj&title=Evaluating_the_initial_impact_of_COVID-19_containment_measures_on_economic_activity .
[29] CPB Netherlands Bureau for Economic Policy Analysis, “Scenarios economic consequences corona crisis”, CPB Scenarios, March 2020, https://www.cpb.nl/sites/default/files/omnidownload/CPB-Scenarios-March-2020-Scenarios-economic-consequences-corona-crisis.pdf .
[30] International Monetary Fund, “World Economic Outlook Update”, June 2020, https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020 .
[31] Politi, James, “What to know about America’s newly unemployed”, *Financial Times* , 21 May 2020, https://www.ft.com/content/5924441b-1cb6-4fbd-891b-0afb07e163d7 .
[32] Frey, Carl Benedikt, “Covid-19 will only increase automation anxiety”, *Financial Times* , 21 April 2020, https://www.ft.com/content/817228a2-82e1-11ea-b6e9-a94cffd1d9bf .

[33] Jaimovich, Nir and Henry E. Siu, “Job Polarization and Jobless Recoveries”, National Bureau of Economic Research (NBER), Working Paper 18334, November 2018 revision, https://www.nber.org/papers/w18334.pdf .
[34] Coyle, Diane and Benjamin Mitra-Khan, “Making the Future Count”, mimeo, 2017.
[35] Boffey, Daniel, “Amsterdam to embrace 'doughnut' model to mend post-coronavirus economy”, *The Guardian* , 8 April 2020, https://www.theguardian.com/world/2020/apr/08/amsterdam-doughnut-model-mend-post-coronavirus-economy .
[36] Banerjee, Abhijit V. and Esther Duflo, *Good Economics for Hard Times* , PublicAffairs, 2019.
[37] Ibid.
[38] Commission on Growth and Development, *The Growth Report: Strategies for Sustained Growth and Inclusive Development* , World Bank, 2008; Hallward-Driemeier, Mary and Gaurav Nayyar, *Trouble in the Making? The Future of Manufacturing-Led Development* , World Bank Group, 2018.
[39] Ellen MacArthur Foundation, “What is a circular economy?”, 2017, https://www.ellenmacarthurfoundation.org/circular-economy/concept .
[40] As proven by the Platform for Accelerating the Circular Economy (PACE), see https://pacecircular.org .
[41] International Trade Union Confederation (ITCU), “Investing in the Care Economy: A Pathway to Growth”, 8 March 2016, https://www.ituc-csi.org/investing-in-the-care-economy-a .
[42] Cassidy, John, “Can We Have Prosperity Without Growth?”, *The New Yorker* , 3 February 2020, https://www.newyorker.com/magazine/2020/02/10/can-we-have-prosperity-without-growth .
[43] Degrowth, “Degrowth: New Roots for the Economy”, 2020, https://www.degrowth.info/en/open-letter .
[44] McAfee, Andrew, *More from Less* , Simon & Schuster, Inc., 2019.
[45] Blanchard, Olivier, “Designing the fiscal response to the COVID-19 pandemic”, Peterson Institute for International Economics (PIIE), Briefing 20-1, 8 April 2020.
[46] Reinhart, Carmen M. and Kenneth Rogoff, “The Coronavirus Debt Threat”, *The Wall Street Journal* , 26 March 2020,

https://www.wsj.com/articles/the-coronavirus-debt-threat-11585262515 .
[47] Reinhart, Carmen M., “This Time Truly Is Different”, Project Syndicate, 23 March 2020, https://www.project-syndicate.org/commentary/covid19-crisis-has-no-economic-precedent-by-carmen-reinhart-2020-03 .
[48] Saez, Emmanuel and Gabriel Zucman, “Keeping Business Alive: The Government Will Pay”, 16 March 2020 revision, http://gabriel-zucman.eu/files/coronavirus2.pdf .
[49] Effective deep negative interest rates would have to be supported with measures to prevent financial firms from hoarding cash, see Rogoff, Kenneth, “The Case for Deeply Negative Interest Rates”, Project Syndicate, 4 May 2020, https://www.project-syndicate.org/commentary/advanced-economies-need-deeply-negative-interest-rates-by-kenneth-rogoff-2020-05 .
[50] Blanchard, Olivier, “Is there deflation or inflation in our future?”, VOX, 24 April 2020, https://voxeu.org/article/there-deflation-or-inflation-our-future .
[51] Sharma, Ruchir, “Elizabeth Warren and Donald Trump Are Wrong About the Same Thing”, *The New York Times* , 24 June 2019, https://www.nytimes.com/2019/06/24/opinion/elizabeth-warren-donald-trump-dollar-devalue.html .
[52] Kumar, Aditi and Eric Rosenbach, “Could China’s Digital Currency Unseat the Dollar?”, *Foreign Affairs* , 20 May 2020, https://www.foreignaffairs.com/articles/china/2020-05-20/could-chinas-digital-currency-unseat-dollar .
[53] Paulson Jr., Henry M., “The Future of the Dollar”, *Foreign Affairs* , 19 May 2020, https://www.foreignaffairs.com/articles/2020-05-19/future-dollar .
[54] Eichengreen, Barry, Arnaud Mehl and Livia Chiţu, “Mars or Mercury? The geopolitics of international currency choice”, VOX, 2 January 2018, https://voxeu.org/article/geopolitics-international-currency-choice .
[55] Kissinger, Henry A., “The Coronavirus Pandemic Will Forever Alter the World Order”, *The Wall Street Journal* , 3 April 2020, https://www.wsj.com/articles/the-coronavirus-pandemic-will-forever-alter-the-world-order-11585953005 .
[56] The expression has been used, and also debunked, repeatedly. For a specific example, see Jones, Owen, “Coronavirus is not some great leveller: it is exacerbating inequality right now”, *The Guardian* , 9 April 2020,

https://www.theguardian.com/commentisfree/2020/apr/09/coronavirus-inequality-managers-zoom-cleaners-offices .
[57] El-Erian, Mohamed A. and Michael Spence, “The Great Unequalizer”, *Foreign Affairs* , 1 June 2020, https://www.foreignaffairs.com/articles/united-states/2020-06-01/great-unequalizer .
[58] Dingel, Jonathan I. and Brent Neiman, “How Many Jobs Can be Done at Home?”, Becker Friedman institute, White Paper, June 2020, https://bfi.uchicago.edu/wp-content/uploads/BFI_White-Paper_Dingel_Neiman_3.2020.pdf .
[59] Deaton, Angus, “We may not all be equal in the eyes of coronavirus”, *Financial Times* , 5 April 2020, https://www.ft.com/content/0c8bbe82-6dff-11ea-89df-41bea055720b .
[60] Milanovic, Branko, “The Real Pandemic Danger Is Social Collapse”, *Foreign Affairs* , 19 March 2020, https://www.foreignaffairs.com/articles/2020-03-19/real-pandemic-danger-social-collapse .
[61] According to the Global Protest Tracker of the Carnegie Endowment for International Peace, https://carnegieendowment.org/publications/interactive/protest-tracker .
[62] Milne, Richard, “Coronavirus ‘medicine’ could trigger social breakdown”, *Financial Times* , 26 March 2020, https://www.ft.com/content/3b8ec9fe-6eb8-11ea-89df-41bea055720b .
[63] Long, Heather and Andrew Van Dam, “The black-white economic divide is as wide as it was in 1968”, *The Washington Post* , 4 June 2020, https://www.washingtonpost.com/business/2020/06/04/economic-divide-black-households .
[64] McAdam, Doug, “Recruitment to High-Risk Activism: The Case of Freedom Summer”, *American Journal of Sociology* , vol. 92, no. 1, July 1986, pp. 64-90, https://www.jstor.org/stable/2779717?seq=1 .
[65] Micklethwait, John and Adrian Wooldridge, “The Virus Should Wake Up the West”, Bloomberg, 13 April 2020, https://www.bloomberg.com/opinion/articles/2020-04-13/coronavirus-pandemic-is-wake-up-call-to-reinvent-the-state .
[66] Knoeller, Herman, “The Power to Tax”, *Marquette Law Review* , vol. 22, no. 3, April 1938.

[67] Murphy, Richard, “Tax and coronavirus: a tax justice perspective”, Tax Research UK, 24 March 2020, https://www.taxresearch.org.uk/Blog/2020/03/24/tax-and-coronavirus-a-tax-justice-perspective .
[68] Mazzucato, Mariana, “The Covid-19 crisis is a chance to do capitalism differently”, *The Guardian* , 18 March 2020, https://www.theguardian.com/commentisfree/2020/mar/18/the-covid-19-crisis-is-a-chance-to-do-capitalism-differently .
[69] Stiglitz, Joseph E., “A Lasting Remedy for the Covid-19 Pandemic’s Economic Crisis”, *The New York Review of Books* , 8 April 2020, https://www.nybooks.com/daily/2020/04/08/a-lasting-remedy-for-the-covid-19-pandemics-economic-crisis .
[70] This is shown in particular in the annual Edelman Trust Barometer, https://www.edelman.com/trustbarometer .
[71] Two prominent examples emanate from the International Panel on Social Progress, *Rethinking Society for the 21st Century* , 2018, https://www.cambridge.org/gb/academic/subjects/politics-international-relations/political-economy/rethinking-society-21st-century-report-international-panel-social-progress , and the World Bank, *Toward a New Social Contract* , 2019, https://openknowledge.worldbank.org/bitstream/handle/10986/30393/9781464813535.pdf .
[72] Kissinger, Henry A., “The Coronavirus Pandemic Will Forever Alter the World Order”, *The Wall Street Journal* , 3 April 2020 https://www.wsj.com/articles/the-coronavirus-pandemic-will-forever-alter-the-world-order-11585953005 .
[73] Hu, Katherine, “‘I Just Don’t Think We Have the Luxury to Have Dreams Anymore’”, *The New York Times* , 24 March 2020, https://www.nytimes.com/2020/03/24/opinion/coronavirus-recession-gen-z.html .
[74] McNulty, Jennifer, “Youth activism is on the rise around the globe, and adults should pay attention, says author”, UC Santa Cruz, 17 September 2019, https://news.ucsc.edu/2019/09/taft-youth.html .
[75] As an example, in September 2019, more than 4 million young people demonstrated simultaneously in 150 countries to demand urgent action on climate change; see Sengupta, Somini, “Protesting Climate Change, Young People Take to Streets in a Global Strike”, *The New York Times* , 20

September 2019, https://www.nytimes.com/2019/09/20/climate/global-climate-strike.html .
[76] For a discussion of current forms of nationalism, see Wimmer, Andreas, "Why Nationalism Works", *Foreign Affairs* , March/April 2019, https://www.foreignaffairs.com/articles/world/2019-02-12/why-nationalism-works .
[77] Rudd, Kevin, "The Coming Post-COVID Anarchy", *Foreign Affairs* , 6 May 2020, https://www.foreignaffairs.com/articles/united-states/2020-05-06/coming-post-covid-anarchy .
[78] Rodrik, Dani, *The Globalization Paradox* , Oxford University Press, 2012.
[79] Pastor, Lubos and Pietro Veronesi, "A rational backlash against globalisation", VOX, 28 September 2018, https://voxeu.org/article/rational-backlash-against-globalisation .
[80] Huang, Yanzhong, "U.S. Dependence on Pharmaceutical Products From China", Council on Foreign Relations, Blog post, 14 August 2019, https://www.cfr.org/blog/us-dependence-pharmaceutical-products-china .
[81] Khanna, Parag, "Post-pandemic: welcome to the multi-speed world of regional disparities", *Global Geneva* , 26 April 2020, https://www.global-geneva.com/post-pandemic-welcome-to-the-multi-speed-world-of-regional-disparities .
[82] Global Business Alliance, "Inbound Investment Survey", May 2020, https://globalbusiness.org/dmfile/GlobalBusinessAlliance_InboundInvestmentSurveyFindings_May2020.pdf .
[83] Paulson, Henry, "Save globalisation to secure the future", *Financial Times* , 17 April 2020, https://www.ft.com/content/da1f38dc-7fbc-11ea-b0fb-13524ae1056b .
[84] United Nations, Department of Economic and Social Affairs (DESA), Committee for Development Policy, "Global governance and global rules for development in the post-2015 era", Policy Note, 2014, https://www.un.org/en/development/desa/policy/cdp/cdp_publications/2014cdppolicynote.pdf .
[85] Subramanian, Arvind, "The Threat of Enfeebled Great Powers", Project Syndicate, 6 May 2020, https://www.project-syndicate.org/commentary/covid19-will-weaken-united-states-china-and-europe-by-arvind-subramanian-2020-05 .

[86] Fukuyama, Francis, *Political Order and Political Decay: From the Industrial Revolution to the Globalization of Democracy* , Farrar, Straus and Giroux, 2014.
[87] Shivshankar Menon, a former Indian national security adviser, quoted in Crabtree, James, "How coronavirus exposed the collapse of global leadership", *Nikkei Asian Review* , 15 April 2020, https://asia.nikkei.com/Spotlight/Cover-Story/How-coronavirus-exposed-the-collapse-of-global-leadership .
[88] Cabestan, Jean-Pierre, "China's Battle with Coronavirus: Possible Geopolitical Gains and Real Challenges", Aljazeera Centre for Studies, 19 April 2020, https://studies.aljazeera.net/en/reports/china%E2%80%99s-battle-coronavirus-possible-geopolitical-gains-and-real-challenges .
[89] Anderlini, Jamil, "Why China is losing the coronavirus narrative", *Financial Times* , 19 April 2020, https://www.ft.com/content/8d7842fa-8082-11ea-82f6-150830b3b99a .
[90] Kynge, James, Katrina Manson and James Politi, "US and China: edging towards a new type of cold war?", *Financial Times* , 8 May 2020, https://www.ft.com/content/fe59abf8-cbb8-4931-b224-56030586fb9a .
[91] Lee Hsien Loong, "The Endangered Asian Century", *Foreign Affairs* , July/August 2020, https://www.foreignaffairs.com/articles/asia/2020-06-04/lee-hsien-loong-endangered-asian-century .
[92] Fedrizzi, Alessandro and Massimiliano Proietti, "Quantum physics: our study suggests objective reality doesn't exist", *The Conversation* , 14 November 2019, https://theconversation.com/quantum-physics-our-study-suggests-objective-reality-doesnt-exist-126805 .
[93] Jiaming, Li, "Every move to stigmatize China evokes our historical memory", *Global Times* , 19 April 2020, https://www.globaltimes.cn/content/1186037.shtml .
[94] Bill of Rights Institute, "Founding Principles and Virtues", n.d., https://billofrightsinstitute.org/founding-documents/founding-principles .
[95] Nye Jr, Joseph S., "No, the Coronavirus Will Not Change the Global Order", *Foreign Policy* ,16 April 2020, https://foreignpolicy.com/2020/04/16/coronavirus-pandemic-china-united-states-power-competition
[96] Mahbubani's latest book, *Has China Won? The Chinese Challenge to American Primacy* , PublicAffairs, came out in March 2020, in the midst of the health crisis.

[97] Mahbubani, Kishore, “How China could win over the post-coronavirus world and leave the U.S. behind”, MarketWatch, 18 April 14, 2020, https://www.marketwatch.com/story/how-china-could-win-over-the-post-coronavirus-world-and-leave-the-us-behind-2020-04-14 .
[98] Sharma, Ruchir, “The Comeback Nation”, *Foreign Affairs* , May/June 2020, https://www.foreignaffairs.com/articles/united-states/2020-03-31/comeback-nation .
[99] This is the subtitle of the article by Kevin Rudd already quoted: “The Coming Post-COVID Anarchy: The Pandemic Bodes Ill for Both American and Chinese Power – and for the Global Order”, https://www.foreignaffairs.com/articles/united-states/2020-05-06/coming-post-covid-anarchy . All quotes in the paragraph are from this article.
[100] Miyamoto, Takenori, “Interview: US is a mess but China isn't the solution: Niall Ferguson”, *Nikkei Asian Review* , 21 May 2020, https://asia.nikkei.com/Editor-s-Picks/Interview/US-is-a-mess-but-China-isn-t-the-solution-Niall-Ferguson .
[101] Signé, Landry, “A new approach is needed to defeat COVID-19 and fix fragile states”, Brookings, 21 April 2020, https://www.brookings.edu/blog/future-development/2020/04/21/a-new-approach-is-needed-to-defeat-covid-19-and-fix-fragile-states .
[102] As reported in *Monthly Barometer* , June 2020.
[103] Miller, Adam, “Call unanswered: A review of responses to the UN appeal for a global ceasefire”, Armed Conflict Location & Event Data Project (ACLED), 13 May 2020, https://acleddata.com/2020/05/13/call-unanswered-un-appeal .
[104] Quammen, David, “We Made the Coronavirus Epidemic”, *The New York Times* , 28 January 2020, https://www.nytimes.com/2020/01/28/opinion/coronavirus-china.html .
[105] “Coronavirus and Wildlife Letter: Stimulus Package”, 24 March 2020, https://www.documentcloud.org/documents/6819003-CoronavirusWildlifeLetterStimulusPackage.html .
[106] World Economic Forum, “COVID-19 – Food/Nature/Climate”, Internal document, May 2020.
[107] Cui, Yan, et al., “Air pollution and case fatality of SARS in the People's Republic of China: an ecologic study”, *Environmental Health* , vol. 2, no. 15, 2003, https://ehjournal.biomedcentral.com/articles/10.1186/1476-069X-2-15 .

[108] Friedman, Lisa, “New Research Links Air Pollution to Higher Coronavirus Death Rates”, *The New York Times* , 7 April 2020, https://www.nytimes.com/2020/04/07/climate/air-pollution-coronavirus-covid.html . The scientific article published by researchers from Harvard University is by Wu, Xiao, et al., “Exposure to air pollution and COVID-19 mortality in the United States: A nationwide cross-sectional study”, Harvard T.H. Chan School of Public Health, 24 April 2020 update, https://projects.iq.harvard.edu/covid-pm .
[109] International Energy Agency (IEA), *Global Energy Review 2020* , April 2020, https://www.iea.org/reports/global-energy-review-2020 .
[110] United Nations Environment Programme (UNEP), *Emissions Gap Report 2019* , 2019, https://www.unenvironment.org/interactive/emissions-gap-report/2019 .
[111] S&P Global and RobecoSAM, *The Sustainability Yearbook 2020* , 2020, https://www.robeco.com/docm/docu-robecosam-sustainability-yearbook-2020.pdf .
[112] International Energy Agency (IEA), “How clean energy transitions can help kick-start economies”, 23 April 2020, https://www.iea.org/commentaries/how-clean-energy-transitions-can-help-kick-start-economies .
[113] Hook, Leslie and Aleksandra Wisniewska, “How coronavirus stalled climate change momentum”, *Financial Times* , 14 April 2020, https://www.ft.com/content/052923d2-78c2-11ea-af44-daa3def9ae03 .
[114] Chenoweth, Erica, et al., “The global pandemic has spawned new forms of activism – and they’re flourishing”, *The Guardian* , 20 April 2020, https://www.theguardian.com/commentisfree/2020/apr/20/the-global-pandemic-has-spawned-new-forms-of-activism-and-theyre-flourishing .
[115] KSTP, “BP takes $17.5B hit as pandemic accelerates emissions cuts”, 15 June 2020, https://kstp.com/business/bp-takes-over-17-billion-dollar-hit-as-coronavirus-pandemic-accelerates-emissions-cuts/5760005/ ; Hurst, Laura, “Supermajors find obstacles, and opportunities, as pandemic drags on”, World Oil, 16 June 2020, https://www.worldoil.com/news/2020/6/16/supermajors-find-obstacles-and-opportunities-as-pandemic-drags-on .
[116] European Commission, “A European Green Deal”, https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en .

[117] Gray, Emily and Chris Jackson, “Two thirds of citizens around the world agree climate change is as serious a crisis as Coronavirus”, Ipsos, 22 April 2020, https://www.ipsos.com/en/two-thirds-citizens-around-world-agree-climate-change-serious-crisis-coronavirus .
[118] World Economic Forum, *COVID-19 Risks Outlook: A Preliminary Mapping and Its Implications* , Insight Report, May 2020, http://www3.weforum.org/docs/WEF_COVID_19_Risks_Outlook_Special_Edition_Pages.pdf .
[119] Se-jeong, Kim, “Seoul City to implement 'Green New Deal' to mitigate pandemic fallout”, *The Korea Times* , 4 June 2020 update, https://www.koreatimes.co.kr/www/nation/2020/06/281_290628.html .
[120] Systemiq and World Economic Forum, “Building a Nature-Positive Future – Recommendations for Policy-makers to Reset the Economy through the Power of Natural Capital”, July 2020.
[121] Klaus Schwab, *The Fourth Industrial Revolution* , World Economic Forum, 2016, p. 9.
[122] Both quoted in Waters, Richard, “Lockdown has brought the digital future forward – but will we slip back?”, *Financial Times* , 1 May 2020, https://www.ft.com/content/f1bf5ba5-1029-4252-9150-b4440478a2e7 .
[123] Frey, Carl Benedikt and Michael A. Osborne, “The future of employment: How susceptible are jobs to computerisation?”, *Technological Forecasting and Social Change* , vol. 114, January 2017, pp. 254-280, https://www.sciencedirect.com/science/article/pii/S0040162516302244 .
[124] Heric, Michael, et al., “Intelligent Automation: Getting Employees to Embrace the Bots”, Bain & Company, 8 April 2020, https://www.bain.com/insights/intelligent-automation-getting-employees-embrace-bots .
[125] Chotiner, Isaac, “The Coronavirus and the Future of Big Tech”, *The New Yorker* , 29 April 2020, https://www.newyorker.com/news/q-and-a/the-coronavirus-and-the-future-of-big-tech .
[126] Holmes, Oliver, et al., “Coronavirus mass surveillance could be here to stay, experts say”, *The Guardian* , 18 June 2020, https://www.theguardian.com/world/2020/jun/18/coronavirus-mass-surveillance-could-be-here-to-stay-tracking .
[127] Harari, Yuval Noah, “The world after coronavirus”, *Financial Times* , 20 March 2020, https://www.ft.com/content/19d90308-6858-11ea-a3c9-1fe6fedcca75 .

[128] Ibid.
[129] Morozov, Evgeny, “The tech ‘solutions’ for coronavirus take the surveillance state to the next level”, *The Guardian* , 25 April 2020, https://www.theguardian.com/commentisfree/2020/apr/15/tech-coronavirus-surveilance-state-digital-disrupt .
[130] Thornhill, John, “How Covid-19 is accelerating the shift from transport to teleport”, *Financial Times* , 30 March 2020, https://www.ft.com/content/050ea832-7268-11ea-95fe-fcd274e920ca .
[131] Sneader, Kevin and Shubham Singhal, “From thinking about the next normal to making it work: What to stop, start, and accelerate”, McKinsey & Company, 15 May 2020, https://www.mckinsey.com/featured-insights/leadership/from-thinking-about-the-next-normal-to-making-it-work-what-to-stop-start-and-accelerate# .
[132] This anecdote appears in the article by Kulish, Nicholas, et al., “The U.S. Tried to Build a New Fleet of Ventilators. The Mission Failed”, *The New York Times* , 20 April 2020 update, https://www.nytimes.com/2020/03/29/business/coronavirus-us-ventilator-shortage.html .
[133] BlackRock, *Sustainable investing: resilience amid uncertainty* , 2020, https://www.blackrock.com/corporate/literature/investor-education/sustainable-investing-resilience.pdf .
[134] Tett, Gillian, “Business faces stern test on ESG amid calls to ‘build back better’”, *Financial Times* , 18 May 2020, https://www.ft.com/content/e97803b6-8eb4-11ea-af59-5283fc4c0cb0 .
[135] Strine, Leo and Dorothy Lund, “How to restore strength and fairness to our economy” reproduced in “How Business Should Change After the Coronavirus Crisis”, *The New York Times* , 10 April 2020, https://www.nytimes.com/2020/04/10/business/dealbook/coronavirus-corporate-governance.html .
[136] Schwab, Klaus, “Covid-19 is a litmus test for stakeholder capitalism”, *Financial Times* , 25 March 2020, https://www.ft.com/content/234d8fd6-6e29-11ea-89df-41bea055720b .
[137] Merchant, Brian, “Google Says It Will Not Build Custom A.I. for Oil and Gas Extraction”, OneZero, 19 May 2020, https://onezero.medium.com/google-says-it-will-not-build-custom-a-i-for-oil-and-gas-extraction-72d1f71f42c8 .

[138] Baird-Remba, Rebecca, “How the Pandemic Is Driving Labor Activism Among Essential Workers”, Commercial Observer, 11 May 2020, https://commercialobserver.com/2020/05/how-the-pandemic-is-driving-labor-activism-among-essential-workers .
[139] Hamilton, Gabrielle, “My Restaurant Was My Life for 20 Years. Does the World Need It Anymore?”, *The New York Times Magazine* , 26 April 2020 update, https://www.nytimes.com/2020/04/23/magazine/closing-prune-restaurant-covid.html .
[140] Taparia, Hans, “The Future of College Is Online, and It’s Cheaper”, *The New York Times* , 25 May 2020, https://www.nytimes.com/2020/05/25/opinion/online-college-coronavirus.html .
[141] Hess, Amanda, “Celebrity Culture Is Burning”, *The New York Times* , 30 March 2020, https://www.nytimes.com/2020/03/30/arts/virus-celebrities.html .
[142] Barry, John, *The Great Influenza: The Story of the Deadliest Pandemic in History* , Penguin Books, 2005.
[143] Kruglanski, Arie, “3 ways the coronavirus pandemic is changing who we are”, *The Conversation* , 20 March 2020, https://theconversation.com/3-ways-the-coronavirus-pandemic-is-changing-who-we-are-133876 .
[144] Pamuk, Orhan, “What the Great Pandemic Novels Teach Us”, *The New York Times* , 23 April 2020, https://www.nytimes.com/2020/04/23/opinion/sunday/coronavirus-orhan-pamuk.html .
[145] Case, Anne and Angus Deaton, *Deaths of Despair and the Future of Capitalism* , Princeton University Press, 2020, https://press.princeton.edu/books/hardcover/9780691190785/deaths-of-despair-and-the-future-of-capitalism .
[146] Friedman, Thomas L., “Finding the ‘Common Good’ in a Pandemic”, *The New York Times* , 24 March 2020, https://www.nytimes.com/2020/03/24/opinion/covid-ethics-politics.html .
[147] Facebook, “Knowledge Capsules: Lockdown or no lockdown”, 26 April 2020, https://m.facebook.com/KnowledgeCapsules1/posts/2374859852804537 .
[148] Bazelon, Emily, “Restarting America Means People Will Die. So When Do We Do It?”, *The New York Times Magazine* , 10 April 2020,

https://www.nytimes.com/2020/04/10/magazine/coronavirus-economy-debate.html .
[149] Twenge, Jean, “New study shows staggering effect of coronavirus pandemic on America’s mental health”, *The Conversation* , 7 May 2020, https://theconversation.com/new-study-shows-staggering-effect-of-coronavirus-pandemic-on-americas-mental-health-137944 .
[150] Tucci, Veronica and Nidal Moukaddam, “We are the hollow men: The worldwide epidemic of mental illness, psychiatric and behavioral emergencies, and its impact on patients and providers”, *Journal of Emergencies, Trauma, and Shock* , vol. 10, no. 1, 2017, pp. 4-6, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5316796 .
[151] Health and Safety Executive (HSE), “Work related stress depression or anxiety statistics in Great Britain, 2018”, Annual Statistics, 31 October 2018, http://greeningconsultants.co.uk/wp-content/uploads/2019/03/HSE-Stats-2018.pdf .
[152] Bechtel, Robert B. and Amy Berning, “The Third-Quarter Phenomenon: Do People Experience Discomfort After Stress Has Passed?”, in A.A. Harrison, Y.A. Clearwater and C.P. McKay (eds), *From Antarctica to Outer Space* , Springer, 1991, https://link.springer.com/chapter/10.1007/978-1-4612-3012-0_24 .
[153] Brooks, Samantha K., et al., “The psychological impact of quarantine and how to reduce it: rapid review of the evidence”, *The Lancet* , vol. 395, no. 10227, 14-20 March 2020, pp. 912-920, https://www.sciencedirect.com/science/article/pii/S0140673620304608 .
[154] Campbell, Denis, “UK lockdown causing ‘serious mental illness in first-time patients’”, *The Guardian* , 15 May 2020, https://amp-theguardian-com.cdn.ampproject.org/c/s/amp.theguardian.com/society/2020/may/16/uk-lockdown-causing-serious-mental-illness-in-first-time-patients .
[155] United Nations Population Fund (UNFPA), “Impact of the COVID-19 Pandemic on Family Planning and Ending Gender-based Violence, Female Genital Mutilation and Child Marriage”, Interim Technical Note, 27 April 2020, https://www.unfpa.org/sites/default/files/resource-pdf/COVID-19_impact_brief_for_UNFPA_24_April_2020_1.pdf .
[156] Layard, Richard, “A New Priority for Mental Health”, Paper EA035, Centre for Economic Performance, London School of Economics and Political Science, May 2015, http://cep.lse.ac.uk/pubs/download/ea035.pdf .

[157] Falk, Dan, “Must We All Become More Creative because of the Pandemic?”, *Scientific American* , 29 March 2020, https://blogs.scientificamerican.com/observations/must-we-all-become-more-creative-because-of-the-pandemic .
[158] Pollack-Pelzner, Daniel, “Shakespeare Wrote His Best Works During a Plague”, *The Atlantic* , 14 March 2020, https://www.theatlantic.com/culture/archive/2020/03/broadway-shutdown-could-be-good-theater-coronavirus/607993 .
[159] Freedland, Jonathan, “Adjust your clocks: lockdown is bending time completely out of shape”, *The Guardian* , 24 April 2020, https://www.theguardian.com/commentisfree/2020/apr/24/lockdown-time-coronavirus-prisoners .
[160] Whillans, Ashley, “Time for Happiness”, *Harvard Business Review* , January 2019, https://hbr.org/cover-story/2019/01/time-for-happiness .
[161] Helliwell, John F., Richard Layard, Jeffrey Sachs and Jan-Emmanuel De Neve (eds), *World Happiness Report 2020* , Sustainable Development Solutions Network, 2020, https://happiness-report.s3.amazonaws.com/2020/WHR20.pdf .
[162] This research is summed up in Jones, Lucy, *Losing Eden: Why Our Minds Need the Wild* , Allen Lane, 2020.
[163] Im, Su Geun, et al., “Comparison of Effect of Two-Hour Exposure to Forest and Urban Environments on Cytokine, Anti-Oxidant, and Stress Levels in Young Adults”, *International Journal of Environmental Research and Public Health* , vol. 13, no. 7, 2016, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4962166 .
[164] Nieman, David C. and Laurel M. Wentz, “The compelling link between physical activity and the body's defense system”, *Journal of Sport and Health Science* , vol. 8, No. 3, 2019, pp. 201-217, https://www.sciencedirect.com/science/article/pii/S2095254618301005 .
[165] Klaus Schwab on 3 March 2020; see also World Economic Forum, “The Great Reset”, 3 June 2020, https://www.facebook.com/worldeconomicforum/videos/189569908956561 .
[166] McGowan, Kat, “Cooperation Is What Makes Us Human”, *Nautilus* , 29 April 2013, http://nautil.us/issue/1/what-makes-you-so-special/cooperation-is-what-makes-us-human .

[167] Cleary, Seán, “Rebuild after the crisis on three pillars: Equity, security and sustainability”, G20 Insights, Policy Brief, 29 May 2020, https://www.g20-insights.org/policy_briefs/rebuild-after-the-crisis-on-three-pillars-equity-security-and-sustainability .
[168] Sen, Amartya, “A better society can emerge from the lockdowns”, *Financial Times* , 15 April 2020, https://www.ft.com/content/5b41ffc2-7e5e-11ea-b0fb-13524ae1056b .
[169] Diamond, Jared, “Lessons from a pandemic”, *Financial Times* , 27 May 2020, https://www.ft.com/content/71ed9f88-9f5b-11ea-b65d-489c67b0d85d .
[170] Harvey, Fiona, “Britons want quality of life indicators to take priority over economy”, *The Guardian* , 10 May 2020, https://www.theguardian.com/society/2020/may/10/britons-want-quality-of-life-indicators-priority-over-economy-coronavirus .
[171] Gray, Emily and Chris Jackson, “Two thirds of citizens around the world agree climate change is as serious a crisis as Coronavirus”, Ipsos, 22 April 2020, https://www.ipsos.com/en/two-thirds-citizens-around-world-agree-climate-change-serious-crisis-coronavirus .
[172] World Economic Forum, *COVID-19 Risks Outlook: A Preliminary Mapping and Its Implications* , Insight Report, May 2020, http://www3.weforum.org/docs/WEF_COVID_19_Risks_Outlook_Special_Edition_Pages.pdf .