



THE NEW DIGITAL DOMAIN

How the Pandemic Reshaped
Geopolitics, the Social Contract
and Technological Sovereignty

POLICY REPORT
SEPTEMBER 2020

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EXECUTIVE SUMMARY

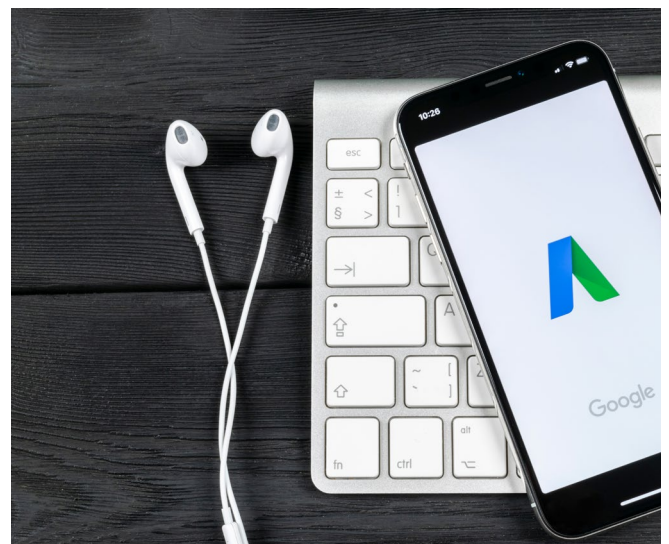
The COVID-19 pandemic, besides triggering the most severe economic crisis since the Great Depression, is accelerating technological trends that were well in the making before its outbreak. **The Great Lockdown exposed the digital divide between frontier and non-frontier firms**, with the former group being able to provide services and goods no longer available within traditional markets. **The growing concentration of power and wealth in the hands of a few global digital companies will shape global and domestic politics in the immediate future.**

Globally, **the pandemic has increased geopolitical rivalry and underlined the decline of the US as a superpower.** At the same time, **it has highlighted the fact that geopolitical confrontation is increasingly taking place in the digital domain and among private companies.** The information space has been overloaded by an ‘infodemic’ and cyberattacks directed at hospitals, research institutes and universities have soared in the race to discover and market a vaccine.

Domestically, **states are struggling with a loss of technological sovereignty in terms of governing data and unilaterally taxing the winners of the digital economy.** Some of the largest European governments have been unable to implement their own contact-tracing protocols due to the stranglehold of Apple and Google. At the same time, **there are serious concerns regarding data privacy in both centralized contact tracing as well as using the Apple/Google protocol should such national protocol be implemented,** which further underlines the importance of data privacy in the twenty-first century.

Today’s biggest winners are the big tech companies, who represent the lion’s share of the most valuable companies that run on data, algorithms and apps rather than physical labor, but have also **managed to utilize the under-governed nature of the digital domain to avoid paying tax and social security.** The societal flipside of the growing digital gaps between winners and losers has been **skyrocketing inequality and the hollowing-out of the middle class**—something that in the short term the pandemic is likely to exacerbate.

THIS REPORT ANALYSES THESE SHIFTS, PROPOSES A SERIES OF RECOMMENDATIONS FOR GLOBAL AND ECONOMIC GOVERNANCE, AND IDENTIFIES OPPORTUNITIES TO IMPROVE THE SOCIAL CONTRACT IN THE DIGITAL ERA.



DIGITALIZED AND PRIVATIZED: GEOPOLITICS IN THE PANDEMIC

The “Unipolar moment” with the US as the sole superpower has been fading in recent years, due to both the rise of revisionist powers and a general diffusion of power. Both Russia and China have become increasingly assertive, and the challenge to the US is now more severe. In economic terms, the US has never had an antagonist with the same economic power as China. In nominal terms, Chinese GDP is 66% of US GDP (and greater in PPP terms), whereas the GDP of the Soviet Union in 1980 was 40% of the US GDP, and Nazi Germany only 26%.¹

Donald Trump has contributed to the worsening of relations with US partners—most notably the EU—as well as attempted to weaken the foundations of international order. Trump “wants to destroy the alliances, trading relationships and international institutions that have characterized the American-led order for 70 years”.² The pandemic is likely to speed up this process.

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The US handling of the pandemic has been, at best, ineffective and shows its decreasing appetite for multilateralism and global governance.

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The US handling of the pandemic has been, at best, ineffective and shows its decreasing appetite for multilateralism and global governance. This culminated in the halting of funding for the WHO, but also included blocking the WTO’s dispute-settling mechanism, defunding UN institutions and programs, and criticizing NATO.

While it is still early to gauge the full impact of the pandemic on the US, both domestically and internationally, the results of a survey of 982 US international relations professors may be illuminating.³ 92% saw that COVID-19 was making the US less likely to be widely respected in the international system, and 76% believed that the US is less likely to be seen as a state with unmatched material power and capabilities in the future.



1 Krepinevich, A., 2017, “Preserving the Balance: A U.S. Eurasia Defense Strategy”, Center for Budgetary and Strategic Assessment.
 2 Schake, K., 2018, “The Trump Doctrine Is Winning and the World Is Losing”, New York Times.
 3 Jackson, E. et al., 2020, “What Foreign-Policy Experts Make of Trump’s Coronavirus Response”.



CONFRONTATION IS INCREASINGLY IMPACTING PRIVATE COMPANIES

Friedrich Engels stated that the character of war changes with the character of the economy. In slave-owning societies, the goal of war was to capture more slaves, whereas in industrial societies, the goal was to capture more resources and access to new markets.⁴ Today, we live in a knowledge economy, or perhaps an attention economy, where the key economic winners are the big technology companies. One manifestation of this was seen in January 2020, when the value of Apple surpassed that of the DAX30, Germany's thirty most valuable companies.

This trend is likely to increase in the future. Much of the innovation in tomorrow's technologies is concentrated in the big technology firms, which are predominantly based in the US and in China. Europe is lagging behind, with European firms capturing only 11% of global venture capital in 2016, and only four of the top 100 AI startups in 2018.⁵ The increasing importance of the technological domain is accompanied by increasing geopolitical competition. This has given rise to a technological arms race, in which states are leveraging their national capabilities to gain ownership of everything from data, talent, companies and access to the materials needed for production.

This is seen in the clash between the digital infrastructure developed in Silicon Valley and that developed in China. The former, designed around market dictates, takes advantage of the under-governed digital economy to place tremendous value on the data collected and generated online, while the latter uses these same data as a tool of social, political and economic control. Indeed, China is actively exporting this model to illiberal and autocratic regimes tempted by the power of online control.

The ongoing controversy over allowing Huawei to build 5G-networks in Europe is a case in point. Under pressure from the US, the UK changed its position and banned telecom providers from using Huawei and required them to remove all their components by 2027.⁶ Another example is the US Department of Commerce requiring all semiconductor firms using US equipment to apply for licenses to sell to Huawei.⁷ The move has arguably targeted the TSMC (Taiwan Semiconductor Manufacturing Facility), which is Huawei's main supplier for semiconductors and would set them at a clear disadvantage.⁸ This shows how private companies are increasingly a battleground, as tomorrow's power will stem from those controlling and innovating in mostly civilian sectors.

4 Peralta, A. 2005. *Med andra medel: från Clausewitz till Guevara: Krig, Revolution, och Politik i en marxistisk idétradition* [By other means: From Clausewitz to Guevara; War, Revolution, and Politics in a Marxist ideational tradition]. Munkedal, Sweden: Glänta Produktion, p.96.

5 Bughin, J. et al., 2019, "Tackling Europe's Gap in Digital and AI", *McKinsey Global Institute*.

6 Kelion, L., 2020, "Huawei 5G kit must be removed from UK by 2027".

7 US Department of Commerce, 2020, "Commerce Addresses Huawei's Efforts to Undermine Entity List, Restricts Products Designed and Produced with U.S. Technologies".

8 Blank, S., 2020, "The Chip Wars of the 21st Century", *War on the Rocks*.

CONFRONTATION IS INCREASINGLY DIGITALIZED

Geopolitical confrontation is not only about strategic ownership and access to material, but also operates on the platforms of big technological companies. Facebook and Google are information networks that have become the infrastructure through which we understand the world, perceive power, and legitimacy. As Sara Smyth puts it, “the process of collecting and organizing information is now a tremendous source of economic, political and cultural power. Data makes us more malleable, easier to predict, and extremely prone to influence”.⁹

Moreover, their business model is premised on their ability to manipulate flows of information through advertising.¹⁰ Consequently, the big social media platforms are becoming increasingly contested spaces, which is enabled by them being treated as platforms free from editorial responsibility. This changes the preconditions for power in the twenty-first century as algorithms become paramount in national and international struggles.¹¹ This includes, of course, the Russian influence operation targeting the US 2016 election, which used a combination of cyber intrusion, subversion and disinformation, as well as inorganic amplification of divisive content.¹² However, focusing on foreign influence operation misses the bigger point of the digitalization of political competition. The Trump campaign’s Project Alamo and cooperation with Cambridge Analytica shows how the use of large-scale databases of voter information could be used to target political messages using psychographic models.¹³

The pandemic in and of itself has created a notable increase in disinformation, cyberattacks and cyber intrusions. The president of the European Commission Ursula von der Leyen surprised many when she openly called China out for cyberattacks against hospitals and healthcare institutions in Europe.¹⁴ The European External Action Service initiative to combat disinformation EUvsDisinfo stated that, in the pandemic,

*Despite their potentially grave impact on public health, official and state-backed sources from various governments, including Russia and—to a lesser extent—China, have continued to widely target conspiracy narratives and disinformation.*¹⁵

Despite their potentially grave impact on public health, official and state-backed sources from various governments, including Russia and—to a lesser extent—China, have continued to widely target conspiracy narratives and disinformation.¹⁵ Increasing uncertainty in the cyber domain will continue in the lead-up to the 2020 US election and, potentially, affect its outcome. Trump is already contesting the legitimacy of the election as “the most corrupt election in the history of our country” due to the use of mail-in ballots necessitated by the pandemic.¹⁶ The outcome of the US election will not only impact the US, but also the international order as we know it.

9 Smyth, 2019, “The Facebook Conundrum: Is it Time to Usher in a New Era of Regulation for Big Tech?”, *International Journal of Cyber Criminology*, Vol.13, No.2, pp.578-595.

10 Skok, D. & Owen, T., 2020, “Matt Stoller on Taking on the Tech Goliaths”, *Big Tech*.

11 Jonsson, O., 2020, “Putting Modern War in Perspective”, in Jonsson, O. (ed.), *Modern Warfare: New Technologies and Enduring Concepts*, Stockholm Free World Forum.

12 Mueller, R. S., 2019, “Report On The Investigation Into Russian Interference In The 2016 Presidential Election”, *U.S. Department of Justice*.

13 Cadwallr, C. & Graham-Harrison, E., 2018, “[Revealed: 50 million Facebook Profiles Harvested for Cambridge Analytica in Major Data Breach](#)”, *The Guardian*; and Winston, J., 2016, “[How the Trump Campaign Built an Identity Database and Used Facebook Ads to Win the Election](#)”, *Medium*.

14 Cerulus, 2020, “[Von der Leyen Calls Out China for Hitting Hospitals with Cyberattacks](#)”, *Politico*.

15 EUvsDisinfo, 2020, “[Short Assessment of Narratives and Disinformation around the COVID-19/Coronavirus Pandemic](#)”.

16 Vazquez, M. & Judd, D., 2020, “[Trump Predicts ‘Most Corrupt Election’ in US History While Making False Claims about Mail-in Voting](#)”, *CNN*.

IMPLICATIONS

- China and Russia are furthering their positions while the current order, and the US leadership, is weakening. China, which has purposefully acquired strategic infrastructure, resources and companies in Europe and Africa, is now intent on leveraging relevant political benefits. Russia is increasing its non-military effort to subvert Western unity. All of this reinforces the need for the EU to assert its strength as a geopolitical actor, which it has so far been unable to do.
- Geopolitical competition between the great powers is increasingly playing out in a technological arms race involving private companies. The chosen infrastructure is now inseparable from this global power struggle. This risks splitting the internet and global supply chains in two, thus forcing Europeans to choose from the US or China as seen in the 5G-case.
- The algorithms of big tech companies are key for all actors to influence perceptions of legitimacy, power and influence. Contention in this space has increased in the pandemic and will continue to do so due to a lack of appropriate safeguards. This can challenge legitimacy and potentially the outcome of the US election.





DRIVERS AND IMPLICATIONS OF THE DIGITAL ECONOMY

The skyrocketing performance of stocks like Amazon, Netflix and Zoom, while financial markets were crashing, was tangible evidence of this divergence, amplified by the unconventional monetary policies adopted by central banks across the world.

The years before the COVID-19 outbreak saw a wide technological gap opening between frontier and non-frontier firms. This became more evident during the Great Lockdown when different digital platforms provided customers with goods and services no longer available on traditional markets. The skyrocketing performance of stocks like Amazon, Netflix and Zoom, while financial markets were crashing, was tangible evidence of this divergence, amplified by the unconventional monetary policies adopted by central banks across the world.

At the heart of the pre-COVID technological decoupling was the emergence of AI, which can be seen as the engine at the heart of the Fourth Industrial Revolution. The OECD has reported that, over the last decade, new technologies developed at the global technological frontier were spreading faster than ever. However, they were taking more time to be adopted by a critical mass of firms within any given economy and many existing technologies remained unexploited by a non-trivial share of firms. For Small and Medium Enterprises (SMEs) in traditional sectors, which account for more than 90% of all active firms across OECD countries, intelligent robots or Big Data are hardly affordable, accessible or necessary.¹⁷

Slow adoption and adaptation are typical of general purpose technologies (GPT) that radically transform the structure of the economy. GPTs, like the steam engine, electricity and IT, have spurred all the industrial revolutions of the past.¹⁸ And now it is AI's turn. However, it takes two or three decades for a GPT to become widely adopted, giving a significant competitive advantage to early users that can expand the scale and scope of their production, while innovating and consolidating their advantage over time. For example, it took more than two decades for electricity to surpass steam (in terms of share of total horsepower in manufacturing), and almost four decades to become the undisputed source of power generation.



¹⁷ Andrews, D., Criscuolo C. & Gal, P., 2015, "Frontier Firms, Technology Diffusion and Public Policy: Micro Evidence from OECD Countries", *OECD Productivity Working Papers*, No. 2, OECD Publishing, Paris.

¹⁸ Jovanovic, B. & Rousseau, P., 2005, "General Purpose Technologies", in Aghion, P. & Durlauf, S., *Handbook of Economic Growth*.

TECHNOLOGICAL GAP WIDENS DUE TO IMPLEMENTATION LAGS

To make use of electricity, governments had to invest in nationwide electric grids; entrepreneurs had to invent complementary technologies like light bulbs, cables, and switches; bureaucrats had to agree on standards such as the voltage of the current and the shape of the plug. The full potential of a GPT often remains unknown for years as companies have to commit money, time and attention to their development without knowing whether the world will actually go that direction. Companies must duplicate costs to experiment with new processes and models while still preserving their traditional procedures. Autonomous cars, for example, already absorb a lot of resources but are not yet commercially available.¹⁹

Implementation delays might explain why the Digital Revolution is not showing up in productivity statistics. Whether from the point of view of output per hour worked or from that of total factor productivity, since 2010, productivity has been growing at its slowest pace in five decades. The US has never granted as many patents as it has in recent years—records date back to 1790—but this technological dynamism does not necessarily translate into higher growth immediately because it takes time for companies to turn inventions into marketable products and to adapt their production and organizational processes accordingly.²⁰ There is also a problem of mismeasurement. Standard statistics struggle to capture the scale of these activities because AI-related innovation is often the outcome of intangible investments (like software, databases, R&D, design, training, etc.). National accounts, despite recent improvements in this sense, continue to treat some forms of investment in intangibles not as investment but as intermediate goods, thus subtracting value from final output.²¹

COVID-19 ACCELERATES DIGITALIZATION AND WIDENS GAPS

When the Great Lockdown froze the global economy for several weeks, only the companies that had already invested in digital operating models could guarantee continuity to their business operations. While in the pre-crisis years most firms of a sufficient size had moved towards a digital core based on software, data, and digital networks, only some had reached sufficient digital capacity to transition to a new business model almost overnight. The pandemic has not only exposed the wide technological divide between those who were ready for hybrid business models and those who were not, but it has also sharply accelerated the pre-existing move towards digitalization.

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According to McKinsey, the world has vaulted five years forward in consumer and business digital adoption in around eight weeks.²³ Banks have shifted to remote sales and service teams for even the most traditional activities. Grocery stores have shifted to online ordering and delivery as their primary business. Schools moved to online learning and digital classrooms. Several companies have launched analytics and AI initiatives in their operations. Moreover, smart working arrangements have become widespread, at least among some professions.

19 Campanella, E., 2018, "The Real Payoff From Artificial Intelligence Is Still a Decade Off", *Foreign Policy*, 9 August.

20 Brynjolfsson, E. & Rock, D., 2017, "Artificial Intelligence and the Modern Productivity Paradox: A Clash of Expectations and Statistics", in Agrawal, A., Gans J. & Goldfarb A. (Eds.) *Economics of Artificial Intelligence*.

21 Haskel, J., & Westlake, S., 2017, *Capitalism without Capital: the rise of the intangible economy*, Princeton University Press.

22 Baig, A. et al., 2020, "The COVID-19 Recovery Will be Digital: A Plan for the First 90 Days", *McKinsey Digital*, 14 May.



IMPLICATIONS

The post-COVID world will likely see rising tensions and competition between the technological leaders, adopters and laggards.

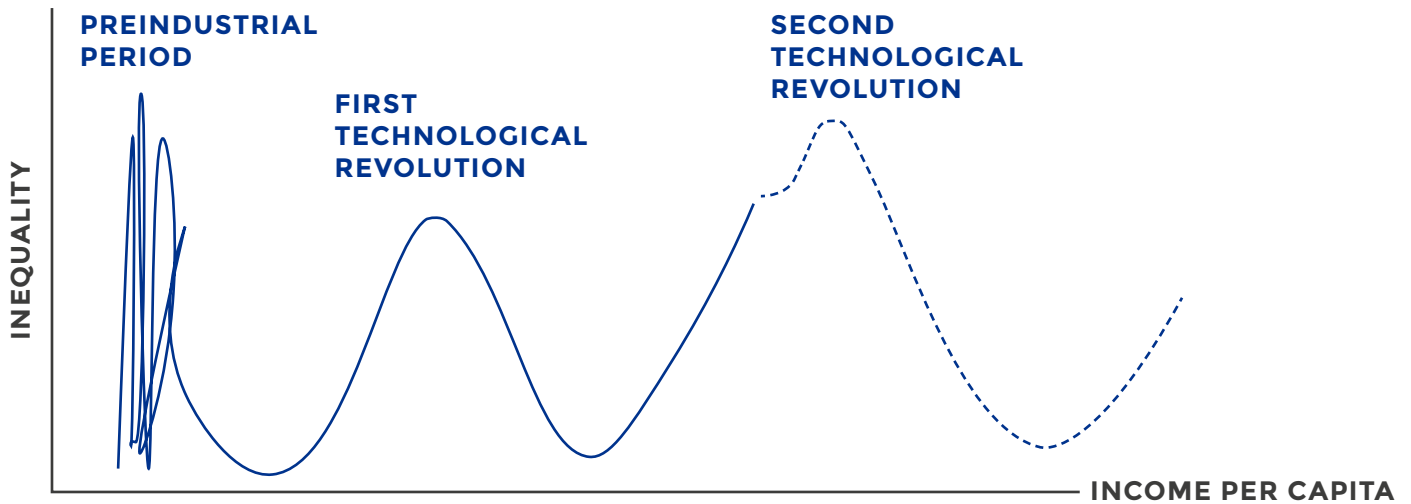
- **Leaders.** The most dynamic and innovative tech companies will take advantage of these changes, pushing the technological frontier outward. Pioneers also enjoy a first mover's advantage as they become infrastructure, as Apple's App store and Amazon as a marketplace.²³ Even if AI-related business activities remain the prerogative of a handful of companies, the number of active venture-backed US private companies developing AI systems is now fourteen times higher than in 2000.
- **Adapters.** At the same time, firms that have used the health crisis as an opportunity to update and upgrade their business model will have great incentives to speed up their digital transition. For these experiments to become permanent, firms need to make significant investments in digitalization, but the benefits will not manifest immediately. Transforming business processes and models requires the acquisition of new organizational and managerial skills, while cost structures duplicate as investments in new digital assets and capabilities overlap with existing business processes, targeting the same customers and competing for the same revenues. Among the least innovative players, only the largest ones will be able to undertake this kind of transformation.

- **Laggards.** The laggards, especially the smallest ones in the sectors hit hardest by the health crisis, risk falling further behind. Given the financial strain caused by the pandemic, they will be unable to invest significant resources necessary to catch up with new technologies that in many instances look too sophisticated for their needs. Economically, this implies a widening in the technological gap that could further erode their market share, especially if new actors enter and attempt to revolutionize sectors where a lack of physical proximity seems impossible to overcome.
- **Regulators.** Governments will have to perform a complicated balancing act. On the one hand, they need to create an innovation-friendly environment to attract talent, funds and firms that are key for their countries to grow. On the other hand, they need to introduce light regulation in disrupted sectors to allow laggards to adapt. Very often, as was the case in Europe with Uber, innovators in traditional industries not only enjoy a technological advantage over the incumbents, but disrupt existing business models such that they may catch regulators by surprise. As a result, they often do not play by the rules, posing entirely new regulatory issues. Responding swiftly and quickly to this kind of challenge is key to create a level playing field and prevent an innovation backlash.

²³ Warren, T., 2020, "Apple Has Finally Met its Fortnite Match", *The Verge*, 14 August.



A FRACTURING SOCIAL CONTRACT



Source: Milanovic, B., 2017, *Global Inequality: A New Approach for the Age of Globalization*, Harvard University Press.

In the last two decades, the world has found itself in what economist Branko Milanovic called the second modern Kuznets curve—an inverse relationship between economic development and income disparities.²⁴ In the sixties, the Nobel laureate Simon Kuznets argued that inequality rises during rapid industrialization when workers are plentiful and wages are low, but then falls when the slack in the labor market is absorbed. When Kuznets developed this theory, the wave of inequality that had started in the nineteenth century with the First Industrial Revolution was on its downward trajectory and under control.

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By the 1970s, two world wars, the political upheavals of the 1960s, and growth in the number of college graduates in Western countries had compressed inequality significantly. Since then, however, the world has been riding a new Kuznets wave and the technologies of the Fourth Industrial Revolution—AI, robotics, and so forth—are further widening the gap between the highly skilled and everyone else.

The widening wealth and income gap is, in a way, the societal flipside of the technological gap discussed in the previous section. The first who can ride a new economic paradigm enjoy a sort of rent until the rest adapt. Innovators employ qualified professionals within booming sectors, giving them large slices of a fast-growing cake. Innovation not only boosts the wages of those who fuel it but also erodes the middle of the jobs pyramid, first routinizing and then automating middle-skilled tasks like sales, bookkeeping or repetitive production activities.²⁵ These tasks are usually associated with routine tasks that follow predetermined rules and procedures—something computers or machines can easily automate. Complex, non-routine cognitive and manual activities, instead, can hardly be coded into a software. Engineers or biotechnologists, for example, usually possess a combination of analytical and problem-solving abilities that, at least for now, cannot be replicated by any form of artificial intelligence. Equally, low-skilled services like cleaning and gardening, health support or childcare, which require substantial situational adaptability, physical ability and oral communication, must be performed in person. As a result, jobs tend to be concentrated at the tail of the occupational skill distribution, where both the degree of routinization and the probability of automation are lower. This technological process, along with globalization, explains why in recent years the middle class has been squeezed in the West.²⁶

²⁴ Milanovic, B., 2017, *Global Inequality: A New Approach for the Age of Globalization*, Harvard University Press.

²⁵ Autor, D., "Why Are There Still So Many Jobs? The History and Future of Workplace Automation", *Journal of Economic Perspectives*, Vol. 29, n. 3, 2015

²⁶ Manyika, J. et al., 2020, *The Social Contract in the 21st Century: Outcomes So Far for Workers, Consumers and Savers in Advanced Economies*. McKinsey Global Institute, February.



Kuznets waves, at least in their upward trajectory, also pose a vast political challenge. The social contract—that in the US was centered around social mobility and in Europe around economic security—looks broken. In the US, over the last fifty years a child's chances of out-earning his or her parents have fallen from almost 90% to 50%.²⁷ At the same time, permanent employment and generous pension benefits are often a mirage for younger Europeans. Moreover, innovation can instill fear in those struggling to keep up with the changes ushered in by new technologies. Older people can feel inadequate in a world that changes too fast. The left-behind were the most vulnerable to the nostalgic rhetoric deployed by both Trump and Brexiteers, deluding voters that the present could accommodate a past that no longer exists. The former promised to Make America Great Again, while the latter believed that London, once divorced from Brussels, would restore the glories of the British Empire.²⁸

The hollowing out of the middle of the income distribution has also led to the hollowing out of the political spectrum, with growing support for extreme parties on both left and right.²⁹

The hollowing out of the middle of the income distribution has also led to the hollowing out of the political spectrum, with growing support for extreme parties on both left and right.²⁹ Politics, particularly in Europe and North America, is seeing a double challenge as the center collapses, with increasing polarization within countries and the rise of illiberal populism, underpinned by a declining belief in democracy and declining trust in the media. In the US, the proportion of citizens who believe that it is essential to live in a democracy has declined across the generations, from 72% of those born before the Second World War to a mere 30% among millennials.³⁰ Declining support for democracy is repeated in a number of other countries, such as Great Britain, the Netherlands, Australia and New Zealand. These results are mirrored by a Cambridge University study whose main conclusion was that the share of those dissatisfied with democracy has increased by around +10% points from the mid-1990s to 58% in 2020.³¹ Similarly, trust in the media is also falling and the only source of media a majority (57%) now trusts in EU countries is the radio.³²

27 Chetty, R. et al., 2016, "The Fading American Dream: Trends in Absolute Income Mobility since 1940", *NBER Working Paper* No. 22910, December.

28 Campanella, E. & Dassu E., 2019, *Anglo Nostalgia: The Politics of Emotion in a Fractured West*, Oxford University Press.

29 Muñoz, M., 2019, "A New Social Contract for the Digital Age", in *Work in the Age of Data*, BBVA Openmind, No.12.

30 Foa, R. & Mounk, Y., 2017, "The Signs of Deconsolidation", *Journal of Democracy*, Vol. 28, No.1, pp.5-16.

31 Center for the Future of Democracy, 2020, "Global Satisfaction with Democracy 2020", *University of Cambridge*.

32 European Commission, 2019, "Media Use in the European Union".

COVID-19 NOT A GREAT LEVELER

Kuznets waves are nothing new. They move in cycles and pandemics are often one of the forces to bring them under control. For centuries, inequality fluctuated with demographic forces or territorial conquests. From pharaonic Egypt to Czarist Russia, Victorian England, the Ottoman Empire, and China under the Qing Dynasty, the pattern has been the same: wealth tends to concentrate in the hands of a privileged elite. However, income and wealth disparities have never been constant over time. Long stretches of high inequality were followed by bursts of violent compression, owing to cataclysmic events such as wars, revolutions, natural disasters and pandemics. At least in theory, viruses, bacteria and germs are perfect equalizers, blind to wealth, class, age, gender and race.³³

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However, COVID-19 looks like an exception, exacerbating inequality. In their attempts to flatten the epidemio-logical curve, governments have unintentionally upended the livelihoods of the least advantaged. In March alone, the US economy destroyed more jobs than over the entire Great Recession, with workers with less than a college education, such as shopkeepers, waiters and hairdressers, taking the largest hit.³⁴ In Europe, by contrast, official unemployment numbers did not show an equally catastrophic rise due to furlough, as

furloughed staff were recorded as unemployed in the US. Finally, to add insult to injury, the wealth of America's billionaires increased by at least 10% in March and April.

Available evidence suggests that the risk of falling seriously ill from COVID-19 in the West is higher among individuals with lower income and lower levels of education. Mobility data for the US analyzed by the New York Times shows that the wealthy limited their mobility sooner and more drastically than the bottom 10%, thus reducing their exposure.³⁵ While millions of white collar workers can work from home, essential workers like cashiers, bus drivers or street cleaners have been forced to show up at work, thus exposing themselves to the contagion. According to estimates, no more than around 30-35% of jobs can be fully or mostly performed from home and these jobs include the most highly-qualified professions.³⁶

What's more, while governments will emerge from the pandemic with historic levels of debt, the digital firms that have captured the majority of recent growth remain largely untaxed. This revenue cap in the digital economy exists at the national level, where sales tax for goods and services provided by digital platforms are often not collected, and at the international level, where the global corporate tax revenue on digital firms ends up in the hands of a small number of states. This disconnect, between the engines of growth in the economy, and those governments mandated with delivering on their social contracts risks exacerbating tensions within and between societies.

33 Scheidel, W., 2017, *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*, Princeton University Press.

34 Tappe, A. & Kurtz, A., 2020, "The US Economy Lost 701,000 Jobs in March — Worst Report Since 2009"

35 Jennifer Valentino-DeVries, Denise Lu and Gabriel J.X. Dance, "Location Data Says It All: Staying at Home During Coronavirus Is a Luxury", *New York Times*, 3 April 2020.

36 Dingel, J. & Neiman, B., 2020, "How Many Jobs Can be Done at Home?", *Becker Friedman Institute, University of Chicago*, 19 June.



IMPLICATIONS

In the short term COVID-19 will likely exacerbate inequality, and even more so if governments are forced to scale down employment protection schemes to absorb the COVID-19 shock to public finances. A substantial increase in unemployment would be a boon for illiberal populists, who could run once again on anti-establishment platforms and radical political agendas that will attempt to stifle globalization and technological change. In the medium term, COVID-19 could actually mitigate income disparities through at least three channels:

- Urban hierarchies.** Smart working arrangements that shorten distance can alter urban hierarchies between the core and periphery. If new digital technologies allow us to reap part of the typical network effects of booming cities from a distance, then the agglomeration costs of living in crowded and expensive cities might outweigh the benefits, pushing even qualified professionals towards smaller towns where they can enjoy higher standards of living. The repopulation of less developed areas might contribute to closing regional divides that have contributed to the emergence of populism across the West in recent years, while also creating new job opportunities for the least qualified workers living on the periphery. According to Enrico Moretti, each qualified job produces at least five less qualified ones, raising the standard of living for all the individuals residing in the same area.³⁷
- Agile work.** The widespread use of smart working arrangements provides better opportunities for higher skilled labor but could also foster inclusion. New technological platforms that facilitate working from home may push companies to hire people with disabilities, reduce geographical distances and favor people—mainly women—who take care of children, and elderly or unwell family members.
- Essential workers.** The pandemic has shown the key role played by low skilled workers, who at the peak of the pandemic became essential workers. In many cases, and especially those employed in the gig economy, such workers tend to be both under-protected and underpaid. It is tempting to argue that this is because new technologies increasingly kill medium- and low-skilled jobs, while boosting the wages of the most qualified. In reality, the marginalization is the outcome of a political and institutional failure in which taxes and social security have both been lowered. Governments should rethink social security to include essential workers and force innovative firms to fairly remunerate them by giving up on part of their rent of position.

³⁷ Moretti, E., 2012, *The New Geography of Jobs*, Mariner Books.

The background of the entire page is a network diagram. It consists of numerous small, dark blue circular nodes connected by thin, red lines. The nodes are distributed across the frame, with a higher density in the center, creating a web-like structure. The overall color palette is a deep blue with red accents.

CONTACT TRACING AND TECHNOLOGICAL SOVEREIGNTY

Governments around the world are looking to technological solutions for tracking the spread of the virus, stepping into the nexus of global platform power, data regulation and technological sovereignty. Contact tracing is also an illustration of the digital economy, power in the digital era and the relation between the public and private in the twenty-first century.

As the world begins to consider reopening, it has become conventional wisdom that, until a vaccine is developed, the safest way to resume economic and social activity is through a process of testing and tracing the population. Contact tracing is a disease control measure that has been used for decades, but now the promise is that it can be turbocharged by technology. Instead of a public health worker conducting a lengthy interview with someone who has tested positive for COVID-19 to reconstruct where they've been, an individual who has tested positive or a public health department could draw on data from a tracing app downloaded to such a person's mobile device. Using these data, they would know exactly where the device's user had been and who they had been in contact with. This same data—either stored only on the individual's device, or centralized—could also be used to notify the user if they had been close to someone who has tested positive (exposure notification). The platform or government managing the application could also upload the data from many individual users to a centralized authority, creating a society-wide data set. Such a system could not only collect location data but also draw on other data about users to build sophisticated epidemiological models. Finally, to better understand this vast wealth of public health data, they could deploy AI to study patterns of spread, and to learn about the virus.

How governments have managed the procurement, development and policy choices surrounding contact tracing and exposure notification reveals real challenges to the state's technological capacity and ultimately sovereignty in the digital domain.

TECHNOLOGICAL CHOICES—CONTACT TRACING VERSUS EXPOSURE NOTIFICATION

There is a wide range of technological options for achieving the broad contact tracing and exposure notification aims. Where governments end up on these choices reveal deep tensions in the relationship between our technological infrastructure and state power. The two main options are Bluetooth Low Energy-Based Contact Tracing and BLE-Based Exposure Notification. While similar in intent, they reveal a conflict in the relationship between national control of digital services and the power of big tech in setting global technology standards.

BLE Contact Tracing uses BLE to signal nearby devices. When two devices come into close proximity, they exchange anonymized IDs (long sets of randomized characters) that are then stored in contact logs on their individual devices. Upon diagnosis, users may voluntarily upload their contact logs, along with their general location (e.g. the first half of their postal code), to a central server, allowing health authorities to track outbreaks and alert other users if they have come into contact with an infected individual. Variations of this model are possible; for instance, AI may be used to predict a user's unique risk.

The **BLE-Based Exposure Notification** system also uses BLE to signal nearby devices, but unlike in contact tracing, each user's contact log is stored only on their individual device. Only the anonymized tokens of those diagnosed are uploaded to a central server. This model aims to minimize privacy risk through better data protection and uses Apple/Google's exposure notification model, which is based on the Decentralized Privacy-Preserving Proximity Tracing (DP-3T) protocol. While contact tracing offers the promise of centralized authority, national control and potentially far great epidemiological insights, it comes with significant data privacy concerns. Exposure notification using the Apple/Google protocol provides a decentralized model that better protects user data, but at the cost of national control.

PRIVACY SOVEREIGNTY TRADE-OFF

The UK tried to launch its own Bluetooth contact tracing app in June, having rejected Apple/Google's approach. The app would include personally-identifiable data collected by the UK's manual contact tracing system and would have been retained for 20 years. However, they could not implement a functioning version of the app and pivoted to the Apple/Google one.³⁸ France also recently launched its own contact tracing app with a centralized framework, with contact logs being uploaded to a central server. The majority of the other European states has relied on the Apple/Google-protocol.

Security and privacy experts have raised significant concerns about both apps. In France, 471 cryptography and security researchers (77 of whom are directly affiliated with Iria, the French app's developer) emphasized the privacy vulnerabilities inherent to both contact tracing and exposure notification and called for greater transparency and oversight for the app. Singapore's Bluetooth app, praised for its rapid deployment and apparent initial success, has only been downloaded by 40% of residents, with many citing privacy concerns and poor functionality since the app only works on Apple devices if it is kept open at all times.

Over 300 academics across 26 countries strongly argued against a centralized contact tracing model, jointly outlining its vulnerability to security breaches, massive data collection, and possible surveillance after the pandemic, given inadequate legislative protections. This kind of "mission creep" (unintended app use or data abuse) could represent an overextension of government power and surveillance. Moreover, since contact logs are uploaded to the server, malicious actors would only need to target the central server, rather than individual accounts or devices. IDs generated by global tokens stored in the server could be decrypted to re-identify the users listed in the logs. To successfully perform contact tracing, authorities must request location information. Since even general, area-based location data can readily re-identify users, authorities will have access to highly sensitive identifying information. Experts have also warned that such apps could result in

security threats and potential for wrongful surveillance of users' devices, since Bluetooth signal is openly broadcast.

A wide range of countries has instead adopted the BLE-Based Exposure Notification system developed on top of the Apple/Google protocol. Switzerland and Italy have deployed apps incorporating this framework. While 70% of Swiss residents intend to download their country's app, only 44% of Italians say they will probably or certainly download theirs. Other European countries, including Germany, Latvia and Estonia, are preparing to roll out their own Apple/Google-based apps in the coming weeks. Several US states and a total of 23 countries have requested Apple/Google's API. On the one hand, two private companies, Google and Apple, are deciding by themselves for how 3.2 billion smartphones can and cannot be used to combat a global health emergency, and large European states seem unable to exert the technological sovereignty to implement solutions in their own countries. On the other, the countries that want to achieve technological sovereignty and have chosen a contact tracing model over Apple/Google's exposure notification are undermining the broader positions on data privacy.

States adopting the Apple/Google API will need to contend with the power they delegate to private companies over public health and security, especially as companies have already rejected demands from other federal governments relating to contact tracing. Since clear terms of use and explanation of data collection are the mandate of individual developers, governments using the Apple/Google API must ensure companies comply with strict provisions of use and purpose, data governance, and privacy protections. The inability of the largest European states to create and implement their own protocol must also be seen as a failure of a cornerstone of the European Commission's strategy to become a "global digital player" and to achieve "technological sovereignty".³⁹ This underlines the power shift from states into the hands of the largest technological companies, who act without the accountability that governments (generally) have.

38 Smout, A., 2020, "UK Ditches Homegrown COVID-19 Tracing App to Use Google-Apple Model", 18 June.

39 European Commission, 2020, "The European Digital Strategy".



IMPLICATIONS


- **Not all the technologies available for use in fighting COVID-19 are equal or interchangeable.**

There is a big difference between centralized contact tracing, whereby data about a society is collected en masse and used by public health authorities to control the epidemic, and exposure notification apps, which tell an individual user whether they may have been near someone who has tested positive.

- **There is a huge gulf between promise and implementation, which directly affects the calculation of trade-offs.** Governments must look closely at the challenges of implementing digital contact tracing. If either the system's design or operation fails, any trade-off between civil liberties and public health or between data privacy and collective good is moot. In terms of design, contact tracing is not simply an app that can be quickly developed and rolled out (although there are many such products on offer), but rather a product more akin to a platform: a system that needs to reliably collect, store and manage very large data sets and sustain a vast network infrastructure. How this system is designed will have widespread downstream effects on the utility of the exercise. As for implementation, governments are proposing national rollouts of a very intrusive and complex technological platform that demands 60 percent adoption among the population to be effective. It is worth noting that no country currently working with voluntary digital contact-tracing systems has hit this target yet. We also must keep in mind the track record of governments

implementing complex technology platforms: it doesn't always end well.

- **Tech policy can entrench power.** There are economic and political factors underlying our decisions around these technologies. Big tech has got bigger during the pandemic, and these companies have long lusted for the data troves of the financial sector and the health system. We need to be weary of entrenching this trend.
- **The deployment of contact tracing technologies can embed new governance norms, that can reinforce or exacerbate inequities and abuses.** Contact tracing might seem like a good idea to a wealthy computer programmer in Palo Alto, or a civil servant in Ottawa. It may look very different to communities that have long experienced the costs of data being weaponized against them and that are already disproportionately harmed by from COVID-19.

A hand holding a small globe, which is overlaid with a white network diagram consisting of dots and connecting lines. The background is a blurred image of a laptop keyboard. Several currency symbols are faintly visible in the background: a Euro symbol (€) on the left, a Japanese Yen symbol (¥) in the upper right, a US Dollar symbol (\$) in the middle right, and a British Pound symbol (£) in the lower right. The entire image has a blue tint.

RECOMMENDATIONS AND TOPICS FOR EXPLORATION

The world is again facing a yawning gap between the social, economic, and political challenges and the design of our governance systems designed to meet them. Questions about digital governance are central to how we reconstruct our post-pandemic world. Digital technologies and the coronavirus are both manifestations of an era of under-managed hyper-globalization, and the pandemic threatens to deepen the economic, geopolitical, and technological divide between the United States and China.⁴⁰ Managing the adverse effects of the dynamics of the digital domain requires holistic approaches to platform and data governance. For too long, and on too many issues, the governance of technology has been left solely to those who design it. Instead, we need to think critically about how the deployment of digital technology in our society bumps up against our existing democratic laws, norms and regulations, and how it could change them.

Data governance needs to be embedded in a much broader policy agenda that includes international politics, competition policy, content moderation policies, and a host of data rights issues. This poses formidable challenges for governments and private companies alike.

This report is the starting point of a multi-year effort from the Center for the Governance of Change that will research the drivers and implications of the digital and data economy and the fracture of the social contract, as well as advance new solutions for governance and society.

The following topics of exploration are intended to serve as a basis for further research.

GLOBAL GOVERNANCE

- The world needs a new forum for diplomatic and global coordination to overcome the geographic balkanization of data governance. The state-centric China zone and the firm-centric US zone are mirror images of each other: in neither case do individuals have sovereignty

or control over their personal data. By contrast, the

EU's General Data Protection Regulation offers a higher degree of control to individuals on questions of privacy and the use of their data. From an international perspective, the biggest problem is that the three zones cannot "talk" to one another. As a result, no tech firm can be truly global, because it has become impossible to comply with the rules of one zone without violating those of the others.

- We should consider a universal declaration on AI, given existing inequalities in access to data and analytic capacities, not to mention the far-reaching potential for misuse. Algorithms are not value-free. The data upon which they rely and the formulae guiding their decisions reflect their designers' historically and socially conditioned biases. Fortunately, an ethical framework for algorithms and AI can be universalized in the same way that personal protections have been through the Universal Declaration of Human Rights and other agreements.
- Our ability to arrive at common understanding of facts and events is being undermined. To mitigate an epistemological crisis, we need an information space that is treated as a common good rather than information flows manipulated for profit. The information space also needs to be protected from increasing attempts to manipulate it from foreign influence.
- We need a Digital Stability Board to shape global standards, regulations, and policies across the platform economy. This new body could offer advice on best practices, as well as insights about the regulatory and policy actions needed to address vulnerabilities in a timely manner. It could monitor risks arising from new technologies—including their impact on civil society—and develop regulatory and policy interventions to address them, and it could ensure that its efforts complement the work of other institutions, such as the World Trade Organization.

40 Medhora, R. & Owen, T., 2020, "A Post-COVID-19 Digital Bretton Woods", *Project Syndicate*, 17 April.



ECONOMIC GOVERNANCE

- The digital economy is driven by proprietary technology, most of which is created in a few hubs around the world. It is the nature of the innovation economy to privilege first movers, strategic behavior, and economies of agglomeration. We see the need to create a level playing field for innovators and laggards through fair taxation of large tech and smart/agile regulations to tame the impact of technological disruptions in more traditional sectors. This might entail making sectoral regulation applicable to bigtech companies or levelling down requirements for all to boost innovation.
- Laggards must be provided with fiscal incentives to adopt new technologies, while launching informative campaigns to make SMEs aware of the true potential of digital technologies for their businesses.
- To push workers away from large cities and create more geographically balanced development models, governments should build adequate digital infrastructure in peripheral areas, provide tax credits for relocation and incentivizing smart-working arrangements
- Governments should envisage new ways to protect workers in the gig economy, offering them the same forms of socio-economic security enjoyed by ordinary workers. Trade unions should promote the interests of this group.

SOCIAL CONTRACT

- Above handling the economic fracture, improving the social contract needs to be done with efficient and transparent governance that are counteracting the worst aspect of the social fracture.
- As large technology companies are increasing in size, the status quo of an untaxed and largely unregulated digital economy is no longer tenable. These companies are using public utilities: they are providing the services but not properly taxing their gains from those markets and thus reducing the tax base from which to provide social goods. We need to develop a new global regime to address the problem of tax arbitrage by multinationals whose value is derived largely from the intangible economy.
- There are opportunities for smart working arrangements to counter the adverse effects of urbanization. We recommend promoting and regulating smart working arrangements to ensure that they foster inclusion.
- Education is the most effective tool for social mobility, but its costs are increasing while curricula are slow to adapt to the changing needs of the digital economy. It is crucial to provide effective, updated and affordable education for citizens.

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