



Business in the post-lockdown era

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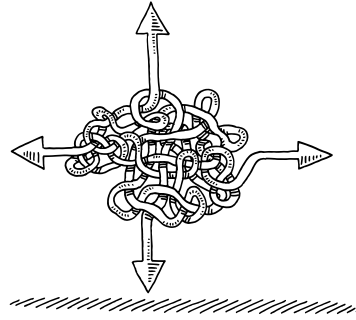
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Ben van der Schaaf, Aurelien Guichard

Editorial

Dear Reader

As we write in late May 2020, lockdowns are slowly lifting across the regions most affected by COVID-19. Global news media are awash with content on every possible aspect of the process, from personal tragedies and local heroes all the way through to global economics and geopolitics. Many consumers have decided to regulate their consumption of news, just to stay sane.

In the business world too, executives are engaged in grueling rounds of back-to-back virtual meetings to work out how to cope with an unpalatable mix of urgent short-term issues for survival, medium-term priorities for recovery, and long-term strategies for regrowth. In this issue of Prism we have sought to provide some useful insight into the latter – what could the world look like in the next two to five years as we emerge into a new status quo after the immediate crisis, and what would this mean for businesses across different sectors?

We asked our experts in strategy, risk, banking, telecoms, petroleum, automotive, chemicals and pharma to give us their perspectives. These are all based on studies, data analysis and – most importantly – conversations and current work with clients on the frontline. While each sector has its own unique issues, most striking are some of the commonalities in the pictures they paint of the new post-lockdown world, for example:

- **Uncertainty:** The only thing certain about the new world is its uncertainty across multiple dimensions, and any claim to be able to forecast exactly how things will pan out is likely to be suspect. Scenario-based thinking will therefore be key for strategic decision-making.

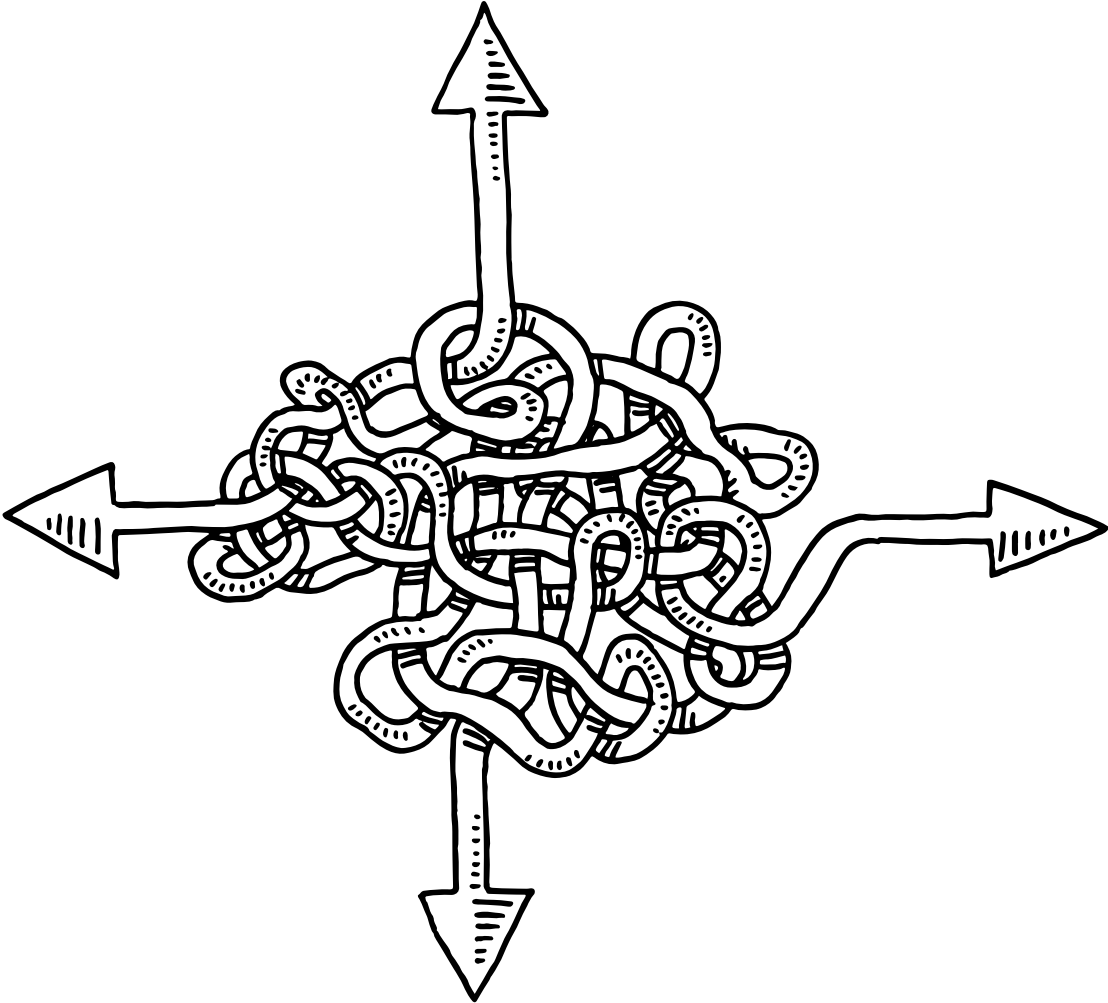
- **Disruption:** The disruption from COVID-19 has been, and will continue to be, profound. However, in most cases the trends that we expect to see going forward already existed to a large extent, such as digitalization, responses to climate change and protectionism. The crisis seems to be giving them a turbo-boost.
- **Economic recession:** That we are facing the mother of all economic downturns is beyond doubt, and this is, of course, a major factor to address for business. However, the depth and duration of the downturn and the shape of the recovery curve are very much open to debate. How this ultimately turns out will make a big difference to strategies for business.

In this edition of Prism, we wanted to give our experts free reign to provide their perspectives without constraining them in terms of format or structure. We have, therefore, decided to present different versions of future-scenario models without trying to come up with a single, unified approach. In fact, we strongly believe there is more than one way to “cut the cake”, and that different approaches can be more suitable for different purposes without being contradictory.

We hope you enjoy the insight in this special edition of Prism, and look forward to working with many of you as we put our shoulders to the wheel and face up to the future!



Rick Eagar
Chief Editor, Prism
Arthur D. Little



Strategy: How to cope with the uncertainties of tomorrow's new world

Gregory Pankert, Aurelia Bettati, Arnaud Jouron, Florence Carlot, Idriss Mestari, Rick Eagar

When the dust of the COVID-19 crisis finally starts to settle, we will face a new environment that may vary dramatically from what we know today in terms of consumer behaviors, business models and the respective roles of the state and private sector. The longer and deeper the crisis, the more likely that profound changes will define tomorrow's new world.



Drawing on insights from our client network and internal experts, we have tried to map these changes and outline the range of very different future possible scenarios. In such an uncertain environment, strategic decision-making is challenging, so we have also provided guidance on how to approach this, based on well-established principles.

Planning for the future has never been more difficult given the unstable and uncertain global environment that businesses face at both a macro and micro level. Based on insights from client conversations and internal experts, we outline the range of potential scenarios organizations could face, along with guidance and best practice on making strategic decisions in tomorrow's new world.

Thrown into a world of uncertainties

After the initial period of fast adaptation, companies across the globe are reflecting on what the new world might look like in the next few years. Tomorrow's world will be shaped by both highly probable trends (such as greater working from home and more e-commerce) and other high-impact trends whose potential development is much more uncertain. A helpful way to consider these trends is to group them into two dimensions:

- 1. Macro/structural level:** Trends relating to economic structural and policy shifts, characterized especially by states and large companies wanting to reduce their global interdependency risks.

- 2. Micro/behavioral level:** Trends relating to sustained behavioral shifts among citizens as both consumers and workers, resulting initially from their experiences of lockdown and social distancing.

(1) Macro/structural level: Will we see a structural shift towards relocalization?

As countries cautiously begin to lift restrictions on lockdown and movement across borders, governments are focusing intensively on measures to limit economic and social damage while continuing to control public-health risks. Governments in many countries have already taken a huge stake in business through direct funding of furloughed employees. In the turmoil of the coming economic recession they may need to increase their economic involvement substantially and apply new policies and regulations that will change the open, global free-trade market dynamic we know today. In parallel, large international companies will also be looking to increase organizational robustness, potentially through the relocalization of their operations, to hedge against future major disruptions:

Technological sovereignty: The COVID-19 crisis revealed to European and US citizens (and their governments) their high dependency on China and other Asian countries to supply protective equipment and pharmaceuticals. This is particularly true for strategic supplies such as masks and medicines – for example, according to the US Department of Commerce, 97 percent of all antibiotics in the US come from China. In response, many governments have committed themselves to greater control over the production and provision of these products. However, it is unclear to what extent these current intentions and commitments will be realized in practice and extended to other products and services:

- *What will be the scope and extent of technological sovereignty shifts in terms of actual relocalization of production? What technologies and sectors will be covered, beyond the pharmaceutical and healthcare industries?*

State intervention: Before the crisis, globalization was accelerating across most regions, with developed economies displacing manufacturing to low-cost countries. Faced with bankruptcies, galloping national debt and unheard-of levels of unemployment, governments are likely to be tempted towards protectionist measures that salvage returns on emergency loans and shore up local industries. Even before the crisis, there were incipient trade wars between the US and China, and governments in many countries have been increasingly voicing ambitions to take back control over the development of strategic economic sectors, for example, by promoting local/regional champions or through incentives to invest in local infrastructure:

- *How far will governments keep their faith in global free markets to drive recovery, versus adopting ever-greater protectionist measures?*

Environmental economics: The crisis hit at a time when climate-change concerns were rapidly moving up the policy agenda, and these concerns are here to stay. Governments in Europe, the US, and Japan have been used to transferring “dirty” industries to China and Asia, while imposing stricter environmental regulations on their own industries. This cost burden contributed to a lack of competitiveness in Europe and other western countries (e.g., producing one ton of hot-rolled steel from a blast furnace is 13 percent more expensive when CO₂ emissions are taxed at €30/ton¹). There has already been intensive lobbying to relax environmental norms. Given economic distress, European and western governments may be tempted to use regulation to favor growth and relocalization over environmental economics:

1. One ton of hot-rolled steel from a blast furnace whose average cost is ~450 euros/T consumes 2T of CO₂. Assuming CO₂ costs 30 euros/T, this represents a cost increase of 13 percent. EBITDA margins for European steel companies were typically less than 6 percent in 2019.

- *How will the economic downturn affect policies? Will governments compromise on global environmental standards out of economic necessity, or will the reality of climate change force them instead to compromise on short-term economic well-being?*

Operational robustness: The COVID-19 crisis highlighted the strong reliance of companies on long, complex global supply chains. Many companies whose logistical flows collapsed may consider refocusing, at least partially, on closer supply chains. Even before the lockdown, some European industrial companies (such as in the automotive sector) had concerns about global supply-chain vulnerabilities. However, operational relocation is costly and introduces new risks:

- *Will companies only relocalize limited parts of their operations to hedge against future disruption, or will they aim to develop fully local supply chains as alternatives to current global ones?*

(2) Micro/behavioral level: How disruptive and permanent will the behavioral shift be?

In the context of lockdowns and social distancing, our behaviors as consumers have already changed in ways that were previously unheard of. Companies have also already changed the way they do business so they can operate safely for employees and customers. The longer these measures last, the more likely the shift will become, at least in some respects, irreversible. We expect that the following aspects will be especially impactful for businesses:

Accelerated digitalization: The step-change in digital interactivity is the most obvious and direct behavioral change we have seen so far. Many services and utilities have switched from on-site to online access overnight: education, public administration, legal advice, consulting and even

medical appointments. This growth in digital interactions would have been unimaginable only a few months ago, and represents a jump into the future of between two and 10+ years, according to different observers. The CEO of British Land, Chris Grigg, who manages one of Britain's biggest retail and office landlords, says that as a result of the pandemic his company has significantly brought forward the time when it expects the share of online shopping in Britain to reach almost 40 percent – double its current level². Augmented reality- and virtual reality-enabled (AR/VR) technologies are breaking through as online retailers and service professionals test new ways to provide their services. The longer restrictions last, the more sustained adoption is likely to be. However, people still have a strong basic need for physical contact:

- *As lockdown measures are progressively relaxed, how much will people continue to accept and embrace digital channels, rather than meeting their needs for physical interaction?*

Local and “slow” life: Most people are experiencing a new home-based life. Remote working, which was already growing steadily (close to 50 percent over the past five years in the US³), has exploded. Some consumers have had to change their purchasing habits and buy local products as retail stores experienced shortages of imported goods. Online stores run by local farmers have seen a boom in business as short food supply chains proved more resilient than traditional ones. One of the few upsides of the pandemic has been that people have started to realize the benefits of the absence of traffic – substantially reduced pollution, lower noise levels and, for many, the absence of commuting. However, this has all happened in the context of a massive drop in economic activity, the pain of which has yet to be felt by most:

2. <https://www.economist.com/briefing/2020/04/11/the-changes-covid-19-is-forcing-on-to-business?fsrc=scn/ftb/te/bl/ed/lessglobalisationmoretechthechangescovid19isforcin-gontobusinessbriefing>

3. <https://www.flexjobs.com/blog/post/flexjobs-gwa-report-remote-growth/>

- *To what extent will companies and citizens sustain the shift towards local living and working, and will environmental/wellbeing criteria become more significant in consumption and lifestyle choices?*

Data privacy: Lockdown has translated into a brutal loss of freedom, which we have accepted to collectively protect our health. The imposition of intrusive tracking-and-tracing tools may be a necessary price to pay if people are to be free to move while the virus is still globally active. In parallel, the accelerated development of digital services will lead companies to look to access even more of our personal data, fueling a trend that was already prevalent. These factors are already the subject of significant debate:

- *Will people ultimately accept less data privacy for public health and convenience/lifestyle reasons, or will new safeguards and restrictions need to be imposed by public authorities to reflect their concerns?*

Investment and entrepreneurship: In recent years, fueled by low interest rates, creative financial engineering and leveraging have been the keystone to delivering shareholder value; this has been demonstrated by share buybacks, debt- and equity-backed acquisitions, industry consolidations and huge valuations for loss-making unicorns with winner-takes-all business models. With massive financial support provided by governments to distressed sectors, citizens may require governments to limit the debt levels and dividend payments of companies supported by their taxpayer dollars. A severe economic downturn may lead to risk aversion in investment decisions, with investments concentrated in sectors labeled strategic by public authorities. On the other hand, investors and governments may also take the opportunity to invest in innovative breakthrough business models and technologies as society adapts to survive:

- *To what extent will investors become more risk averse (by choice or regulation), rather than funding breakthroughs and fueling a new wave of entrepreneurial investment?*

The combination of these two uncertainty dimensions (the degree of macro/structural and micro/behavioral changes), both of which will be impacted by the length and depth of the crisis, potentially produce very different market environments for businesses. We will explore these in the next section.

The new world – What are the scenarios?

We have illustrated the uncertain world of tomorrow with four scenarios, which represent different combinations of macro and micro shifts. These scenarios all require different strategic responses from businesses.

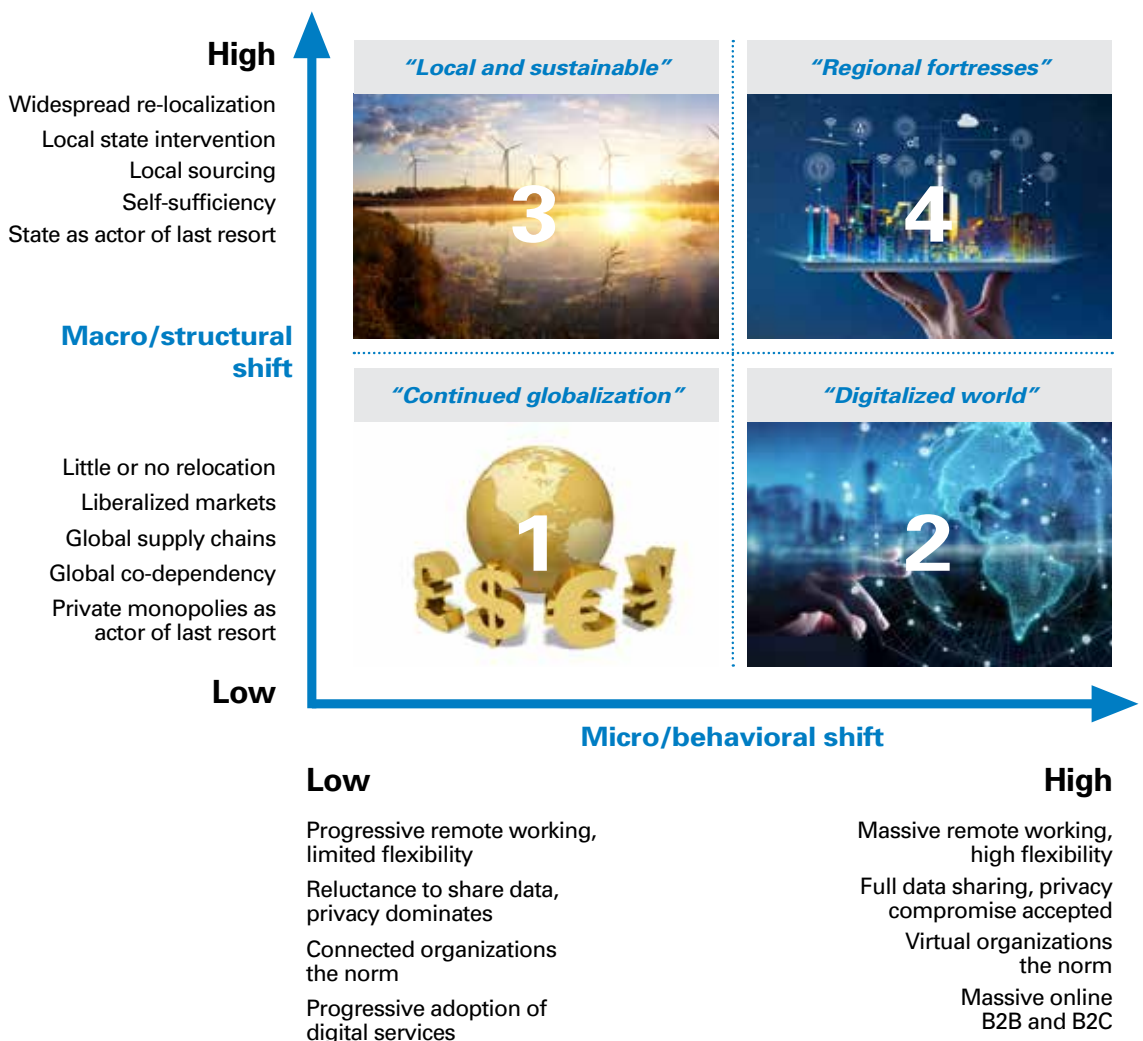


Figure 1: Scenarios for tomorrow's new world

Scenario #1 – Continued globalization

In Scenario #1, rapid progress in eliminating the virus and a relatively fast economic recovery leads to a return to the key patterns of a globalized economy:

- The economic downturn and limited investment capacity increase the consolidation of economic power into the hands of a small number of giant corporations, including tech leaders such as Amazon, Netflix, Google, Baidu and others. These continue to pursue optimization and efficiency via global supply chains.
- High unemployment rates, low investment capacity and the high cost of debt to the rest of the economy hinders further acceleration of digitalization beyond pre-crisis levels.
- Investment in digital services continues along its previous path, but with a clear and more rigorous focus on short-term return on investment.
- Society's reluctance to share personal data justifies stringent data-privacy norms, limiting the speed of further economic digitalization.
- Climate-change priorities are still high, but tempered by the need to alleviate short-term economic hardship.

Scenario #1 would not drastically change the key ingredients of the economy and markets, but would mean that private monopolies would act even more as the actor of last resort.

Scenario #2 – Digitalized world

In Scenario #2, a protracted recovery period or failure to find a full solution to the pandemic drives rapid acceleration of digitalization, leading to more permanent changes in the global economy:

- Massive adoption of digital services and other means of securing social distancing, including drastic robotification and remote/flexible working with virtual organizations, become the norm.
- Companies and supply chains are not just connected, but completely digitalized.
- Governments temper protectionist and interventionist policies to enable global free markets to help drive economic recovery, focusing instead on managing the collateral damage from the collapse of distressed legacy sectors.
- Privacy norms are sacrificed to the common interest and private data is made fully available to secure optimal efficiency and fluidity of B2C, B2B and B2G online services such as e-care, e-justice and advisory services.
- The remaining investment capacity of corporations and private-equity firms focuses on new breakthrough technologies and business models, driven by the necessity for radical change.
- Climate-change priorities drive fundamental transformation of the global economy towards sustainable technologies in areas such as energy, mobility and manufacturing.

Scenario #2 effectively continues the trend of the NYSE FANG+ Index, which has outperformed the market this year by up to 12 percent on average, compared to a double-digit drop for the S&P 500. As another example, digital-health funding has already grown by 50 percent in 2020 Q1 year on year, with \$3.1B invested. In Scenario #2 the major global digital private players would further accelerate their strong growth.

Scenario #3 – Local and sustainable

In Scenario #3, the combination of a deep recession, high state protectionism, and a public preference for “slower life” causes a reaction against further globalization and drives a focus on developing sustainable local communities:

- Stronger state intervention incentivizes local sourcing and reduces dependency on the global economy.
- Climate change and corporate social responsibility issues are seen as higher priority than economic growth.
- Digitalization progresses, but at a similar rate to pre-crisis levels, with careful prioritization limited by available investment.
- Organizations and their customers are connected, but they do not become virtual – human contact is still the norm.
- Experiences during lockdown leave a legacy of public preference for localism and stronger awareness of the environmental and personal benefits of less travel, local consumption, less waste and self-sufficiency.
- Lack of investment capacity and economic hardship contribute to a focus on developing the local economy, specializing as required to be competitive for trade and gain access to vital or innovative imports.
- Data-privacy concerns remain strong, with employment as a key priority versus radical technology development.

As an example, some of the principles in Scenario #3 can be found today in Sweden, with its ReGen Villages. As another example, incentivization of local sourcing and reducing reliance on the global economy is already planned by the Bank of Japan.

Scenario #4 – Regional fortresses

In Scenario #4, a protracted recovery period or prolonged failure to find a full solution to the virus drives not only acceleration of digitalization, but also the formation of regional clusters driven by greater state intervention and protectionism as governments look to increase resilience to global shocks:

- Stronger protectionism and state intervention, with the state as the actor of last resort, securing strategic sectors and supporting industries, companies and the economy in fighting threats.
- As in Scenario #2, acceleration of digital and smart technology is a key lever to secure local or regional economic growth, self-sufficiency and local sourcing. Thanks to robotics, regions are able to reshore most of their activity and use digital channels and robots to make cities more efficient and productive.
- “Smartization” of public services is accelerated, including health and infrastructure, as well as robotization of services such as restaurants and stores.
- Privacy norms are sacrificed to the common interest, with private data made fully available to enable digital development.
- Investment, led by cities and regional clusters, focuses on new breakthrough technologies and business models, driven by the necessity for radical change and redeployment.
- Local technology-driven companies are the new champions of a self-sufficient, multi-local world, with the power of global corporations restricted through local regulations.
- Climate-change priorities are pursued through government support to national/regional technology investment and behavior-change efforts.

Although Singapore is not yet as sophisticated as we describe in this scenario, the early response of the city-state to COVID-19, mainly built on strong digital foundations, illustrates some of its features. Singapore has been recognized as very efficient in addressing the surveillance, prevention, diagnosis and treatment stages of the pandemic, as detailed by the United Nations Development Programme (UNDP). The government used contact-tracing technology, with geographic and demographic data shared with the population to encourage people to seek healthcare in case of virus exposure. A range of apps and platforms were used to provide detailed information and stay in touch with the population, while buildings were equipped with diagnostic technologies.

What does this mean for strategy?

As the saying goes, “It is difficult to make predictions, especially about the future”. The range of potential scenarios shows that companies need to embed uncertainty into their strategic decision-making approaches. In working with hundreds of large companies over the last 20 years, we have found that there is a proven methodology for achieving this, which remains effective today.



Figure 2: Strategy in an uncertain environment

As shown in Figure 2, the essence of this is to formulate four types of strategic moves, while realizing that in any scenario-planning exercise, the actual outcome is more likely to be a combination of elements rather than conforming to a single stereotype:

1. Strategic levers – How to shape scenarios and their outcomes in our favor?

First, companies need to leverage the power they possess to influence and shape scenarios in ways that are favorable to them. For example:

- Companies active in the production of medical supplies (such as hydroalcoholic gel) have already engaged with public authorities on the conditions necessary to develop and maintain local/regional production.
- Digital actors are already promoting their solutions (such as e-health platforms, e-education, and individual track & trace) to public authorities and local ecosystems as ways to improve regions' and cities' resilience against pandemics. They are also negotiating the frameworks for changes to digital privacy regulation, thereby shaping the future towards a "Regional fortresses" scenario.
- Telecom network operators are positioning themselves as a "critical" sector (enablers of e-education, work-from-home, robotization, etc.) to secure state subsidies or favorable regulations to accelerate the deployment of fiber-to-the-home and 5G, thereby promoting the "Digitalized world" and "Regional fortresses" scenarios.

2. No-regret moves – How to leverage the certainties?

However, while many uncertainties exist, some things will be fairly certain in all scenarios. For example, today it is almost guaranteed that there will be an increase in workplace virtualization, along with a significant global economic downturn. Any strategy will need to address these issues.

The need for organizations to balance agility and productivity will be critically important to respond rapidly to ongoing changes in a difficult economic climate.

In some cases, distressed competitors or suppliers represent a unique opportunity to acquire strategic competencies (patents, technologies, expertise) that will be key whatever scenario unfolds. Embedding uncertainty management into decision-making processes and governance is compulsory to navigate through the crisis, as well as more fundamentally to thrive in an increasingly volatile world.

3. Strategic options – How to act boldly when opportunities arise?

The aim here is to be ready to make bold moves as trigger points of favorable scenarios are reached. This involves identifying strategic moves with limited upfront investment but massive potential for rapid upscaling. By projecting the company into the most likely scenarios, clear strategic directions can be defined and the company's future business and operating models shaped. This starts with monitoring promising business models and technologies that are emerging during the crisis, with a view to, for example, taking minority stakes or initially entering partnerships. For example:

- Retail and B2B companies might develop proofs of concept for online personalized AR-/VR-enabled sales and distribution to meet new physical-distancing needs.
- Services companies (e.g., lawyers, notaries, consultants, insurance agents, health professionals) might invest in technical platforms and pilot teams to switch to online provision of (most of) their services, as soon as the first trigger points of the "Digitalized world" or "Regional fortresses" scenarios occur.

- If either the “Local and sustainable” or “Regional fortresses” scenarios begin to unfold, food retailers could prepare their own local-sourcing ecosystems and smart-city suppliers could prepare to double down on their growth investments.

4. Strategic insurance – How to protect against unfavorable scenarios unfolding?

Finally, one of the aspects often poorly addressed in strategic planning is strategic “insurance”. Against an uncertain and unwanted outcome, you insure yourself. Targeted actions can be taken to mitigate the negative impact of unwanted scenarios. For example:

- Companies with globalized production chains could launch robotization pilots to mitigate labor-cost increases due to forced re-localization to higher labor-cost markets.
- Companies could develop plans and establish preliminary contacts/proofs of concept for multi-supplier and multi-geographical set-up of their sourcing strategies to pre-empt any losses of competitiveness in case of the “Local and sustainable” or “Regional fortresses” scenarios.
- Businesses could also secure potential access to contracts and/or markets for which public authorities might impose pre-qualification requirements (e.g., localization and security of data storage, minimal production/delivery capacity within the region, back-up facilities, formal safety and risk management certifications). Again, the aim is to invest a little upfront to ensure that the company is able to protect itself, rather than deploying costly full-scale back-up plans.

The above approach allows companies to embrace the complexity related to uncertainties, providing clear decision frameworks and linking decision points to events that will trigger the (progressive) unfolding of one or more scenarios. In periods of high uncertainty such as the current crisis, the best-prepared first movers can build substantial competitive advantage, either through minimizing exposure to losses or by capturing the lion's share of new opportunities.

Insight for the executive

The crisis we are facing is certainly deeper than most of us have seen in our lifetimes. However, despite the hardship and tragedy, there will ultimately be new opportunities, as well as challenges. To prepare for these, leaders need to maintain a broad perspective:

- Look beyond the short-term crisis and start preparing for the new world as structural and behavioral changes begin to significantly reshape the business environment.
- Do not only focus on the most obvious trends, but also assess the major areas of uncertainty and their implications.
- Use the full breadth of strategic plays. Most executives tend to focus on developing strategic options, but they overlook the three other strategic plays: shaping the scenarios, making swift no-regret moves and, especially, developing strategic insurance to mitigate unwanted scenarios.
- Do not try to over-simplify complexity related to uncertainties, but instead embrace it and embed uncertainty management into decision-making:

- Develop capabilities for scenario development and monitoring of trigger events.
- Adjust strategic and operational planning and related governance mechanisms.
- Shape the culture of the organization to help employees deal with uncertainty.
- Strengthen the “ambidextrous” capability of the organization to encourage creativity and responsiveness to change, as well as efficiency and productivity.
- Adapt partner and ecosystem management in terms of both communication around uncertainties and redeployment of capabilities.
- Leverage the potential of digital technologies to improve intelligence and increase agility and responsiveness.

The future is full of complexity and uncertainty. Companies need to embrace this and – underpinned by a clear vision and set of values – be prepared to make radical changes to their products, services and processes as they go forward.

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Arthur D Little PRISM



Risk: Strengthening business resilience after COVID-19

Building a “sense and respond” approach using new predictive analytics tools

Tom Texeira, Stefano Milanese, Marcus Beard, Emanuele Salvador, Rick Eagar

When COVID-19 suddenly escalated from a regional crisis in China to a pandemic, in companies around the world executives rapidly started double-clicking on their crisis management and emergency-response plans. For some, especially those with significant Asian operations, there



was already a plan to respond, while for others, the term “pandemic” returned a blank. So began an intensive period of almost continuous back-to-back virtual meetings as leadership teams attempted to regain control of their business operations. Their immediate priorities were securing employee and customer safety and health, followed by maintaining operational continuity, managing cash, helping suppliers,

coordinating with governments, engaging with communities, looking towards the recovery phase and, through all of this, continuous intensive communications.

Most companies, as well as governments, quickly realized that they were not well prepared¹. The breathtaking speed with which the crisis unfolded meant companies had to improvise, because the processes set out in their crisis-response plans were simply too rigid and slow.

Despite that they had invested in comprehensive crisis management planning, the spread of COVID-19 found many companies ill-prepared, even though it was a known risk with extreme consequences and a reasonable likelihood of occurring. Looking at the evidence, the authors consider the underlying causes of this poor preparedness and set out the key elements of a new business resilience approach suitable for the post-COVID-19 world.

1. Refer to Prism Special Report “Leading businesses through the COVID-19 crisis”

Many found that their plans had not considered the challenges of having to make rapid decisions with incomplete information, and many had underestimated the efforts needed to coordinate across complex external partner ecosystems. Initially, there were huge shortages of basic provisions such as appropriate protective equipment.

Yet, a virus pandemic such as COVID-19 was not at all unexpected. The world had already had a stark warning during the SARS outbreak in the early 2000s, and the risk of similar events was discussed in numerous conferences and panels, including two pandemic tabletop exercises by the John Hopkins Center for Health Security in 2018 and 2019. Bill Gates famously warned about the potential consequences of a virus pandemic in a TED Talk in 2015.

So, if we had a known risk with extreme consequences and a reasonable likelihood of occurring in the medium term, why did governments and companies do so little to invest in the necessary control and response measures? What does this tell us about how companies should go about improving their business resilience? In this article we consider some of the underlying causes of the poor preparedness, and set out the key elements of a new business-resilience approach suitable for the post-COVID-19 world.

Why were we not better prepared?

Major crises with global impact occur regularly. For example, in the last 20 years we have seen, among many others, 9/11, Deepwater Horizon, Fukushima and the 2008/9 financial crash. After every major crisis event there has been an in-depth investigation and analysis. In nearly all cases the conclusion was that there had been weaknesses or errors in how emerging issues had been recognized and dealt with. New controls and/or regulations were then put in place to prevent similar events from happening again – think of changes to air travel after 9/11, changes to banking regulations after the financial crash, and nuclear power policies after Fukushima. Of course, we can expect similar,

and probably even greater, changes in the wake of COVID-19. This means next time we have a global crisis that looks like COVID-19, we will be a lot better prepared.

The problem is, of course, that the next global crisis probably won't look exactly like COVID-19. It could be a different sort of pandemic or an entirely different sort of crisis altogether, such as a cyber-security or environmental crisis, both of which are already well recognized on corporate risk registers.

So why are companies in general still reluctant to invest in controls for catastrophic events that are already recognized but may or may not happen in the medium term? We can identify some common underlying reasons:

- **The need to feel it to believe it:** It is sometimes said that people do not learn from history. It is perhaps more accurate to say people learn from their own history, but not so well from someone else's. The countries that were prepared for COVID-19 were the ones that had been through SARS. After a catastrophe, it's usually not so difficult, with the benefit of hindsight, to find at least one or two prior pieces of evidence or warnings that could have been better heeded. However, in the period before the catastrophe these warnings are often lost in the noise with all the other warnings about potential catastrophes that may or may not happen. So, it is perhaps no wonder leaders do not always take action. Hindsight can be a deceptive tool.
- **The "boiling frog" problem:** This metaphor (a fable that suggests a frog may fail to jump out of a pan of water as it slowly heats up) refers to the poor ability of humans to take action in the case of threats that build gradually rather than appear suddenly. It is often used in connection with the threat of climate change, but could equally apply to the early phases of COVID-19. The problem here is that most organizations have not done enough to develop clear thresholds for risk tolerance (part of a wider concept sometimes referred to as "risk appetite"). In other words,

there are no clear criteria to trigger action in the case of a gradually deteriorating situation that causes a risk to reach a predetermined threshold. Without these clear risk tolerance thresholds, organizations tend, like the frog, to do nothing until it's too late.

- **The pressures of the short term:** Governments and business leaders alike tend to be judged over timescales of a few years at most. The average tenure of a CEO has been falling steadily over the last 20 years to no more than five or six years, and governments stand or fall based on their performances between elections. Catastrophic risks tend to be infrequent (high impact, low likelihood), and it is therefore often attractive to park or postpone preparations for them, especially given more pressing short-term priorities and the demands of shareholders or the electorate.
- **The difficulties of investment prioritization:** In theory, prioritizing investments in risk management is straightforward: for each risk, calculate the expected loss over an agreed period by multiplying its impact by its likelihood of occurring. The value of the “averted loss” through investing in risk-control measures is then compared to the costs of those measures. In practice, however, this is often not enough to prompt boards to invest large sums of money to control major catastrophic risks. Firstly, the calculation usually involves a series of modeled assumptions which are often easy to challenge. Secondly, the sums of money involved in major risk control are often significant, so the intervention may get deprioritized when compared to other risks which may be lower impact but more likely to occur.
- **The “can-do” mentality trap:** Management cultures typically value leadership traits such as positivity, dynamism, ambition and entrepreneurship. Indeed, all these qualities are important for good leaders. However, in many organizations the corollary of this is that traits such as caution, attention to detail, and concern for what could go wrong are not valued, or even sometimes discouraged, in top leaders. Although consideration of what could go

wrong and how to respond should be an integral part of any strategy, in practice these are often perceived as negative or pessimistic topics. Consequently, they are often passed down to risk management functions and treated more as unavoidable red tape and overhead than as value-adding activities for the business.

Moving towards a more resilient business

These causes of poor resilience to major crises are fundamental and rooted in basic human behavior. Although some may berate leaders for their short-sightedness and lack of vision, shouting more loudly and introducing more controls and procedures is unlikely to be the solution.

To make matters worse, the vulnerability of the world to global crises has increased significantly due to increased global connectivity. For example, Nassim Nicholas Taleb, the originator of the Black Swan concept, is quoted in a recent interview with the *New Yorker*² as saying, "The great danger has always been too much connectivity." The interview goes on to highlight that "proliferating global networks, both physical and virtual, inevitably incorporate more fat-tail risks into a more interdependent and 'fragile' system..." The COVID-19 crisis is an all-too-real illustration of the problem. So, in the post-COVID-19 world it is also reasonable to assume that there will be:

- Greater *likelihood* of local risks escalating globally.
- Higher *velocity* of escalation of those risks.
- More *interconnections* between risks – for example, COVID-19 has already led to an increase in cyber-attacks due to the numbers of people working at home.

2. Refer to the New Yorker "The Pandemic Isn't a Black Swan but a Portent of a More Fragile Global System" April 2020

If we accept that we can't predict the future just by reviewing the past, and if the fragility of our global systems has increased, the key thing we need from our business resilience system is to sense what is happening in real time, constantly update our predictions, and allow us to take early action before a major risk escalates.

This requires a much more dynamic and adaptive approach than has been traditionally used in conventional static enterprise risk management (ERM) systems. A major shift in philosophy is needed, as shown in Figure 1:

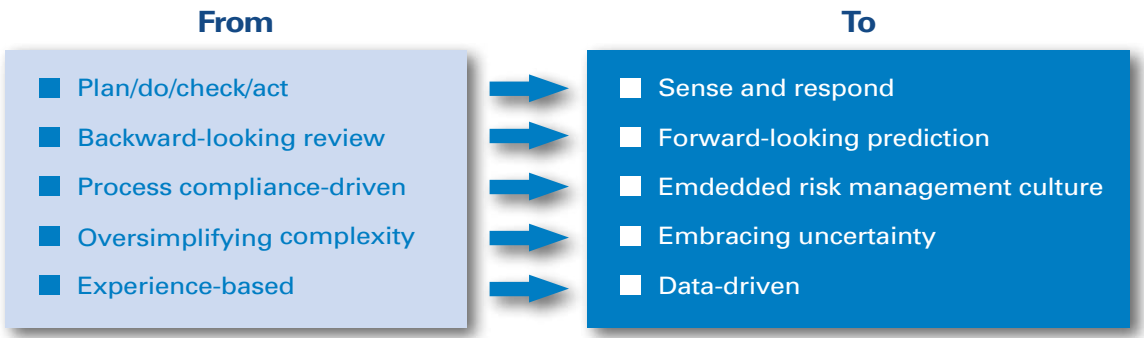


Figure 1: Good practice to “next” practice

To achieve this shift towards a “sense and respond” philosophy, organizations need to evolve beyond conventional risk-register-based ERMs. Three aspects are key to making this evolution (see Figure 2):

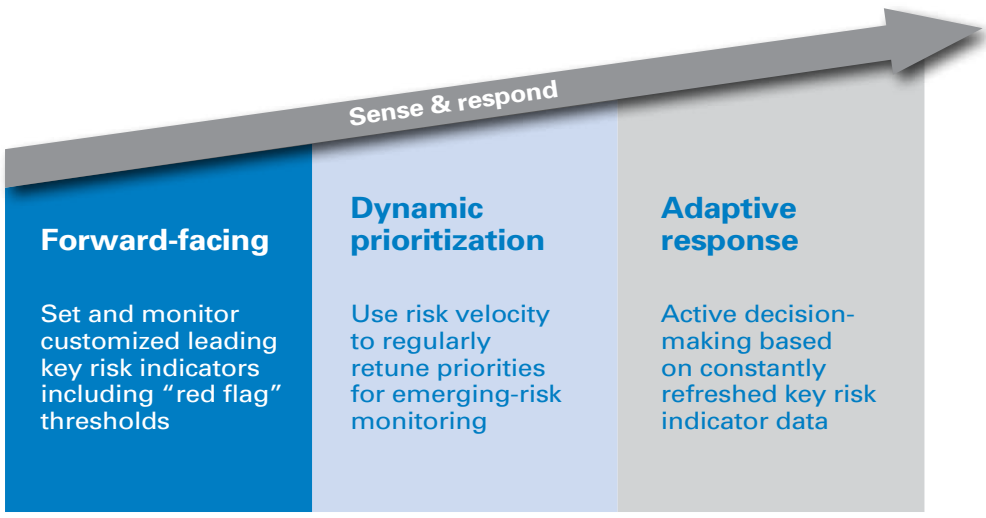


Figure 2: Forward-looking practices

Forward-facing practices: In a sense-and-respond business resilience system the emphasis is changed from rear-facing monitoring and review (such as incidents and losses) towards forward-facing prediction. Using a mix of lagging and leading risk indicators is nothing new, but usually the chosen leading risk indicators (for example, proportion of audits passed successfully or risk training provided) say very little about emerging risks or increasing threats.

The key capability needed for an effective forward-facing approach is the ability to develop realistic and robust **cause-effect models**. This can be challenging in practice for a complex global operation, especially in view of the high degree of connectedness organizations have within their partner ecosystems, but it is possible and worth spending time on. Once the cause-effect models have been developed, it becomes possible to establish customized and aggregated leading **key risk indicators (KRIs)**. KRIs need to be calibrated to provide a “red flag” prior to a risk event occurring, with this calibration directly related to the organization’s risk tolerance levels.

An example could be a composite KRI relating to supplier defaults in one part of a complex global supply chain, which could provide early warnings of major disruptions further down the line. An effective forward-facing approach also requires an effective **horizon-scanning or foresighting** capability to identify emerging risks. Often these capabilities are present in companies, but focused on innovation or new product development, and therefore disconnected from corporate risk or business resilience functions. Fortunately, new data-analytics approaches and artificial intelligence (AI) and machine learning (ML) technologies are now becoming available to enable much easier cause-effect analysis, horizon scanning, detection of weak signals, and real-time KRI monitoring.

Dynamic prioritization: Being able to regularly “retune” risk-control priorities to take account of emerging risks is the essence of being dynamic. For this, understanding **risk velocity** – how quickly an organization will feel the impact of a

risk event occurring – is key. Modern data-analytics tools now enable potentially high-velocity emerging risks to be identified more easily and monitored in real time through KRIs.

Adaptive response: Finally, the business resilience system needs to be adaptive in how it supports decision-making. In practice, this means moving away from formulaic management responses based on static risk registers, towards an active decision-making regime based on constantly refreshed KRI data. A key enabler for this is for decision-makers to have **up-to-date, tailored dashboards** suitable for both operational and leadership levels at their fingertips. Crisis-response and business-recovery plans also need to be adapted regularly, whenever there is a change in the operating model. One of the most commonly reported weaknesses in crisis response – also encountered during corporate responses to the initial COVID-19 outbreak – is that the plans have not been kept updated as the operating model has changed over time.

In terms of organization, one of the most important features is to put in place a **single, integrated framework** that includes risk management, insurance management and crisis recovery. This ensures that there is only one source of truth for data analysis, response plans are updated as risk profiles evolve, and there is a proper balance between risk retention, risk mitigation and risk transfer strategies. Senior executives need to understand that this approach will drive improvement in business performance in the long run.

Operating a dynamic business resilience system of this sort in a large, complex organization is only practical if supported by suitable digital tools. These are needed particularly for:

- **Ingesting and constantly analyzing large quantities of data**, including hard data from governments, intelligence agencies, etc., as well as soft data from other sources such as Google searches, to provide early indications of emerging trends, risks and weak signals. Indeed, when

dealing with catastrophic risks, gathering data from governments and the wider partner ecosystem to which the organization belongs is essential to ensure that risk models are realistic.

- **Aggregating external and internal data and providing customized, context-specific analysis** and interpretation to support decision-making, including user-driven dashboard graphics that can be tailored for different user personas.
- **What-if simulation modeling** to assess scenarios and stress-test responses.
- **Continuously learning and adapting** to improve responses and resilience. AI and ML technologies are especially valuable in this respect, as they enable continuous increases in resilience as the system “learns” and adapts from each iteration.

New predictive data and analytics methodologies also create significant opportunities to drive change in the **insurance market**:

- **Better insight for brokers and underwriters** to ensure they can provide more effective services to their policy holders and reduce the overall number of claims.
- **More relevant and fit-for-purpose specialty insurance products** through reflecting realistic scenarios and associated risk triggers in policy wording.

This also means by implementing data-driven sense-and-respond approaches, companies can reduce insurance costs. Case studies have demonstrated companies have saved up to **15–18 percent** on insurance premiums by demonstrating more dynamic approaches to risk management and thereby ensuring that the premiums are more reflective of the actual risks they face.

In the following box we have included two examples of specific use cases of digital tools in risk and resilience management in a large corporate enterprise.

Use case 1 – Proof of concept (POC) for rail service disruption risk management

One of the world's leading railways implemented a novel approach to improving risk management of service disruptions caused by tree falls. Tree falls, often resulting from adverse weather conditions, are a significant cause of disruption and delay. With support from Arthur D. Little, an ML-based analytical tool was developed to help operations predict where tree falls were most likely to occur. A digital model was created of the railway line and surrounding topography and surface data, including number and proximity of trees, as well as historical data on service interruptions. Machine learning was used to understand past weather patterns and their impact on tree falls and service disruption. By continuously ingesting real-time data on weather conditions, including day forecasts, the tool presented a detailed visual map to indicate dynamic risks where disruption was most likely. This has provided the ability for the company to minimize service disruptions and reduce maintenance costs. The system was delivered in eight weeks and provided a web-based dashboard for the client to use. Further application of the approach more broadly across other risk management domains is under consideration.

Use case 2 – Improving the resilience of clinical-trial planning for a pharma company during COVID-19

A mid-sized pharma company needed to rapidly develop an integrated, global approach for managing the continuity of active and planned clinical trials in light of disruption caused by COVID-19. Using Arthur D. Little's healthcare and digital experts, a new ML-powered approach was developed to collect and integrate data (internal and external), aggregate and correlate it into focused dashboards, and set up a framework to make or recommend relevant clinical operations

decisions, including which locations to prioritize or avoid. The model is constantly updated and refreshed as the work continues, including data on changing government policies and regulations. Further work is continuing to apply the approach more broadly to improve the resilience of future clinical-trial planning.

Insight for the executive

Even when the global economy eventually manages to recover, it will be vulnerable to further shocks. Organizations will need to adopt better strategies and tactics to become what Taleb called “anti-fragile”. Undoubtedly, these will include measures such as reducing supply-chain vulnerability, ensuring adequate backup systems and reducing the dependence of operational continuity on people physically working together. Moving towards an integrated sense-and-respond business resilience system should be a key part of the response. Making this happen requires more than just deploying new digital tools. Organizations should take a true “transformational” approach, for which there are some key priorities:

- 1. Readiness for change:** Reinforce the need to embrace, and commit to, new ways of working around risk. This means, for example, recognizing that the past is not a good playbook for the future, adopting agile work methods, and being willing to experiment and learn.
- 2. Data strategy:** Regard data as the “new currency” and invest in strong data governance to secure a robust single source of truth, both external and internal.
- 3. Capabilities:** Get access to the required capabilities you need to build a dynamic business resilience system, including the best capabilities you can find in data analytics and AI/ML. These may not be in-house.

- 4. Start with a proof of concept:** Start with a “stand back” executive-level workshop to take a fresh look at key risk areas and risk drivers, without being constrained by the current corporate risk register. Consider the whole ecosystem, including suppliers, partners, government, regulators, employees and customers. Following this, select a specific, but strategically important, use case on which to conduct an initial proof of concept before moving towards broader implementation.

Unfortunately, our world is one where catastrophes do happen periodically, and we cannot expect that their frequency or severity is necessarily going to diminish in the foreseeable future – on the contrary. We end with another quote from Nassim Taleb: “Prediction, not narration, is the real test of our understanding of the world.”

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Financial services: Banking on change – Transformation or failure?

The impact on an industry in transition

Philippe De Backer, Juan Gonzalez, Rocio Castedo

Before the advent of COVID-19, the banking industry was already under pressure from three trends – technology, regulation, and the macroeconomic environment:

- **Technology:** Accelerating technology adoption and availability has been enabling new market entrants with disruptive business models to reshape the competitive map, and has resulted in massive shifts in profit opportunities, forcing legacy banks to embark on a costly metamorphosis.



- **Regulation:** Regulators have put additional strain on the sector with open-banking initiatives (PSD2), consumer protection initiatives, and strengthened regulatory capital requirements (Basel IV).

- **Macroeconomic environment:** The ultra-low interest-rate environment leaves no margin for earning the income necessary for transformation while banking fees are challenged by all political and regulatory entities.

COVID-19 amplifies the impact of all three levers. Every segment of the population has become technology savvy, as they had to learn to use digital channels to remain connected to the outside world in new ways. Banks themselves have had to explore new technology-based operating models to allow their workforces to provide services to their customer bases. Governments are imposing relaxed credit-lending practices and loan repayment moratoria, which is increasing the need for tier 1 capital without additional revenues. And, as the economy contracts, defaults on loans across all business lines (individuals, SMEs and corporate) will dramatically increase, and lead to an unsustainable rise in non-performing loans (NPLs).

Prior to COVID-19, banking was already under pressure from technology-enabled disruption, greater regulation and an ultra-low-interest-rate environment. The pandemic accelerates these trends, increasing the need for transformative change. How can banks achieve this? This article outlines the three imperatives for banks moving forward – and the consequences if they fail to transform sufficiently rapidly.

Even if banks are not the root cause of this crisis, they could be among the worst hit by it, forced to carry the losses from all industries in the medium term. Banks therefore need to be part of the solution to restart the economy once markets are fully reopened. To achieve this, banks need to shore up their capital structure to withstand the impending NPL onslaught while transforming to become more virtual and flexible. They need to reshape their revenue and cost models to survive eroding margins and implement long-overdue technology transformation. Speed is paramount because time is running out.

The imperative of a strengthened balance sheet

Banks entered the COVID-19 crisis with robust balance sheets. Stress-test scenarios carried out in 2018 expected fully loaded capital ratios to remain well above 8 percent in 2020. (See Figure 1.) However, these estimates did not consider the severe impact of the COVID-19 standstill. The expectation of large losses during Q1 2020 could lead to a significant reduction in banks’ capital ratios, well below even the worst-case scenarios considered.

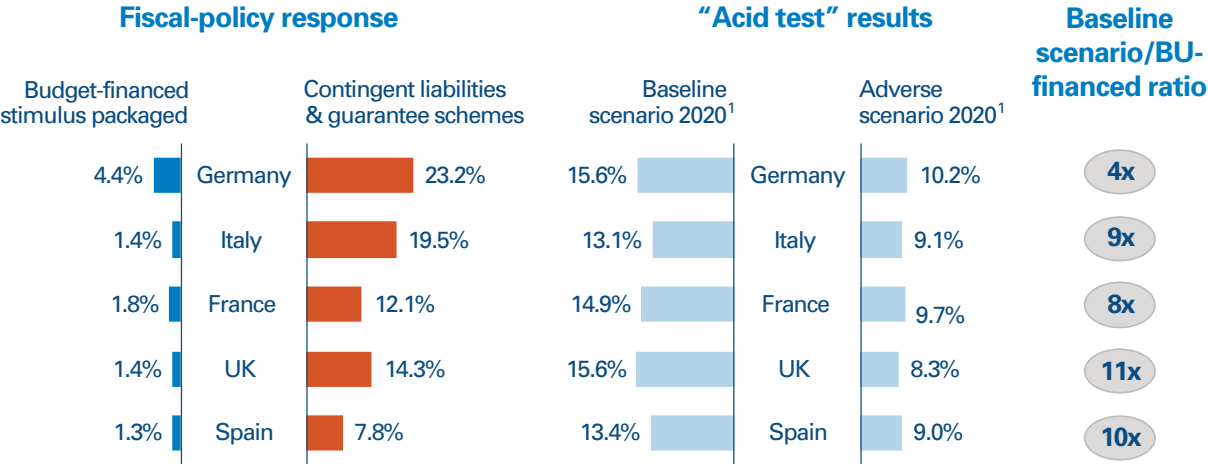


Figure 1: Comparison of fiscal-policy response size (as percentages of GDP) versus estimated "acid test" results (as percentages of fully loaded CET I capital)

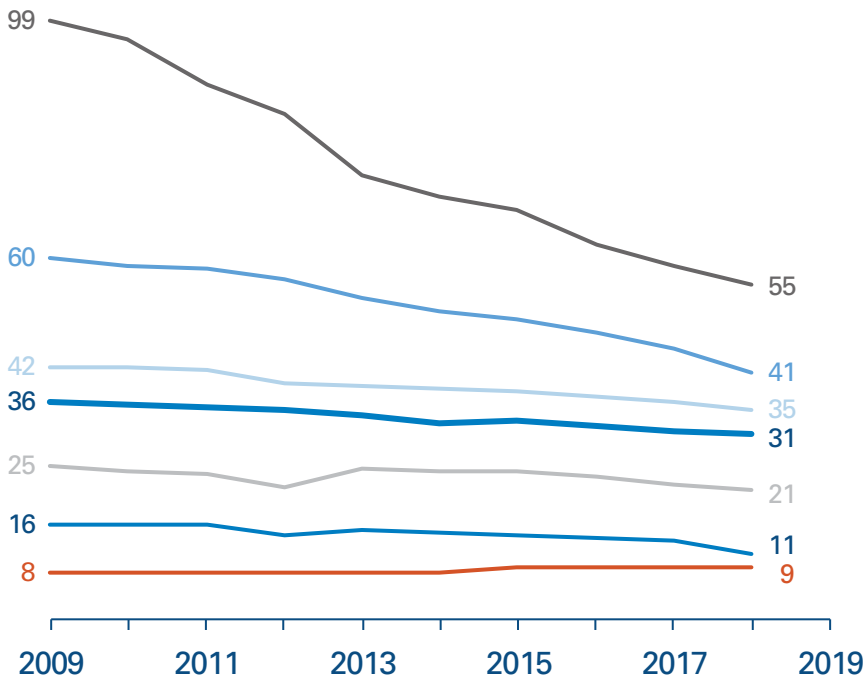
Although some form of regulatory relief might be possible, the 2008 financial crisis taught regulators (and politicians) a hard lesson. We should therefore expect that banks will be required to strengthen their capital bases to better resist the impact of the crisis. Raising additional capital without excessive shareholder dilution will be a challenge. Many banks, particularly in the west, trade below net tangible book value, and even if they are delivering ROE in excess of 9–10 percent, capital markets are slamming their valuations given their perceived inability to transform quickly. In order to rebase their valuations, banks need to come up with fast and credible transformation roadmaps towards virtual and flexible banking.

COVID-19 accelerates the transformation towards virtual and flexible banking

For several years, digital banking was seen as a solution to the distribution paradigm of delivering client convenience and ease of transactions. Digitalization provided banks with a way of migrating customers to lower-cost channels with the hope of decreasing their costs to acquire and serve them.

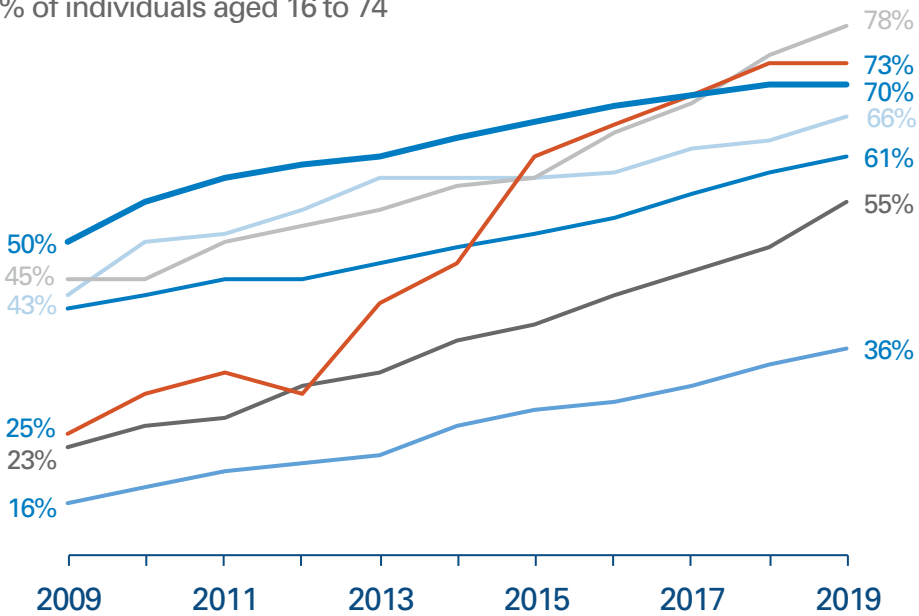
Branch network decrease (2009–2018)

Commercial bank branches per 100,000 adults



Internet banking penetration increase (2009–2019)

% of individuals aged 16 to 74



— Germany — Italy — France — UK — Spain — China — USA

Figure 2: Bank branches restructuring versus internet banking development

However, banks behaved as though this industry shift would take decades, seeing digital platforms as complementary to their existing branch networks. (See Figure 2) As part of their digital strategies, some banks also converted part of their standard branch networks to new co-working spaces, such as the Santander “Work-Cafés” and Virgin “Money Lounges”, in order to offer broader banking experiences.

The lockdown changed all that. Customer segments that historically would not have considered remote channels their primary form of interaction had no choice but to shift online. Retail banks therefore now have to rush into full digital engagement, as well as review their bank portfolios and service delivery to be more personalized and relevant at all stages of their customers’ life cycles.

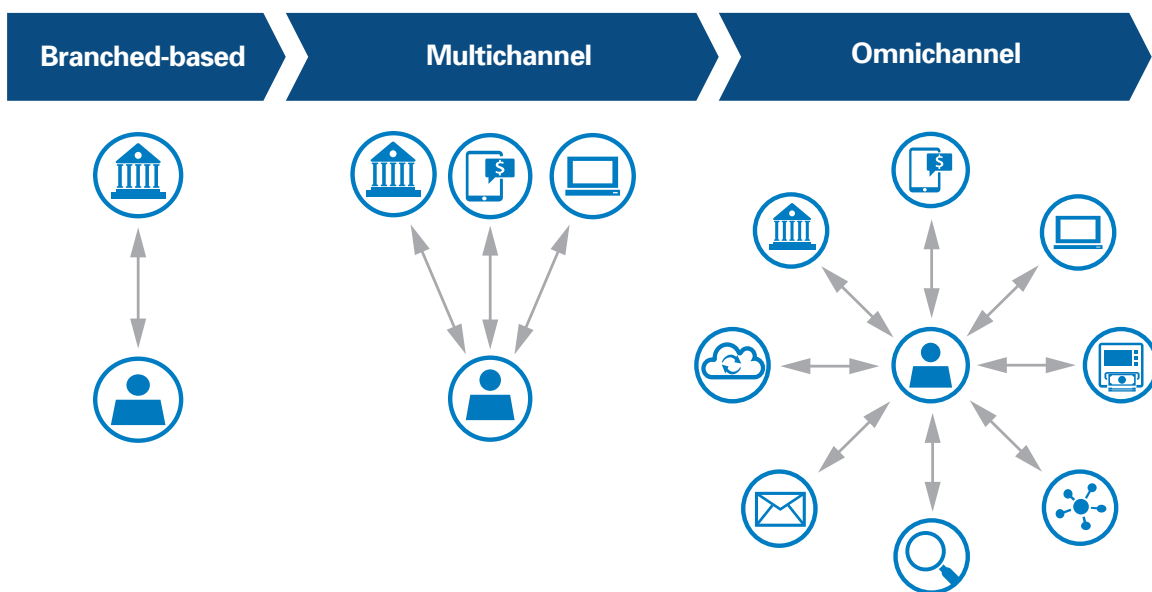


Figure 3: Bank-channels transformation

The implication for banks is daunting across all dimensions. There will be an accelerated switch in the omni-distribution channel mix, moving from a branch network supported by digital channels to digital channels supported by a limited branch network (Figure 3). If well implemented, this could pay handsome dividends through significant non-technology cost savings (as shown in Figure 4), accelerated customer onboarding and effective product cross-sell ratios. Unlike traditional rivals, best-in-class neo banks would achieve a cross-sell ratio of almost two products per customer, despite having more limited product ranges.

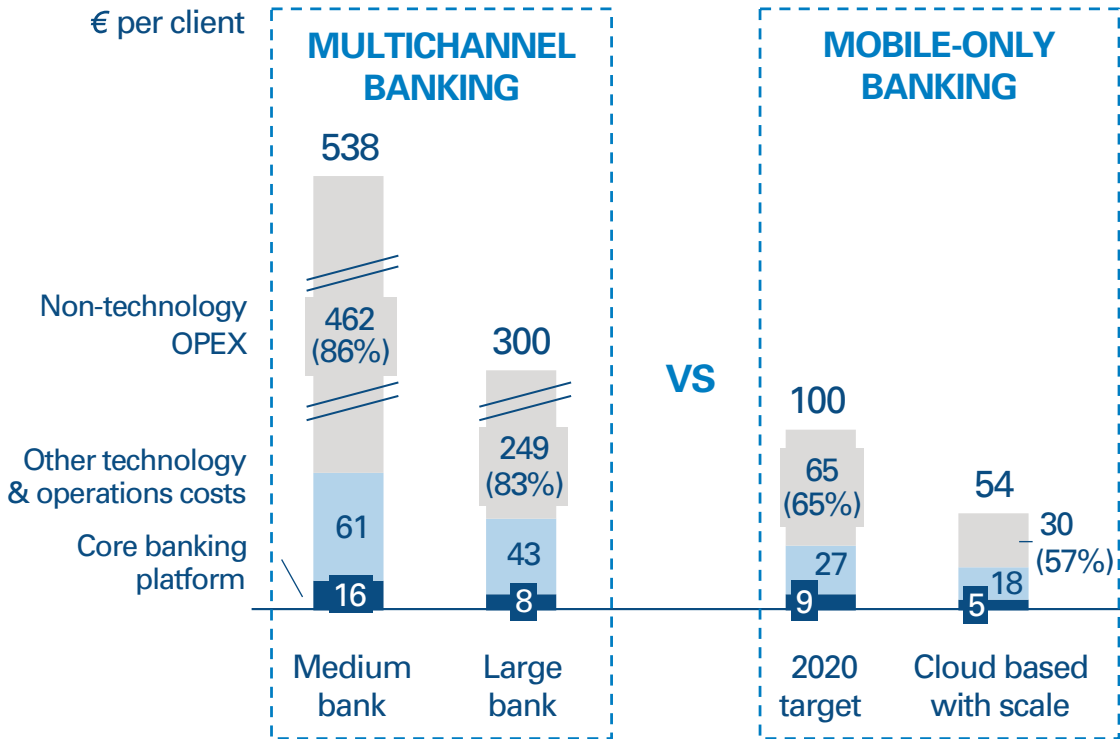


Figure 4: Average cash cost comparison (both OPEX and CAPEX)

It's all about data

When online channels predominate, every step along the customer journey has to be reinvented. Banks will need to improve the way they assess the identities of their customers, engage in a personal manner over digital channels and provide end-to-end digital products. The new customer journey pivots around smart use of data.

i. Identity is the new currency

In a virtual world, digital identity is all that matters. "Know your customer" (KYC) has become a true challenge for all banks as fraud has become more sophisticated and intricate as technology has evolved. Regulators have increased the number of obligations, forcing banks to invest more and more in their KYC systems and expand their infrastructure to store higher amounts of customer data. The solution is not more raw consumer data, but instead, more sophisticated analytics to spot true fraudsters and avoid false positives.

Institutions, particularly medium-size banks, will increasingly have to rely on third-party providers (fintechs) to seamlessly integrate client identity verification into their overall onboarding processes. It will require better data sources and use of AI to accelerate the current cumbersome process and offer speed and convenience to the customer.

ii. Intelligent personalized remote advisory and customer-care capabilities are mandatory

Data enables retail banks to tailor services for each customer at the appropriate time. Banks can therefore benefit from data analytics powered by AI to anticipate customer needs before the actual purchase decision. This applies equally to lending and investment decisions.

For example, the Commonwealth Bank of Australia has developed a best-in-class mortgage-sale process using a real-time digital platform solution. Its omnichannel integration enables a faster process throughout, using its mobile app at key milestones in the process while linking property-guide apps to the bank's mortgage-loan pre-approval solution.

Remote robotized advisory is rapidly becoming the norm for the affluent retail segments. A Morgan Stanley study shows that 30 percent of new investments in the US are through such services. These tools allow banks to meet customer-experience expectations, as well as address other lower-wealth segments that would otherwise be unprofitable.

iii. Traditional products do not work on digital channels

Banks need to shift from standard products pushed across all segments to personalized product/service offerings at the appropriate moments in the customer life cycle, focusing on the "moments of truth". They must start by reducing product complexity, i.e., making their offerings easier to understand and manage through digital channels. Over time, banks need to learn to adapt to more sophisticated product portfolios such as mortgages and investment products. Finally, they should learn to adapt to their clients by offering hyper-personalized products for each customer.

iv. New credit scoring and credit life-cycle management is required

New technologies also allow for improved business decisions based on superior insight. The abnormal situation we are living through now makes credit ratings obsolete, as normally robust businesses and households suddenly have little or no income. AI can evaluate risk more precisely through deeper sectoral analysis for SMEs, or individual financial scanning processes and enhanced pricing models. NPLs can also be better managed along all stages of a bad loan life cycle thanks to data analytics, which allow banks to anticipate short-term client default situations. New entrants such as OakNorth are taking advantage of this opportunity, providing data- and technology-driven solutions that enable smarter decision-making across the loan life cycle.

Opting for delaying tactics will not suffice. Adding a simple digital customer interface (balance and payment features) to appear digital – without addressing obsolete cost and revenue models, slow transformation of the branch network and undifferentiated value propositions – is a recipe for failure. In contrast, neobanks such as N26 and Tandem show fast customer growth, increasingly rich product portfolios and accelerated international expansion. (See Figures 5 and 6.)

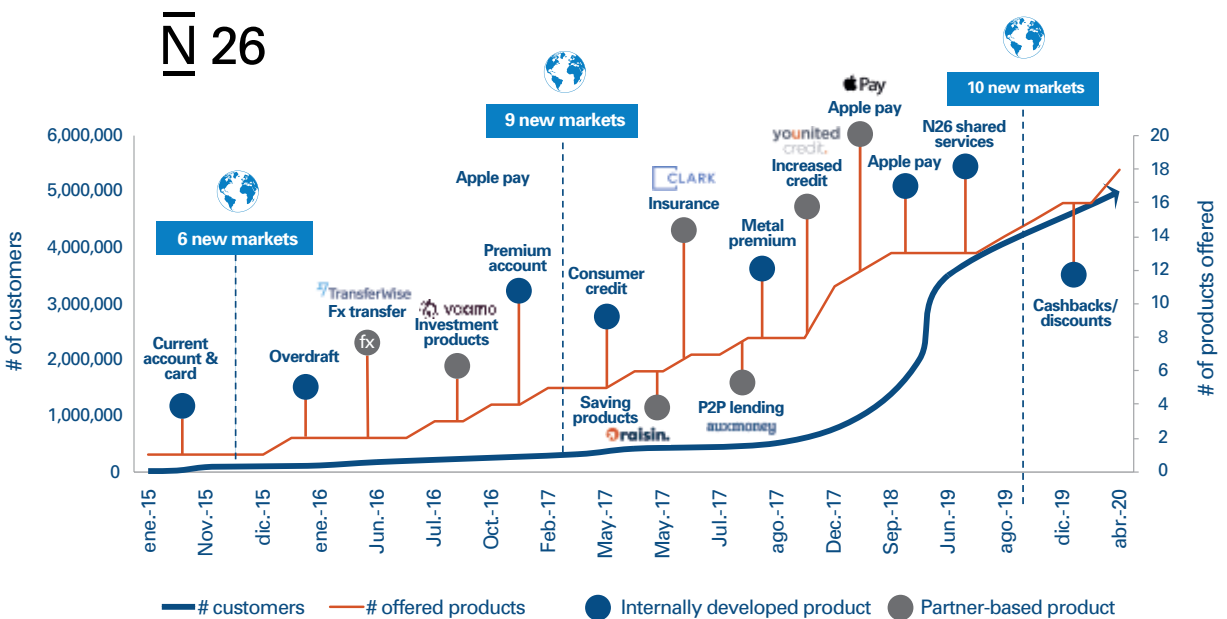


Figure 5: N26 evolution

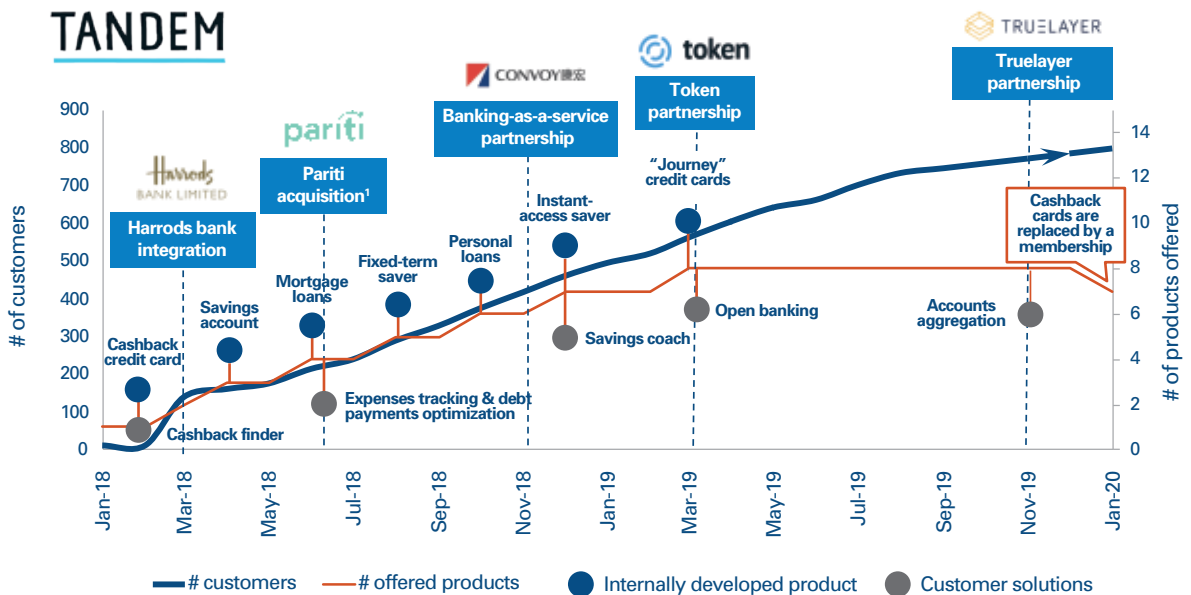


Figure 6: Tandem evolution

V. The technology imperative redoubled

Production models need to gain efficiency and flexibility. Transaction costs and the overall cost of serving a customer need to decrease substantially to restore margins. This can only be achieved through next-generation technologies and more skilled workforces.

Legacy technology solutions are running out of steam. On average, IT costs in banking have grown at approximately 4 percent CAGR since 2013, wiping out cost reduction efforts in people and real estate. To make matters worse, less than 20 percent of IT spend is devoted to changing the bank. This share tends to be even smaller in times of economic hardship. Banks must exchange run costs for change costs, reducing the *run the bank* costs in middle-/back-office operations to enable higher investments in technology- and data-driven capabilities. (See Figure 7.)

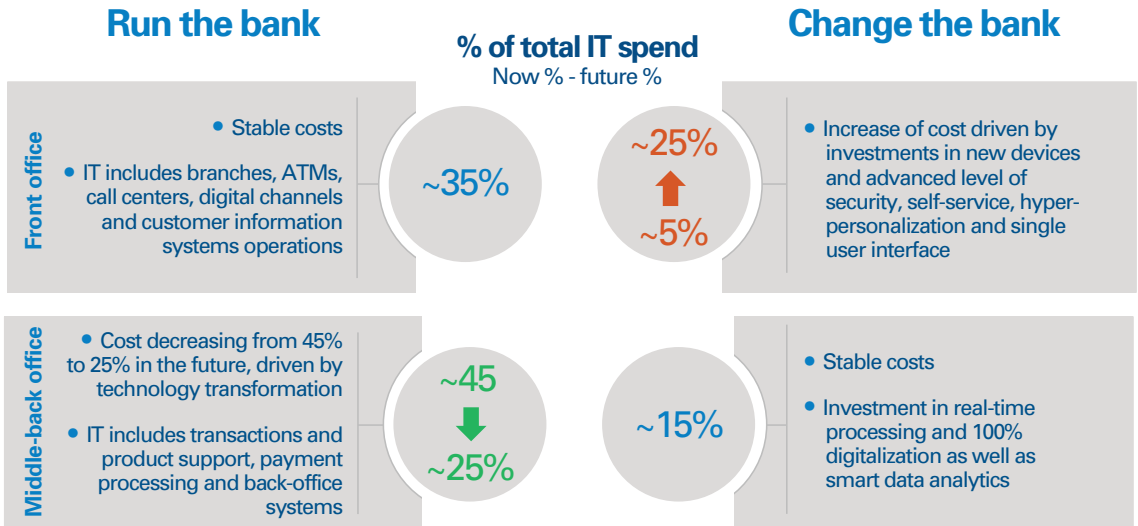


Figure 7: Shift investments from “run the bank” to “change the bank”

Next-generation banking architectures are mandatory to compete. A new technological stack will allow banks to lower costs (between 30 and 60 percent) in order to reduce time to deliver functionality changes (up to 10 times less), as well as increase flexibility. Reaching the full potential of new technologies implies revisiting the current back-office format and delivering greater industrialization through end-to-end automation. It also requires bank employees to upgrade their technology competencies to deal with the new tools.

Mutualization of commodity components should allow banks to further reduce costs. This could be the only way out for mid-size and small banks unable to achieve economies of scale. Mutualization also allows them to share the risks of technology innovation and legacy migration, as well as strengthen bargaining power (on costs and lock-in conditions) against technology providers through demand cooperation.

Insight for the executive

In summary, there are three imperatives for banks going forward:

1. Transform or be left behind

If business- and operating-model transformations were key for banks before the crisis, it is now imperative for financial institutions to accelerate the transformation of their business models, operating model costs, delivery capabilities and technology. They must dare to be bold in the choices they make. Marginal or incremental improvements will not be able to save them.

2. Mutualize non-differentiating capabilities

The banking industry has historically been very reluctant to find ways to create scale and economies of scope through mutualization of non-customer-related activities. As a result, value has been transferred to third-party outsourcers that fulfill this role, although banks have so far not fully capitalized on their offshoring. Perhaps the banking industry can learn from its previously successful sectorial initiatives, such as SWIFT in the payment arena, at a time when radical change is required.

3. Engage with the regulator

The financial strain on the banking industry requires a new dialogue with the regulator, with the aim of allowing greater flexibility and enabling banks to better adapt to the new reality. While many regulators have been favoring the rise of fintechs and non-banks, archaic regulations have hampered banks' ability to compete with new disruptive models. Given their importance to the economy and its recovery, engagement is vital.

Banks will have a critical role to play in the post-COVID-19 economic recovery, but only if they can transform themselves fast enough to meet the economic challenge of cost leadership, capital adequacy and customer engagement. Short of this metamorphosis, as opposed to previous superficial transformation initiatives, banks will not only fail to be the economic lever required for corporate growth and renewed consumer spending, but also simply fail.

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Telecoms: Leveraging adversity to leapfrog into the future

Rohit Sethi, Gregory Pankert, Karim Taga

Telecoms has been able to weather the storm resulting from COVID-19 more effectively than many other sectors, given its utility-like nature and the specific impact of lockdowns on peoples' lives and habits. Telecoms has given people the ability to stay connected to family and friends, work remotely, take classes, and be entertained at home.

Consequently, when compared to other related sectors, such as media and consumer electronics, we expect the telecom industry's medium-term (2020) financials to be only moderately impacted.



Now, with immediate crisis management activities already completed, telecom decision-makers have a unique opportunity to leverage the disruptive nature of the crisis and take steps to strengthen their competitiveness in the medium to long term.

Although some moves CXOs can make will clearly be dependent on the duration and intensity of lockdowns and the overall pandemic, a strategy focused only on "wait and watch" will not serve them well.

The crisis will potentially lead to the transformation, and even elimination, of both individual companies and wider industries, creating new playing fields and changing the rules for existing ones. Previous competitive advantages might not hold sway in the new world.

Therefore, this is the time to start preparing for the future, particularly as market conditions are conducive to acquisition, including assets available at distressed valuations and talented staff being let go by employers. For example, the satellite firm OneWeb, whose assets are being sold now that it has filed for bankruptcy, could provide synergies and diversification opportunities for telecom players at bargain prices.

The telecoms industry has been able to weather the COVID-19 storm better than many sectors, and has even increased its importance for communicating in a locked-down, socially distanced world. What will be the longer-term impacts for different parts of the sector? This article examines the current environment and explains how CXOs can prepare for the potential challenges and opportunities in a post-crisis world.

Telecom players are well positioned to capitalize on such newly created opportunities, as their core businesses are not as adversely impacted as those of some other industries.

Based on this, in this article we outline five key conclusions around the impact of COVID-19 on the telecoms sector, before sharing our insight and opportunities for sector executives. (See Figure 1.)

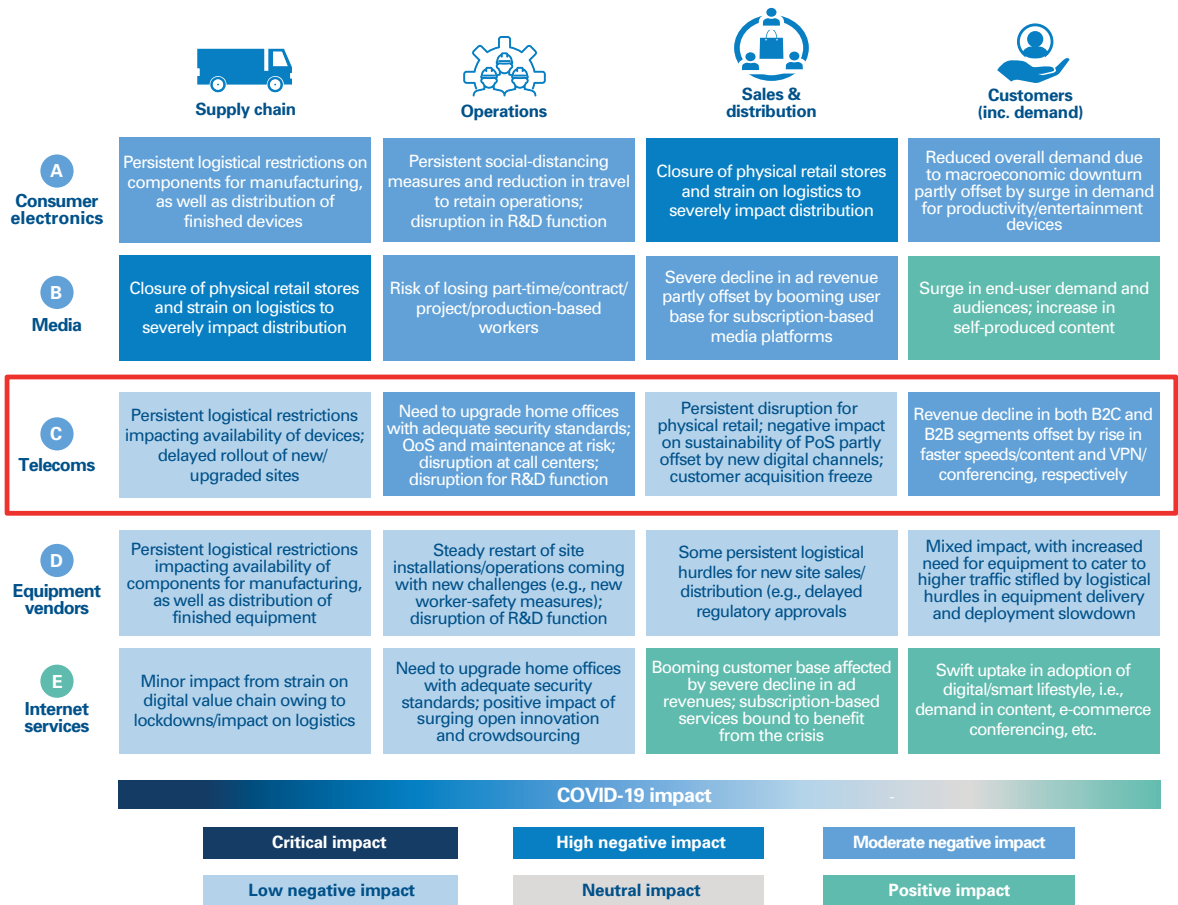


Figure 1: COVID-19’s medium-term impact on the telecoms, information technology, media and electronics (TIME) industry

1. Networks are broadly able to cope with demand

Network traffic grew at approximately 40–50 percent from the beginning of the outbreak, driven by a surge in demand for fixed subscriptions, higher bandwidth and content offerings, which tested the resilience of existing telecom networks. Vodafone UK, for example, experienced a 30 percent increase in mobile internet traffic and a 42 percent increase in mobile voice traffic¹.

Although most networks have been able to meet this increased demand, regulators have stepped in with stipulations to ensure network availability for essential basic communications, such as reducing streaming quality in some countries. Additionally, the crisis has exposed weaknesses in the ability of legacy technologies such as xDSL to deliver the required performance, as use cases moved from nice-to-haves (video, chat and gaming during the evening) to must-haves (work and education), which require much higher quality of experience (QoE).

2. Developments favor incumbents over challengers

Despite the increased demand for bandwidth, the forced closure of physical channels (kiosks, shops) has had a negative revenue impact on telecom players, although lower sales have been partially offset by less churn to competitors. For example, AT&T closed 40 percent of its retail stores in the US².

However, these developments are likely to be net positive overall for the industry, especially in saturated/developed markets, as they lead to lower customer acquisition and retention costs. Challengers that were growing at the expense of others will be the most negatively impacted.

1. Omdia

2. Omdia

Advertising and operations are also being impacted in the short term across the industry:

- Companies saw a reduction in roaming and advertising revenues, coupled with a shortage of SIMs, devices and network equipment.
- Mobility disruptions and social-distancing guidelines hit contact-center and network field operations.

3. Top-line revenues to see early-single-digit year-on-year declines

The medium-term impact of COVID-19 on the telecom industry will vary significantly by country, driven by the scale of the country's health and economic crises. However, the global telecoms industry is likely to demonstrate resilience and perform better than overall GDP trends. This reflects the weak correlation of its utility-like core services with macroeconomic conditions, as was shown in the 2008–09 global downturn. At the same time, social-distancing measures will act as a catalyst for broader and better connectivity, which will be potentially convertible into new revenues through upgraded offers.

However, despite the continuity of these core services and the availability of new opportunities to offset revenues, the net top-line impact of the crisis is unlikely to be positive for most telecom players until well after the global recovery, primarily due to the decline in the B2B segment.

The B2C segment (accounting for approximately 55–70 percent of each company's revenues) is expected to mostly remain stable. This will balance the impact of reduced prepaid and roaming revenues with the uptake of faster broadband and bigger mobile bundles, increased postpaid usage and reduced churn.

Some challenger players might be impacted more than established leaders due to their business models. For example, reduction in travel is expected to result in a projected USD 25 billion roaming revenue loss in 2020³.

Although this will only modestly impact the top lines of the majority of players (for which roaming typically accounts for 5–8 percent of revenues), other players such as Greece’s OTE, which relies heavily on tourists’ use of its network, are expected to take a heavier hit in this area. Additionally, as roaming is often a “pure-margin” service, stronger impact is expected on the net profits of exposed players.

On the B2B side, despite the upside from governments and large corporates seeking higher bandwidth for VPN and conferencing facilities, financial performance will be adversely impacted due to potential bad debts from small and medium enterprises (SMEs), increased unemployment, business closures and the overall decline in economic activity. Few players have taken precautionary measures, although Verizon has set aside a USD 228 million extra reserve for this. Overall, B2B revenues are expected to show a low-single-digit contraction in 2020, bouncing back to growth in 2021 if the global economy recovers.

Based on ADL’s assessment, for mobile operators, global revenues are expected to decline 2–4 percent in 2020 compared to last year. There will be regional differences:

- European players will see a potential decline within a broad range of approximately 2–9 percent.
- In contrast, Asia and Oceania will be affected least, with a probable rough 2 percent decline.
- The Middle East and Africa and the Americas are likely to be between these two poles, with revenue declines of approximately 4 percent and 2–4 percent, respectively.

These estimates assume that the relative geographic impact of the pandemic remains similar to trends seen in April 2020.

4. OPEX to witness a limited decline

A similar evolution can be expected for OPEX. Reduced spending on marketing activities and subscriber acquisition and retention, as well as store closures, is expected to generate OPEX savings of 1–3 percent in 2020.

However, although competition has become moderate as customers' willingness to churn/port has declined, this trend is expected to reverse as soon as movement restrictions are lifted and retail operations are fully restored. This implies a need to then spend any commercial OPEX allocated for customer acquisition and retention that will have been saved during the lockdown.

Overall labor costs should remain stable as societal and governmental pressures mount to prevent furloughing of staff, especially given the moderate commercial downside the sector faces. For example, Orange has pledged to protect its 87,000 French workers without governmental help as part of an agreement with the economy minister. However, this could lead to persistent loss in flexibility, even as automation increases and makes some areas less labor intensive.

In the medium term, the crisis will also reinforce and accelerate some of the pre-COVID-19 OPEX trends, such as network sharing. Thanks to the pandemic and its economic impact, regulators might adopt a more lenient view of mobile network-sharing agreements, shifting part of their scrutiny from competition to the robustness and economic health of the overall ICT sector.

5. Mixed guidance on CAPEX

Postponing the delivery and deployment of network equipment could lead to a CAPEX reduction of 2–4 percent in 2020. However, CAPEX spend will rebound quickly in 2021 as most telecom players, in the midst of significant 5G network infrastructure capital expenditure, have decided to continue or even expand their plans. Fixed networks, in particular FTTP spend, will also grow to ensure that operators have enough capacity to deliver high-performing services given the increased traffic demand. Heavy expenditure on fixed telecom infrastructure in a downturn was a strategy that several operators adopted successfully during the 2008 financial crisis.

So far, there have been mixed messages on 2020 CAPEX guidance:

- Verizon announced an upward revision (+USD 1 billion) to support its network activity.
- AT&T warned of “downward proclivity” due to logistics issues such as difficult cell-site acquisitions.

The COVID-19 crisis will create situations in which companies will want to invest but not be able to. This risk will be amplified in Europe, where plans for 5G infrastructure are likely to be delayed. Additionally, operator propensity to spend might be hampered by heightened volatility in capital markets, with corresponding implications for the cost of capital.

Insight for the executive

In the longer term, key structural changes that are largely enabled by technological “smartization” are expected to reshape behaviors and societal norms, as well as to redefine value chains and business models. Therefore, appropriate actions need to be taken by CXOs to prepare their organizations for this new world, the establishment of which has only been accelerated by the COVID-19 crisis.

We have listed below five key areas for focus. They combine “no-regret” moves that will help telecoms companies, irrespective of which recovery scenario plays out, with potential strategic bets that CXOs can place now to capitalize on any opportunities arising from the impact of the crisis.

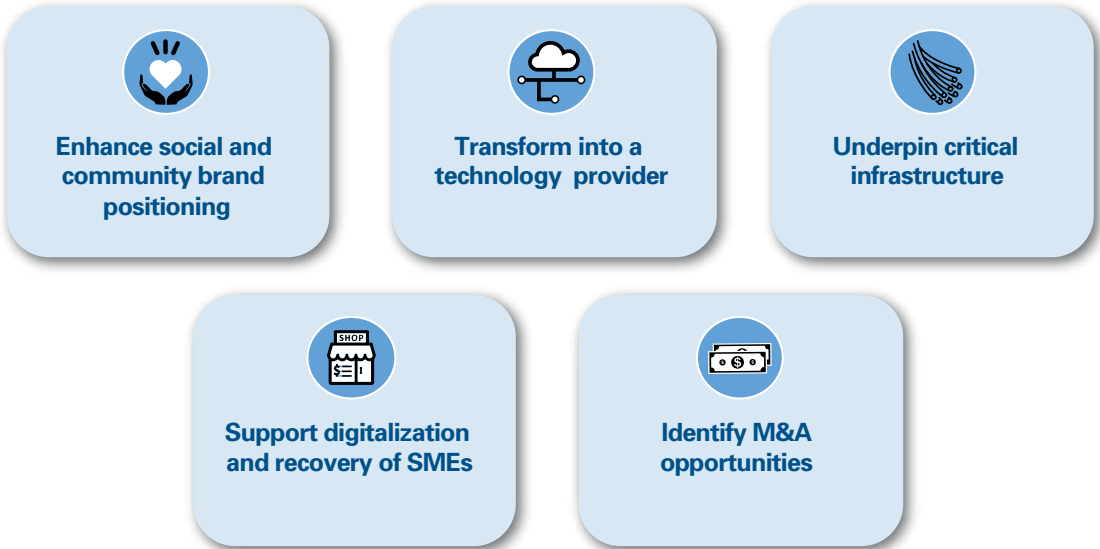


Figure 2: Five key focus areas combining no-regret moves and potential strategic bets



Enhance social and community brand positioning:

Further strengthen the brand’s positioning and perceptions around supporting its community. For example, Telekom Malaysia deployed 5G base stations at quarantine centers to deliver free Wi-Fi and provided 50 5G FWA⁵ terminals.



Transform into a technology provider:

Transform self-perception from a telecom services provider to a technology company. Continue with a broader push towards digitalization of functions and develop solutions for emerging trends such as e-learning and telemedicine.



Underpin critical infrastructure: Enhance core and transmission network capacity to cater for increased traffic, especially international bandwidth owing to increased two-way traffic for video-conferencing and heavy streaming outside of typical peak traffic hours.

5. Fixed wireless access



Support digitalization and recovery of

SMEs: Play a more active role in digitalization of SMEs⁶ by providing cybersecurity support, cloud and business development services, access to training, and tools and capabilities. Devise creative ways to reduce bad-debt risk.



Identify M&A opportunities: Become aggressive in looking for attractive M&A targets. Take opportunities to expand through acquiring innovative start-ups – as demonstrated by Verizon’s acquisition of videoconferencing company BlueJeans in April 2020.

Overall, CXOs need to leverage the disruptive nature of this crisis and exploit the unique opportunities it creates for transformation of the sector.

6. Small and medium enterprises

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HYBRID

ELECTRIC

DIESEL

Automotive: Accelerating disruption through creative destruction

How automotive sales and after-sales need to prepare for the post-COVID-19 era now

Alan Martinovich, Andreas Schlosser, Philipp Seidel, Florent Nanse, Bill Reeves

Economic lockdowns due to COVID-19 have compromised automotive supply chains and dealerships in unparalleled ways. In Q1 2020, car sales dropped by 26 percent in Europe, 12 percent in the US and 50 percent in China. Production was stopped for weeks. The expected post-crisis recession will cut global car demand by multi-digit percentages, followed by a slow global recovery, with car sales lagging GDP rebound by one to two years. At the same time, existing trends such as electrification, digitalization and changing ownership models are putting enormous pressure on the strategies and balance sheets of the automotive sector.



Thanks to the rise of electric vehicles, digital and new ownership models, the automotive market was already facing unprecedented disruption. As this article explains, the impact of COVID-19 on new-car sales accelerates the need for radical change – now is the time to turbocharge transformation efforts and seize opportunities to thrive in a post-ICE era.

Manufacturers (OEMs) had to react immediately to secure their financial liquidity, their operations, the health of their employees, and the value of basic capital assets to guarantee their immediate survival. As the

broader crisis stabilizes, they face the pressing question of how to stay competitive and successful during and after the recovery, against the backdrop of a transforming market.

Unlike in previous recoveries, when buyers start returning to the market in greater numbers in two to three years, ongoing industry disruption will have advanced sufficiently to change their buying behavior. This confluence of factors creates opportunities for those in the industry who set the right course now. Therefore, we suggest making bold – and perhaps counterintuitive – strategic decisions, focusing scarcer resources on future automotive technologies such as electrified powertrains, xEVs¹ and digitalization to accelerate the modernization of products and sales structures, even if it means losing volume in traditional business areas and internal combustion engine (ICE) vehicles.

1. xEVs include hybrid (HEV), plug-in hybrid (PHEV), battery-electric (BEV), and fuel cell (FCEV) electric vehicles

How will COVID-19 ultimately affect the industry?





1. Two or three “lost” years for car sales are ahead, with much lower sales volumes

Although the current crisis is different to previous events, studying their impact on vehicle markets can give some indications on how to develop post-COVID-19 recovery scenarios. In the past, car markets in Europe and the US decreased more than the overall economy (GDP) and took longer to recover to pre-crisis levels. As a rule of thumb, passenger-car markets are likely to recover only one or two years after overall GDP, which points to two to three lost years in terms of sales volumes in the current crisis.

2. The crisis will lead to “creative destruction” and accelerated consolidation

Another consequence of economic crises is the market exit of the least innovative and competitive market players, products and technologies. This creates opportunities for new entrants and ideas, rewards entrepreneurial risks and accelerates structural changes. We expect the COVID-19 crisis to have this effect on the automotive industry, particularly as it accelerates existing transformation, although policy makers and car buyers will have great influence on where this “creative destruction” leads.

3. The impact of COVID-19 on automotive markets will differ from region to region

	 GDP	 Car sales
1 Early '80s recession Federal reserve interest-rate hike made financing unaffordable for most customers	-2% 1 year to recover	-20% 2 years to recover*
2 S&L crisis + Gulf War S&L & bank failures limited consumer-credit availability, Gulf War raised oil prices	-0.1% 1 year to recover	-11% 2 years to recover
3 Financial crisis Consumer-credit market collapse impacted middle class. Overall, lengthened car ownership from 4 to 6 years	-3% 2 years to recover	-35% 3 years to recover
 COVID-19 crisis Consumer-credit market collapse impacted middle class. Overall, lengthened car ownership from 4 to 6 years	-5 to -10% 1-1.5 years to recover	-15 to -35% 2-3 years to recover
Car-sales recessions are 2x longer and 10x worse than GDP		

	 GDP	 Car sales
1 EMS crisis + Gulf War EMS crisis and limited consumer-credit availability, as well as Gulf War, raised oil prices	-6% 1 year to recover	-13% 2 years to recover*
2 Financial crisis Consumer-credit market collapse impacted middle class	-10% 3 years to recover	-5%* (10%) 3 years to recover
3 Eurozone crisis Several Eurozone member states were unable to repay or refinance government debt or bail out banks	-4% 1 year to recover	-6% 2.5 years to recover
 COVID-19 crisis Supply + demand shock impacts lower and middle class, recession hits a stagnating new-car market	-5 to -10% 1-1.5 years to recover	-15 to -25% 2-3 years to recover
Car-sales crisis lasts up to 3 years and exceeds GDP decline		





	 GDP	 Car sales
1 SARS 2002/2003 First coronavirus-induced pandemic, impact on tourism and Chinese economy	+9.6% No significant impact	+36% Boost of car sales
2 Financial crisis 2008 Credit crisis in Western economics, Chinese GDP growth reduced to 9%	+9.5% No significant impact	+3.6% Slower growth, strong catch-up
3 Car-market decline Lower new-car sales due to limited registrations and less favorable policies	+6.5% Reduced GDP growth	-8% 2 years of car-market decline
 COVID-19 crisis Very significant economic supply and demand shocks, expected to be shorter than in Europe and the US, but with consequences for exports	-3 to +5%	-5 to -15%
<p><i>Negative trend on car market expected to continue – political interventions decisive</i></p>		

Figure 1: Impact of historic crises and COVID-19 on GDP and automotive sales

Source: Arthur D. Little analysis, based on IHS and ACEA sales data, GDP data from the World Bank, the US BEA, UBS, BofA, JPMorgan, Goldman Sachs, the Economist, Credit Suisse, Nomura

*includes effects of scrappage schemes in some EU countries, e.g., Germany, France

The United States

In the US, the speed and magnitude of the economic contraction has already eclipsed the 2008 recession and is expected to briefly reach levels of GDP decline and unemployment not seen since the Great Depression of the 1930s. Job losses, general uncertainty, and logistical challenges caused by lockdowns have already had major impact on the automotive market:

- Car sales slowed rapidly, dropping by over 35 percent in March, with the vast majority of the fall in the second half of the month. April sales were down by 50 percent.
- Supply chains were cut and production capacity reduced by 93 percent from late March to the end of May.
- Looking forward, consumer sentiment has dropped to a six-year low and is expected to continue a downward trend.

- COVID-19's nature of limiting human contact will continue to have an outsized impact on services industries, disproportionately affecting the middle class and leading to large numbers of postponed or cancelled car purchases.
- "Millennials" (approximately 22–38 years old) are especially vulnerable, as they are being hit by a second "once in a generation" recession during their prime earning years – all while already struggling to manage higher levels of household debt – which makes large expenditure on new cars unlikely.

These weaknesses could lead to an unprecedented reduction in car sales over the next two to three years.

Europe

Across the continent, the automotive industry directly or indirectly employs 6.1 percent of the total workforce, and six weeks of production lockdowns and supply-chain disruption have had a growing impact on this significant portion of the economy:

- Currently, an EU recession for 2020 with a GDP contraction of 8 percent is the consensus estimate, with the Economic Sentiment Indicator (ESI) and Employment Expectation Indicator (EEI) close to the historic lows reached in 2009.
- Lower GDP and ESI/EEI rankings will lead to reduced long-term car sales. The greatest impact falls on markets such as Italy, Spain, and France, which had barely recovered from previous crises and were hit most severely in medical terms. Car demand contracted by 85 percent in Italy, 72 percent in Spain, and almost 70 percent in France during March.
- In some European markets, however, social-welfare systems and state intervention in key industries will stabilize economies, preventing large-scale layoffs and the impoverishment of the middle class, which could help raise sales.

China

The first global market hit by the COVID-19 crisis, China experienced its first quarter with a contracting GDP (down 6.8 percent compared to Q1/2019) since numbers were first published in 1992. Across 2020, GDP growth of only 2 percent is expected – compared to 2019 growth of 6 percent:

- China faced the most severe hit to car sales of all regions in Q1, with a 50 percent drop compared to Q1 2019.
- Sales had already dropped in 2018 and 2019, with the current crisis leading to further sales declines of up to 10 percent in 2020.
- However, recovery is expected to be quicker than in the rest of the world, with sales already returning to 2019 levels in Q2.

From previous experiences, China's car market is expected to react primarily to state intervention, which means whether historic sales peaks can be reached again, and when, will depend on political measures. For example, the Chinese government has just announced that it will continue new energy vehicle (NEV) sales incentives – at a reduced level – until the end of 2022, as well as especially support domestic manufacturers during the recovery.

4. Recovery within two to three years: Why the current crisis accelerates industry disruption

“The US auto-market recovery will probably take two to three years, depending on different scenarios. We have witnessed the peak of ICE vehicles sales, and we will very likely see an accelerated trend towards electrification. This trend has already started pre-COVID.”

Daniel Weissland, President of Audi of America

Daniel Weissland, the President of Audi of America, points out: “Today there is a major difference from the recoveries of 2009, 2002, and earlier. The automotive industry is currently undergoing a huge transformation in all global markets. However, at this point manufacturers and dealers have only just started to reposition for this new era”:

- **Powertrain electrification:** Demand and supply are shifting towards electric and electrified vehicles with increasing speed.
- **Digitalization of automotive sales and services:** Connected and smart devices are changing the way consumers buy and drive cars and use mobility.
- **Shift in ownership models:** More flexible models of use, financing, and subscriptions of cars and mobility are gaining ground, which is also impacting automotive after-sales.

The current crisis will not bring this disruption to a halt. On the contrary, we expect it to become a catalyst for the transformation and to support a wave of “creative destruction” hitting the automotive sector. This view is supported by industry top managers in major markets, as well as four key observations:

xEV value propositions will improve, and diesel/gasoline car sales will never again reach previous peaks

The next two to three years will be “lost years” for sales of ICE vehicles on traditional technology platforms. Demand will be sluggish due to economic conditions, and when it returns in 2023/2024, customers will be focused on state-of-the-art technology with electrified powertrains. The ADL study “Future of automotive mobility” has identified price and TCO, charging times, range anxiety and the absence of attractive vehicles as today’s major customer concerns regarding xEVs. However, all these issues are likely to rapidly reduce:

- OEMs are increasing xEV lineups by more than 400 new models by 2024, while cutting back on traditional-engine offerings. Huge investments in xEVs have already been made all along the value chain – they will pay off with customer demand for up-to-date powertrain technology in and after the market rebound.

- Technology progress, such as in batteries, high-performance charging and ramped-up production volume, will further reduce manufacturing costs for xEVs, improve the total cost of ownership and range, and make them more attractive for the mass market, as low oil prices will also bring down costs for electricity.
- Charging infrastructure development will continue and improve the practicality of xEVs for a wider group of users – public and private investments into charging infrastructure will increase network density, and charging/battery technology improvements will bring down charging times.
- Regulation and politics will continue to push for low-emission vehicles and the scrapping of current ICE fleets. CO2 limits and purchase and tax incentives will make it unattractive to offer or buy ICEs.



Figure 2: Progress in EV technology until 2025

1) Price per kWh; 2) 100km charging time; 3) Battery capacity & range (mid-sized vehicle)
Source: Arthur D. Little analysis

Digitalization of sales and services will receive a boost

Digital sales and services have steadily gained ground in the automotive sector. The crisis has accelerated this – as many dealerships closed, potential buyers shifted even more of their car-purchase journeys to digital channels. Initial research and information gathering moved online years ago, and video presentations of the car, online negotiations and online sales now digitize the entire process. The COVID-19 crisis will therefore open the door to a rapid rise in digital sales as both customers and dealers overcome their long-standing resistance and trial new technology.

Increased focus on after-sales business and profits

The drop in new-car purchases means that over the next two to three years the average age of cars on the road will increase, intensifying an ongoing trend and creating additional growth in demand for aftermarket parts and services. ADL calculations indicate that the average car age in the EU will increase from 11.4 to 12.6 years in just three years. For dealers weakened by the loss of sales, the aftermarket will be a growth opportunity and lifeline during the years of the downturn. And given that these are out-of-warranty vehicles with ages of five-plus years, OEMs will have to adapt their offerings if they are to avoid losing out to independent aftermarket players.

Government intervention will shape the pace of and path to market recovery

The market rebound and the post-COVID-19 automotive world will be strongly shaped by regulation. Government interventions cannot yet be fully predicted and will differ across the US, Europe, and China. Therefore, manufacturers need to monitor the regulatory conditions for the rebound and act with strategies that can be adapted for multiple scenarios. Supportive measures on the demand side will likely be put in place, along with short-term support for OEMs on the supply side. We also expect CO2 and climate policy to play a major role in political decision-making, based on statements from Chinese and EU officials. Automotive strategies should be based on scenarios which differentiate by the expected extent of purchase incentives (none to high) and the climate and environmental focus (none to high):

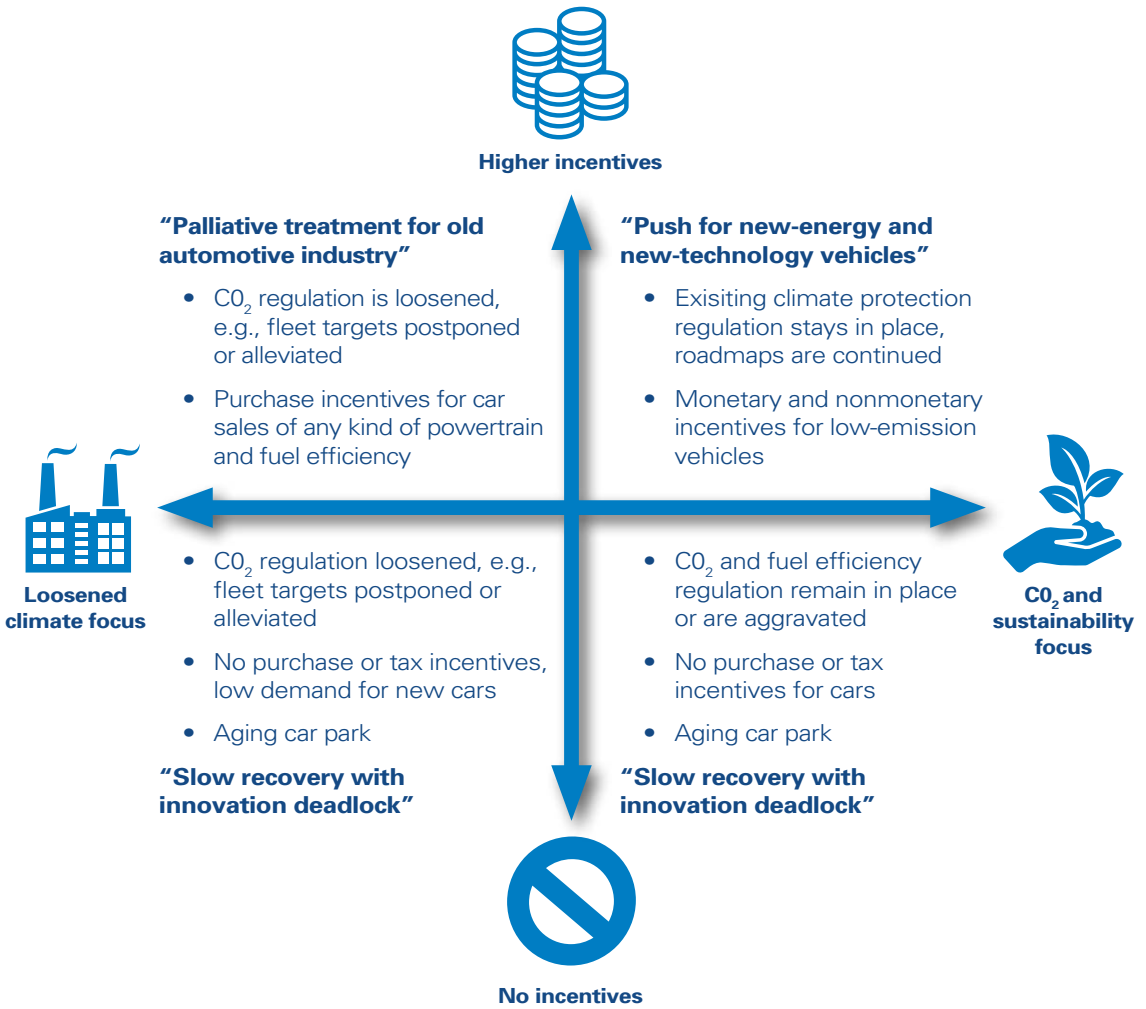


Figure 3: Scenarios for economic stimulus and regulation during COVID-19 recovery

Source: Arthur D. Little analysis

We expect the most likely scenario to be around a push for new-energy and new-technology vehicles in China and the EU. As well as continued xEV subsidies in China, financial incentives for zero or low emission vehicles are being discussed in Europe, and would add to existing schemes. Meanwhile, loosening the CO₂ emission and fuel consumption targets for 2030 seems to be against the EU’s political consensus. In this context, higher prices for CO₂ emissions, such as by taxation of fuels or emission certificates, could offset the current oil-price lows, which adds uncertainty to the current situation for xEVs. In the US, however, the current administration has reduced CO₂ standards and pollution enforcement during the crisis.

Insight for the executive

Although securing cash positions and supply chains are both important to survive the current crisis in the short term, carmakers must start taking action to win in the post-COVID-19 era. With lower revenues and profits during the next few years it is even more important to use limited investment resources wisely:

- **Fully embrace transformation mode now:** OEMs need to use the momentum of crisis-induced change to prepare their organizations for the era of EVs and digital from top to bottom, i.e., from HQ to dealers. This will free up resources in the mid-term. Although many are already on their transformation journeys, the crisis must accelerate their efforts.
- **Keep investing in future products while reducing ICE investment:** The right product lineup will be key, even if it implies severe cuts to spending on ICE technology in the face of fading sales. OEMs “win with winners” and not all technology and vehicle platforms can be continued.
- **Monitor and support the change in the sales landscape:** Dealer networks will suffer heavily from the impact of the crisis and might never reach the geographical density of pre-crisis times. Therefore, now is the time to reboot your sales organization and structures to be prepared for a world of digital sales and services.
- **Review business models for new profit opportunities and generate higher shares of revenues from subscriptions and the aftermarket:** An aging car population, declining new-car sales and the rise of new ownership models require new business models – OEMs need to tap into financial-mobility services, subscriptions and new aftermarket segments, targeting older cars and large fleets.

Before the crisis many automotive manufacturers saw the need for change and had begun the process. However, they now need to turbocharge their efforts. Innovative automotive manufacturers will find healthy ways out of the current crisis, and those that take opportunities now will benefit the most from an accelerated breakthrough to cleaner, more sustainable, and more convenient automotive mobility in the long term. It is a challenge – but achievable for those that grasp the opportunity.

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Petroleum: Surviving in the post-COVID-19 era

Traditional oil & gas companies can only succeed in the decarbonizing energy ecosystem of the future through substantial portfolio realignment

Stephen Rogers, Rodolfo Guzmán, Daniel Monzón

A perfect storm for the petroleum industry

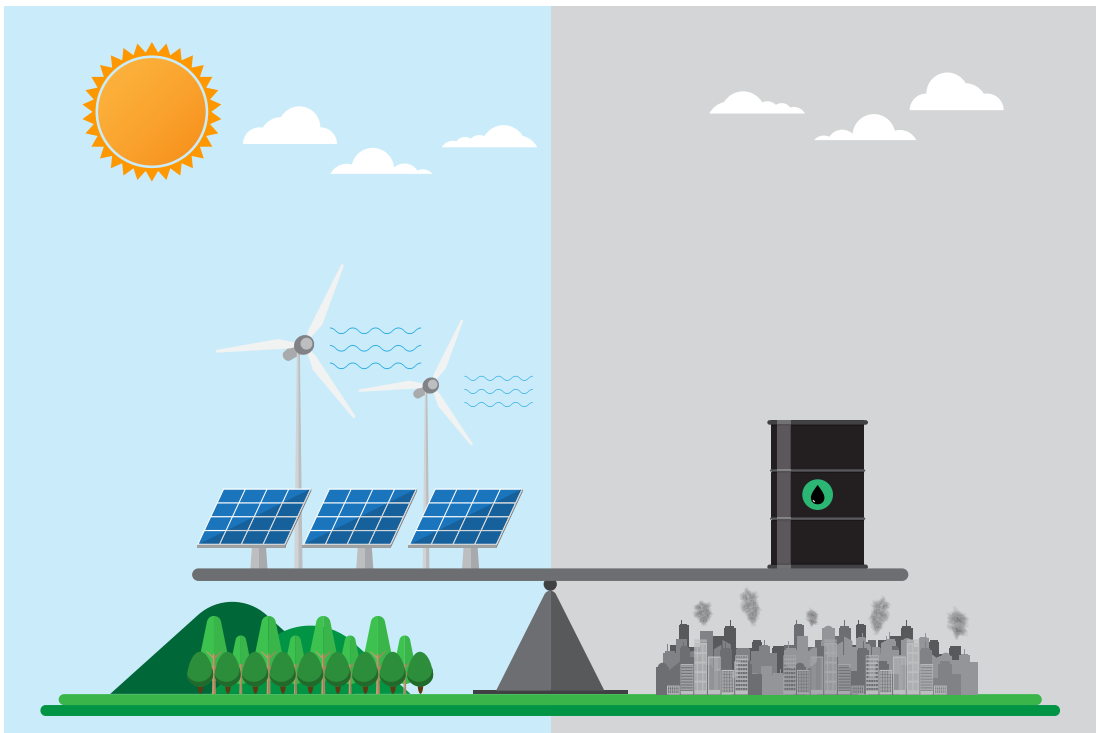
The global lockdown triggered by the COVID-19 pandemic has pushed a transforming industry into a state of major crisis. Progressive weakening of global oil demand during early 2020 was exacerbated by growing structural oversupply caused by a struggle for market share between Russia and OPEC. These

two factors together sent oil prices to a 20-year low. Although OPEC, Russia and other producers later agreed on some production cuts, these price-support efforts have had a relatively modest impact at the time of writing.



This article visualizes different future scenarios for the industry, given the effect of COVID-19 on demand and the likely persistence of structural oversupply. We analyze each scenario and its expected impact on each type of industry player, given expected medium-term oil prices. Looking into the future, we outline how the crisis will impact the current carbon transition and provide insights on the strategies oil & gas executives will require to survive and win in the future industry ecosystem.

The pandemic has created a perfect storm for the global petroleum industry, combining oversupply with a dramatic fall in demand – all at a time when ongoing requirements to decarbonize economies are gathering pace. We look at potential scenarios for the future, analyzing the impact on different market players over both the short and long term.



The COVID-19 crisis will transform the structure of the industry

With the oil & gas industry currently locked into a cycle of oversupply, low prices and volatility, the economic downturn created by the COVID-19 crisis is likely to deal a major blow to many companies. Investors have found the sector increasingly unattractive over the past 10 years. Any further, prolonged period of low oil prices is likely to see them divert their capital elsewhere as the traditional oil & gas business model becomes even riskier and less commercially attractive.

Although the global economy will eventually recover, it is unlikely that it will return soon (if at all) to its pre-COVID-19 “business as usual” state. Instead, the oil & gas industry is likely to be faced with prolonged substantially reduced demand, thanks to lower economic activity and growing pressures to use greener energy sources. Similarly, the industry must also grapple with oversupply issues, whether due to burgeoning oil volumes from US shale, or the struggle for market share between OPEC and Russia. Figure 1 outlines four potential scenarios based on these factors.

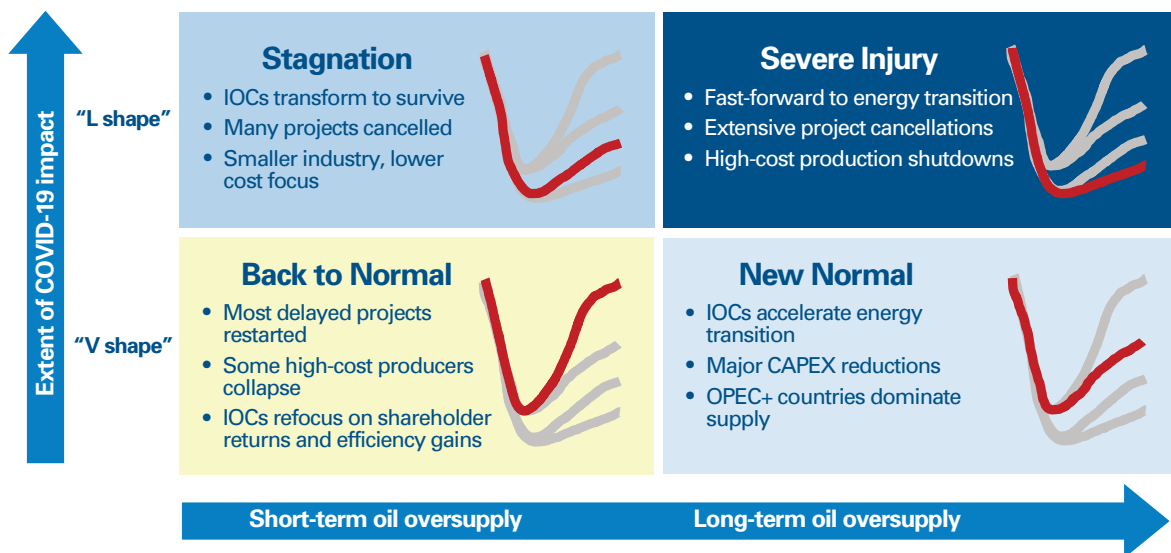


Figure 1: Petroleum industry scenarios – Impact on economy versus oil oversupply

A **“Back to Normal”** scenario depends on an early, “V-shaped” bounce-back of the global economy, combined with failure to progress the climate-change/renewables agenda. At the same time, it requires major oil producers to agree production cuts that are sufficiently rapid and deep that current oversupply is reduced. Achieving these conditions seems unlikely.

The **“Stagnation”** scenario, in which the global economic rebound and oil-demand impact is “L-shaped”, seems much more probable. In this case weak demand recovery is held back by continued adoption of renewables and low-carbon energy forms. Nevertheless, in this scenario producers are gradually able to reduce oversupply to support modest prices that ensure the viability of many new projects.

The worst potential scenario is undoubtedly **“Severe Injury”**. In this case, a slow, “L-shaped” economic recovery, perhaps blended with accelerating demand destruction driven by the renewables transition, combines with persistent oversupply, due to major producers’ repeated failures to agree to sufficiently deep production cuts. On the positive side, any

lasting demand drop would provide OPEC and other major producers with strong political and financial motivation to adjust supply to an adequate price level. This makes this scenario less likely than Stagnation.

Accordingly, the level of injury inflicted on both individual players and the wider industry will largely depend on whether OPEC (and/or Russia) can commit to supporting prices in this way, perhaps at the expense of market share.

Given these factors, another likely outcome is the “**New Normal**” scenario. In this case, if the economy bounces back after a few months (with a “U-shaped” recovery), coupled with relatively slow demand erosion due to tightening of climate-change policies, oil prices should strengthen. This will be the case even if OPEC and other producers fail to curb supply as much as in the past.

Impact will vary across industry segments

A closer examination of sub-sectors within the industry reveals the degree to which each will be affected:

- **International oil companies (IOCs)** will find it increasingly difficult to grow organically, with certain high-cost and stranded assets being written off. However, there will be more M&A opportunities as smaller players struggle to compete.
- **National oil companies (NOCs)** with large, low-cost reserve positions will push to accelerate production, but those with higher cost structures will struggle. Due to reduced oil & gas revenue, lower national budgets will intensify debate about prioritization between oil reinvestment and social needs. Some governments may use the crisis to spur support for energy transition programs.
- **Refiners** will face low margins and returns for many years due to structural overcapacity, heterogenous demand evolution and stricter product-quality standards.

Accordingly, some small-scale plants will not even be able to recover their operating and maintenance cash costs.

- **Oilfield services** players face very low asset utilization because of project cancellations or deferrals and production shutdowns. Severe capacity cutbacks and massive employee layoffs are likely to continue in this segment.

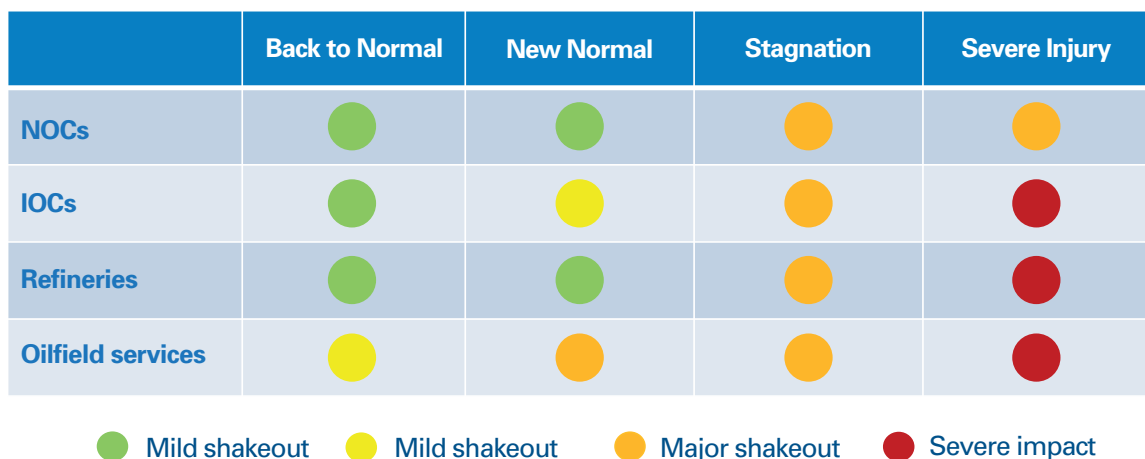


Figure 2: Impact by player under each scenario

Emerging models for the “oil company of the future”

Under almost any scenario, the post-COVID-19 world will see the oil & gas industry accelerate its transition towards cleaner energy sources, products and service offerings, and away from its traditional business models. The pandemic has created a perfect storm that, along with an ongoing need to reduce CO2 emissions, will transform the industry. The future survival and success of many players depends not only on their achieving greater focus on renewable energy, but also upon an ability to deliver still-lower-cost solutions.

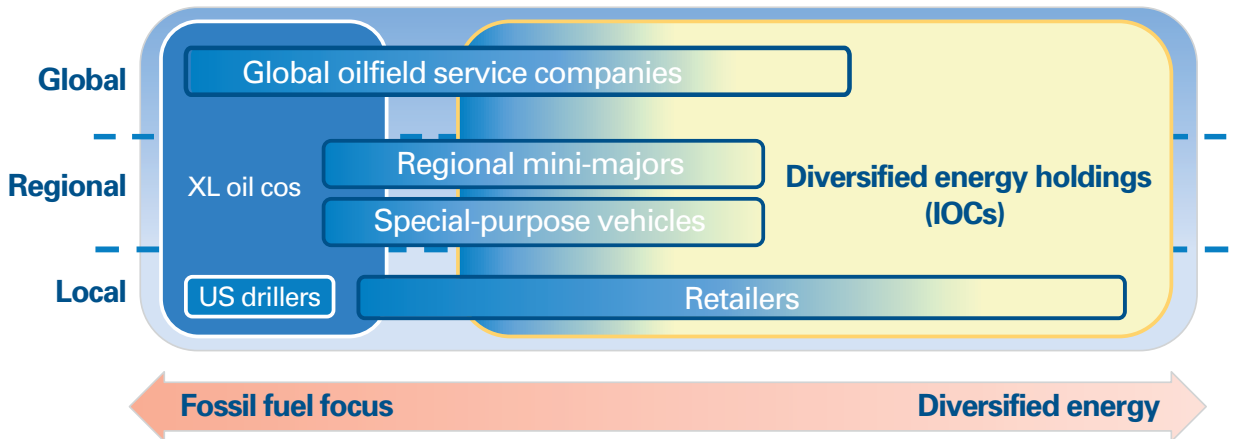


Figure 3: Potential ecosystem for future oil companies

Source: “Shaping the oil company of the future”, PRISM, Arthur D. Little

We expect the following seven hydrocarbon business models to co-exist in the future, as illustrated in Figure 3, with a player’s chance of success depending largely on its ability to transform after the crisis:

- Diversified energy holdings:** IOCs will respond to the twin challenges of low prices and decarbonization by moving rapidly away from their increasingly unattractive traditional business models, becoming energy-holding companies with more diverse interests. They already foresee that oil demand will peak, and after COVID-19 they will increasingly grow organically beyond hydrocarbons. They will transform their global oil & gas operations into truly diversified energy holdings that are robust in a world that is evolving towards cleaner energy sources. IOCs will also look to strengthen their natural-gas value chains and integration into petrochemicals.
- XL oil companies:** Low-cost production and a large reserve base will underpin the predominance of the XL model, which is already being adopted by some IOCs and the large national oil companies.

This model prioritizes scale in monetizing existing, ultra-low-cost oil & gas resources. The largest and most competitive NOCs may therefore emerge as major winners from this crisis.

- **Regional “mini-majors”:** Most regional players will leverage their geopolitical, cultural, logistical and commercial advantages to transform their businesses into regionally tailored, integrated and diversified models. They may become diversified “mini-IOCs”, or perhaps be more strongly oil & gas focused.
- **Special-purpose vehicles (SPVs):** Oil & gas companies will increasingly create SPVs to provide greater financial flexibility within their portfolio-restructuring strategies.
- **US drillers:** These companies have been most damaged by the COVID-19 oversupply crisis. They need to manage their portfolios in a highly dynamic way, maintaining free cashflow while trying to keep opportunities alive for immediate rebound in the event of price recovery. They face shrinkage and a significant challenge for medium-term survival.
- **Global oilfield service companies:** This business sector underwent major efficiency gains in 2015, leaving little room for further improvement. Their business models will be extremely challenged by much lower levels of drilling activity. If they are to maintain growth, they need to pivot into energy transition support through rapid innovation and development of new solutions for energy producers and consumers.
- **Retailers:** Fossil-fuel demand will take time to recover and, even if gross retail margins are not impacted in the long term, this segment will need to prioritize investment in non-fossil energy and other related customer-service areas to ensure viable returns.

Although there isn't one single business model that will enable future success, the journey towards the "oil company of the future" requires companies to adopt transformation strategies now that will prepare them for an uncertain and changing world. They need to think carefully about their long-term survival paths, identify growth options, and take deliberate, meaningful and strategic actions to protect themselves against what is now the very real risk of early obsolescence.

Companies need to improve capital returns in their traditional business segments, while exploring options for future growth into renewables through a combination of acquisitions and new-venture pilots. They also need to undergo deep transformation of their cultures, skills and capabilities if they are to survive and create long-term, sustainable competitive positions. The challenges are huge, and not all of today's oil companies are likely to succeed.

Insight for the executive

All sectors of the industry are affected by the COVID-19 crisis, with some companies at risk of bankruptcy and many more unlikely to survive in their current forms if oil prices and margins remain at depressed levels. Companies dominated by high-cost assets, led by weak management teams, or carrying high debt burdens will face increasingly severe challenges, with many such companies disappearing or being acquired. Most oil companies have already reduced their planned short-term capital spend, but need to also undergo **strategic rebalancing of their portfolios** to give them the best-possible chance of weathering the COVID-19 storm and emerging fitter and more secure in the long term.

In this transformation, they should not only **divest high-cost upstream developments**, including shale or tar sands, concentrating instead on low-cost assets, but also **curtail high-risk exploration**. They should cancel or carefully review new construction of refining projects or plant upgrades, considering the very limited time window to secure returns from such investments. They will need to rebalance their

businesses through stronger positions in the natural-gas value chain and petrochemicals, while delivering more robust emissions-efficiency initiatives.

All oil & gas companies should also now develop expansion opportunities in the **energy transition, electricity and renewables** space, pushing harder in this direction, and investing further into decarbonization and renewables as such projects become more sustainable and attractive.

These changes certainly apply to international and regional oil companies, as well as to American drillers, but **global oilfield service companies** will need to make the most urgent and profound responses to the COVID-19 pandemic. As they are the most severely impacted by the drop in global oil-sector activity, they will need to **rapidly pivot towards renewables-sector support**, as many have already done.

All players will also need to accelerate their **automation and digitalization initiatives** to gain new levels of operational efficiency.

Such transformations are the only way to ensure the long-term viability of the petroleum sector. Participants need to completely rethink their roles in the future industry ecosystem as traditional business models become progressively untenable.

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Chemicals: The old normal or the new normal?

Dr. Michael Kolk, Rodrigo P. Navarro

Never before in human history have so many regions shut down large parts of their economies in near synchronization. As essential parts of every economy, chemicals and materials are present in everyday-life products, which heavily exposes the sector to this broader market stagnation.



This article will explore how the sector has coped in the beginning of the COVID-19 crisis, highlighting noticeable actions taken by individual players and analyzing potential directions for the industry's future. We strongly believe that, alongside the issues it brings, the crisis offers a great opportunity for chemical and material players to speed up their transformational initiatives and, once again, be seen as an essential solution-providing industry that benefits us all.

Given its central position to the global economy, the chemical sector has felt the full force of COVID-19, though some players have suffered more than others. We analyze who the winners and losers currently are, and focus on the steps that all chemical companies need to take now to seize future opportunities – rethinking their purposes, promises and portfolios to drive future growth, value creation and resilience.

The impact of COVID-19 on the chemical industry so far

Market impact

The global stock market is effectively a machine for digesting complex information and outlining the consequences for businesses and sectors. Reviewing its conclusions in terms of share-price fluctuations therefore provides interesting insights into how different industries have coped, or are expected to cope, with the crisis. Our analysis is based on a six-month time frame, incorporating the three months leading up to the crisis (a pre-crisis baseline) and the initial three months of the crisis itself (providing a full time span to show the resiliency of different industries, sectors, and players)¹.

1. To the surprise and delight of many, average chemical stock levels have recovered to more than 90 percent of pre-COVID-19 levels by the end of June 2020, in line with many other sectors. Arthur D. Little believes that this recent rebound does not reflect market reappraisal of underlying resiliencies.

Global industry indexes through the COVID-19 crisis

Six-month period (November 2019–May 2020)

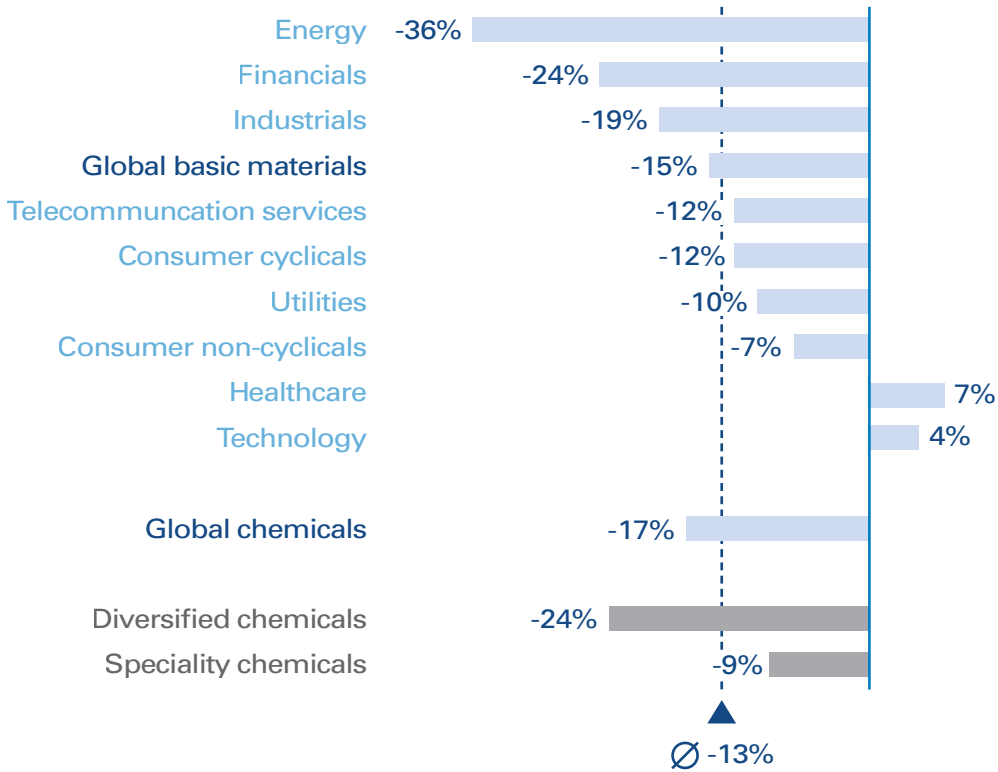


Figure 1: The COVID-19 impact on global stock-market industry indexes (Thomson Reuters). Figures represent compounded averages of sub-sectors

Our analysis in Figure 1 shows that:

- The global Materials/Chemicals sectors suffered significantly (an approximate -15 percent market return) in the midst of the crisis.
- This was not as poor a performance as achieved by the Energy sector, which was even more exposed to the contraction in the oil price, or Financial services, which was heavily exposed to the negative-balance-sheet consequences of the crisis.

- Healthcare led the recovery (which was unsurprising, given its prominent role in this crisis), followed by Technology, which showed that investors were rapid and eager to reinvest proceeds in expected high-growth areas.
- There was a striking difference in returns between the diversified (-24 percent) and specialty (-9 percent) Chemicals sub-sectors². One reason for this gap was the higher exposure of diversified providers to low oil prices and the broader market downturn in demand, which made them less resilient to the crisis's impact.

Operational impact

As with other companies, chemical corporations are adapting their core operations in three different ways:

- **Speeding up digitization efforts:** Social-distancing rules made this compulsory – corporations from many sectors were forced to suddenly shift towards collaborative virtual work environments. For office/management workers, this is relatively simple to achieve, and although true lights-out manufacturing is not yet in place, chemical companies have heavily automated production over the last decade. More difficult are those activities that have historically depended on physical proximity: meeting new people, exchanging ideas, and of course, advocating, convincing and negotiation. These are all essential components of commercial and R&D/innovation functions – unless travel restrictions are lifted soon, companies will need to find solutions that go beyond simply doing video calls.

2. "Specialty" chemical companies typically offer low-volume, high-value products.

"Diversified" players have a large share of sales in (semi-) commodity products.

- **Adapting production lines:** The needs of the crisis have led many chemical firms to adapt to meet the sudden huge demand for a wide variety of medical disposables and protective gear. Producers such as 3M and Braskem have stepped up production of their existing core products overnight to supply face masks and materials for protective gear, accomplishing in weeks what normally would take many months. Others have switched their existing production lines to manufacture products not in their conventional portfolios. Many, such as Arkema, Givaudan and Henkel, turned to production of hand sanitizers, whereas some joined forces to produce masks, such as DSM and Dutch mattress maker Auping. However, not all of these initiatives are expected to have longer-term strategic impact.

Another category of solutions that has emerged that may be more long lasting involves the many 3D-printing initiatives set up, mainly to produce PPE materials. Solvay, HP and Stratasys are good examples, as is the army of distributed DIY producers that have jumped on this opportunity.

- **De-risking the supply chain:** Reminiscent of the 2011 Fukushima disaster in Japan, the COVID-19 crisis has made many worry about major global supply-chain disruptions. There have been temporary disturbances caused by surging demand (such as for non-woven materials used in face masks), with the overall consequences relatively modest. But many business leaders see a pattern emerging after recent threats of trade wars and regard the pandemic as a further warning signal not to be over-reliant on remote, concentrated, and possibly erratic supply chains.

Company impact: Are there winners and losers?

The chemical industry serves a wide range of end markets, some of which have been badly affected, such as automotive and aerospace, and others that have expanded (e.g., medical disposables and packaged consumer goods). To find out which types of players are proving most resilient, we analyzed the immediate post-shock market returns of a selected group of chemical companies. Our findings (Figure 2) show very different recovery dynamics between selected players, largely depending on the inherent growth promise of their overall business portfolios.

- **“High-resilience” players:** These are companies that have so far exhibited roughly stable and/or positive recoveries – it is remarkable that a few players, even while still in the midst of the crisis, could register double-digit returns. We believe the reason for such resilience lies in their perceived higher level of exposure to more attractive markets. Nutrition (DSM, Corbion, Givaudan, Symrise, IFF) is a clear winner, as supermarkets were almost the only businesses which remained open during the early days of the crisis, together with the emerging EV market (LG Chem, Umicore). Agricultural players (FMC, Corteva) are in the middle of the increasingly resilient pack, joined by JSR, which represents examples of exposure to selective specialty niches such as healthcare and technology, including life sciences diagnostics, personal care, semiconductor materials and crop protection.
- **“Low-resilience” players:** These are companies that have been much more severely affected by the crisis thus far, evidenced by falling share prices and collapsing profitability levels. For behemoth BASF, this can mostly be attributed to its sheer size (“when the tide recedes, all boats go down”), while others seem overly exposed to non-differentiated petrochemicals (e.g., LyondellBasel) or faltering end markets such as aviation and automotive (Solvay and Covestro).

Selected chemical companies' market returns throughout the COVID-19 outbreak

Six-month period (November 2019–May 2020)

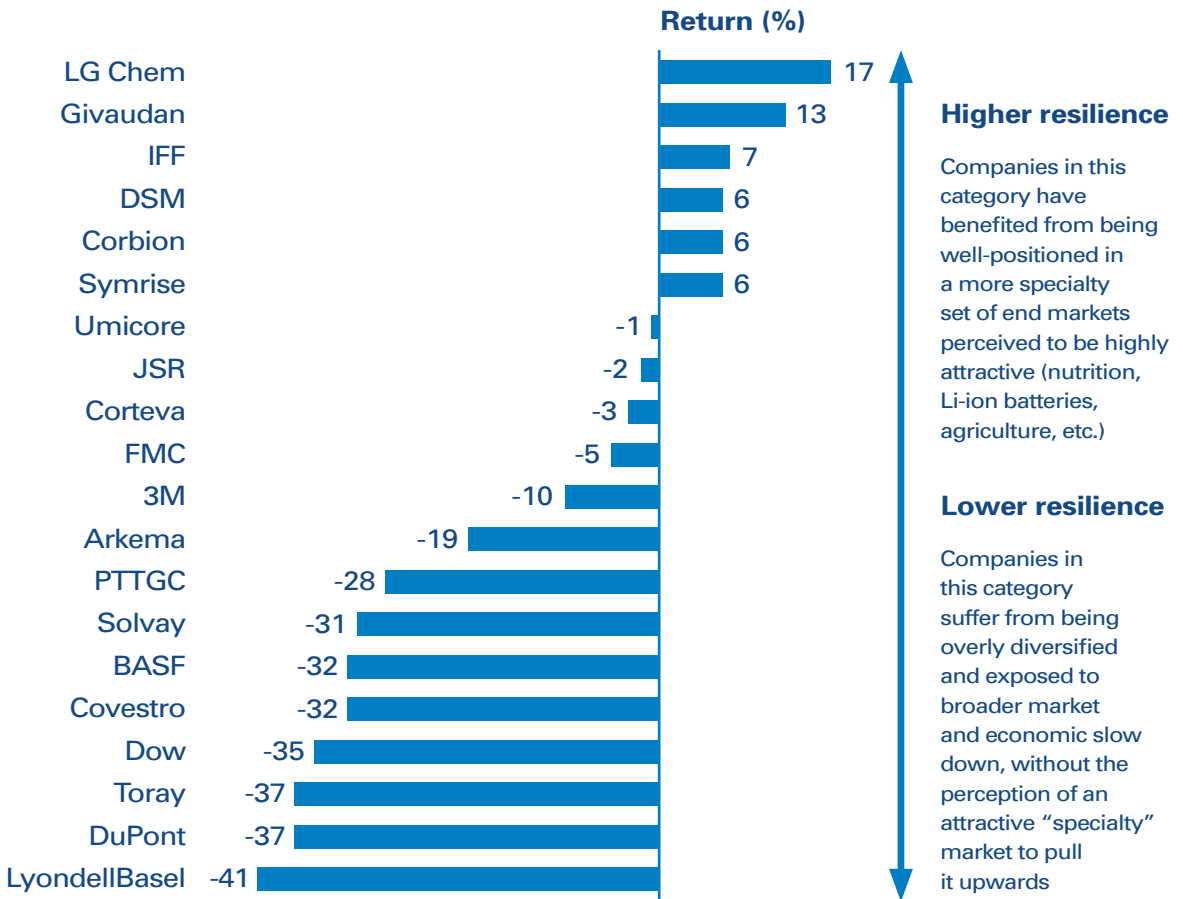


Figure 2: Selected chemical companies' returns

As we argued in our 2019 report, “Breaking the mold”³, this matters not just financially but, in the absence of a credible narrative for future growth, also strategically. Many companies in this category can currently do little more than work towards recovery, while more resilient players are able to invest and strengthen their positions.

3. <https://www.adlittle.com/en/breaking-mold>

Recovery and growth in the chemicals industry: Never waste a good crisis?

Looking back to the 2008 financial crisis, the current speak about the “new normal” sounds all too familiar. As we outlined in our “Breaking the mold” report, at that point the chemical industry was relatively quick to recover, but then mostly carried on with its “old normal” ways of working. We argued that even under favorable economic conditions, such a “more-of-the-same” strategy would eventually lead to missed opportunities and value destruction for most chemical firms. Instead, they should seize the potential of technology and industry convergence, applying new business models and approaches to developing and delivering solutions to the most pressing needs. We still maintain this position and believe that the initial impact of the crisis (Figure 2) reinforces our point.

At the same time, the chemical executives we spoke to while preparing this article all agreed that it was too early to tell whether 2020 would become the turning point that failed to happen post-2008. What is clear is that this will depend on both the time taken for pandemic restrictions to be removed entirely, and the extent of the economic crisis that is already ensuing. These two dimensions are, of course, not entirely independent because a longer pandemic will probably prolong the recession. However, we believe there could still be a longer pandemic and a shorter recession, and vice versa: some countries may be better at keeping infection rates at bay than others, and highly digitalized economies and companies may go a long way towards making the “90 percent economy” work.

So how might the current crisis be different from that of 2008?

- Firstly, the recession could be much more prolonged and steeper. Back then it took roughly two years before companies could shift from “damage control” to “build and grow” strategies – this time it could be much longer.

		Economic crisis: <i>time until global immunity</i>	
		< 2 years	>> 2 years
Pandemic: <i>time until global immunity</i>	< 2 years	1. Continued evolution <i>("Old normal")</i> ▶ <i>Plan for controlled recovery</i>	2. Accelerated portfolio shift ▶ <i>Plan for a multi-year business transformation</i>
	>> 2 years	3. Accelerated digitalization ▶ <i>Plan for a company-wide digital shift</i>	4. New industry paradigms <i>("New normal")</i> ▶ <i>Rethink company purpose and solution promise, plan for company transformation</i>

Figure 3: Possible market scenarios and strategic implications for chemical companies

- Secondly, it could take about the same amount of time before business activities such as unencumbered face-to-face meetings and traveling are back to normal – something that will probably require broad availability of effective vaccines.

Combining these two major uncertainties leaves us with four scenarios (Figure 3):

1. Continued evolution: As past crises have shown, the death of the “old normal” tends to be announced prematurely, and the current crisis may be no exception. Companies planning for this scenario are focusing predominantly on “do anyway” activities: adapting operations and ways of working, planning for low-risk operational ramp-ups, and reviewing the impact on the current strategic outlook. Already, many companies are investing in more

holistic and data-driven risk management and decision-making. Additionally, they may be moving ahead with more distributed production facilities and supplier bases to improve resilience to future shocks.

It should be clear, however, that following a “do nothing” course focused on a pre-COVID-19 status quo is, in itself, a strategic decision, and a risky one at that. Firstly, there is mounting evidence that the world is heading for a very different outcome (see below), and secondly, the old normal was hardly an attractive one for many chemical companies.

2. Accelerated portfolio shift: With a swift return to normal ways of working but a prolonged and steep recession, many companies and shareholders will see the inevitability of making fundamental portfolio decisions. High-resilience companies (Figure 2) will take advantage of their relatively unscathed performance in M&A, partnering and new business development. Companies that are less resilient will face stark choices between going for “commodity scale” or “solutions scope”. Of course, diversification involves a lot more than redrawing the future business portfolio on a whiteboard. From decades of experience accompanying clients on this journey, we identify two major factors for success, among many:

- a. Firstly, overall innovation models need to move away from being essentially support functions created to optimize asset productivity, towards becoming truly strategic business functions for sizable and reliable away-from-the-core innovation that effectively target attractive growth fields.
- b. Secondly, on the organizational side, companies need to move into an “ambidextrous” set-up that allows them to still excel at performance at scale while simultaneously delivering speed and creativity. They need the agility of a small start-up but the resources of a corporation.

3. Accelerated digitalization: Alternatively, the world may quickly go back to a “90 percent economy”, which would allow many end markets and business processes to become at least stable and manageable, albeit with lackluster growth and profitability. But from a business perspective, the 10 percent that remained impeded (such as safety and quality control, ideation and consultative selling) would force chemical firms to find and implement digital solutions at a rapid pace.

4. New paradigms: A prolonged period of lockdowns, travel restrictions and business contraction will most likely lead to a chemical industry that looks markedly different from that of today. Big shifts in demand and depressed commodity margins will remain prevalent for many years, which means maintaining the status quo will be increasingly unattractive, except to those with superior cost and/or scale advantages. The others will need to undertake fundamental revisions of their narratives for future growth and value creation, and ultimately of their business portfolios and core competencies. The good news, compared to 2008, is that shareholders are likely to be more receptive to such strategic investments, especially while the overall cost of capital is low.

Insight for the executive

The chemical industry has lived through many crises before, and it will survive the current one. Those who believe we have reached some point of singularity in which none of the old rules apply should think back 12 years, when the unimaginable also became a daily headline. With most economists, epidemiologists and politicians still so much in the dark about the future, business leaders can only turn to scenario-based decision-making and planning, and ensure that they will be able to react quickly to new developments. However, as Figure 3 shows, there are a number of common themes in all scenarios that should be “no regret” recommendations to chemical executives for this year and next:

1. Invest in forward-looking capabilities, quick decision-making and more resilient operations – you will need these in any conceivable scenario. Many chemical executives have reported that their current intelligence and decision-making are still bureaucratic and “analogue” affairs.
2. Coordinate and accelerate the numerous digitalization initiatives in your company, particularly in customer-facing processes and end-to-end innovation. (See also our article on the laboratory of the future.⁴) Although everyone is implementing the “obvious” digital use cases (such as the IoT in production), actual differentiation will come from finding and implementing working digital solutions for seemingly exclusively interpersonal areas such as (chemical) solution selling or ideation.
3. Perhaps most importantly, take advantage of the open mind-set that the current crisis has brought to every decision-maker around you: the cost of doing nothing, of maintaining the status quo, can no longer be casually assumed to be zero – as has so often been the case. Now is the time to seriously rethink your company’s purpose and solution promise, your future business portfolio, and the overall narrative behind future growth, value creation and resilience.

4. <https://www.adlitttle.com/en/Laboratoryofthefuture>

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Pharma: Strategic realignment for a better future

... and how the industry will be forced to overcome its hesitation to innovate in operations

Ben van der Schaaf, Aurelien Guichard

The life sciences sector faces significant impact from COVID-19 – and although the race for treatments and vaccines is dominating the headlines, the effect on the industry will not solely be positive.



In the short term, some companies are laying people off and reducing operations, whereas others are reallocating resources to focus on COVID-19, or even ramping up efforts in other areas. Stock-market performance has been as diverse (Figure 1).

Organizations need to consider major strategic questions now, to ensure their success in the longer term.

The industry is clearly in the middle of the efforts to combat COVID-19:

- More than 20 companies are trying to find a treatment with either new or approved drugs¹.
- More than 15 companies globally are mobilizing resources to develop new vaccines².
- Globally, by the end of May, more than 1,300 clinical trials related to COVID-19 were recruiting patients³.

Amid the search for effective COVID-19 treatments and vaccines, the pandemic will have long-term side effects for the global pharmaceutical industry. As our article explains, companies will need to focus on change in three areas (portfolio reprioritization, accelerated R&D and technology transformation) if they are to position themselves successfully for the future.

1. Marketwatch.com, 6 May 2020
2. Drugtargetreview.com, 9 April 2020
3. clintrials.gov, 31 May 2020

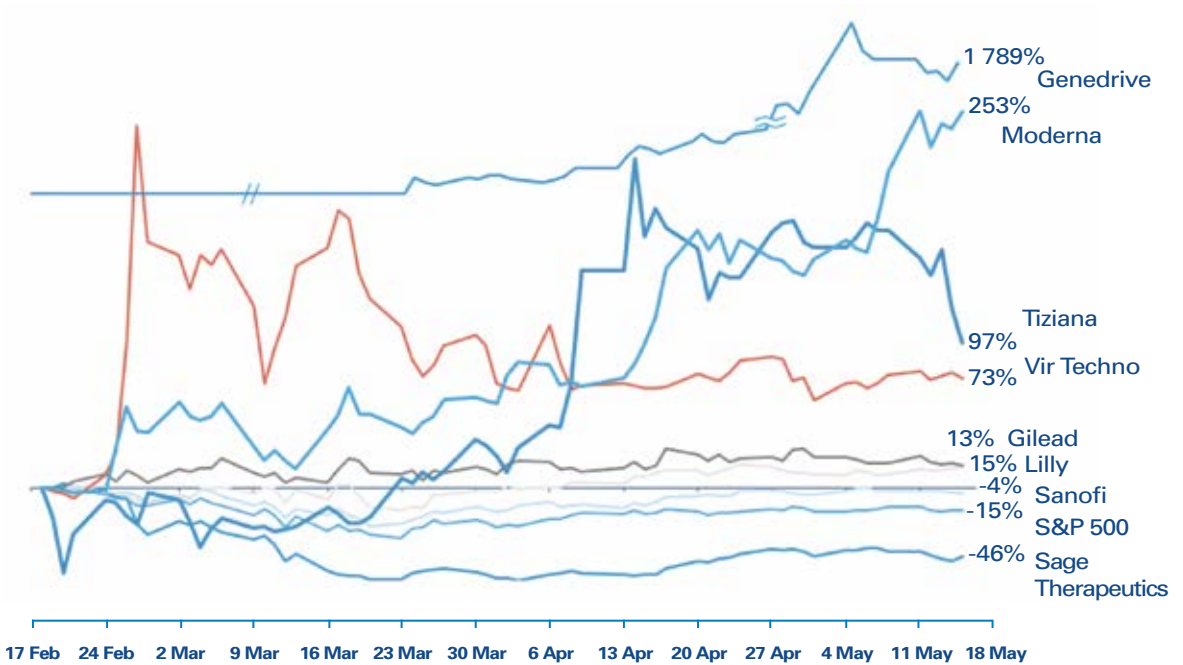


Figure 1: Market performance and volatility of select pharma stocks since the S&P 500 peak on February 19, 2020

This work is driving collaboration between pharma companies, research institutions and government agencies, and does not even include ongoing projects in the diagnostics industry.

In this article we look at the impact of the crisis on life sciences and the long-term prognosis, and suggest some priorities for executives to consider in order to position their companies best.

The impact of COVID-19 on life sciences

Our assessment is that the industry will see significant change in at least three areas:

1. **Strategy – realigning the portfolio:** Companies that are allocating significant resources to COVID-19 are forced to re-prioritize their limited resources, reducing their focus on other activities.

2. **Acceleration of R&D:** The urgency to identify treatments (from either new or approved medicines) and vaccines has caused health authorities to turn things around with unparalleled speed. This will raise expectations for shorter timelines in the future. For example, the US government is working on an accelerated vaccine program under the name “Warp speed”⁴.
3. **Rapid adoption of technology and transforming operations:** This involves digital innovation, especially to solve the dilemma of the pharma “innovation paradox”, whereby highly innovative companies in R&D are quite conservative in operational innovation.

1. Strategy – Realigning the portfolio

Refocusing significant efforts on COVID-19 will not be without consequences. A dollar can be spent only once, and even though people and systems can be more productive, this will inevitably lead to de-prioritization of R&D activity in other areas.

- A significant number of companies are allocating substantial resources to either developing or identifying treatments or developing vaccines for COVID-19 (Figures 2 and 3). This will require reallocating resources (people, facilities, budgets), which will lead to other programs being delayed or cancelled. As it is difficult to cancel an ongoing clinical trial, this will mostly impact programs that have not yet started. This means for some patients it will take longer for treatments to become available, or it may not ever happen. Clinical programs have expiration dates linked to patents, and must be executed by certain times to be attractive commercially.

4. sciencemag.org – 12 May 2020

Organizations in the race for vaccines

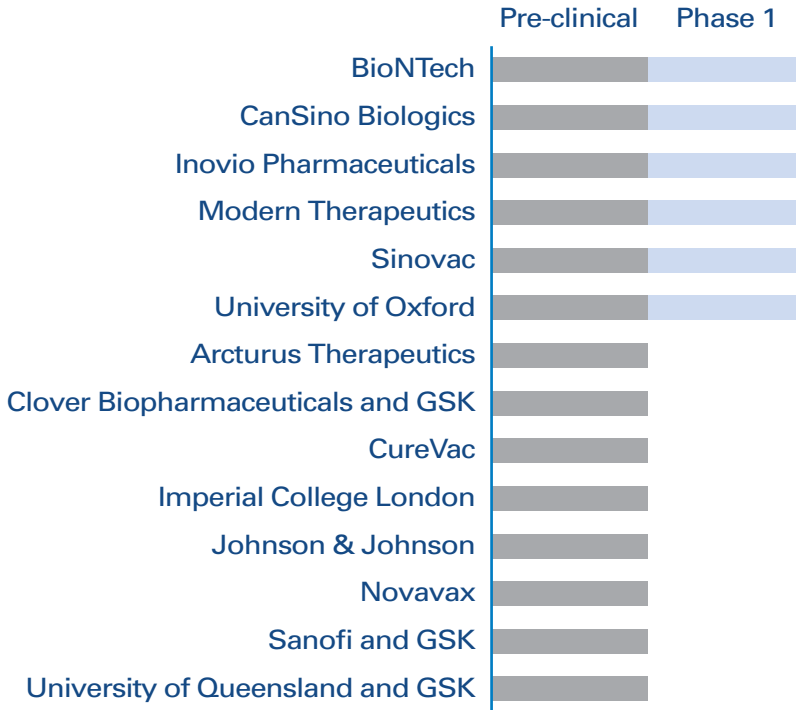


Figure 2: Biopharma companies and research organizations are racing to combat COVID-19

Source: STAT COVID-19 Tracker - 14 May, 2020

- M&A opportunities: Although the industry is generally cash rich, there are plenty of early-stage companies that will find it hard to survive this crisis, and others that are currently vulnerable due to other factors. This may mean good acquisition opportunities for private equity, venture capital and larger pharma companies.

2. Acceleration of R&D

The pandemic is forcing companies, regulators and governments to enhance collaboration and speed up R&D activity in multiple ways. Regulators have demonstrated that they can act fast if they need to, and this potentially sets new standards for the future.

- The urgent drive for treatments and vaccines is forcing companies to do things in ways they haven't done before at this scale (although the Ebola and H1N1

scenarios hold learnings that are being leveraged) and compelling regulators to (re)act much faster than they are used to. Clearly these are extraordinary circumstances, and some of this progress will fall away when the situation normalizes. However, some of the lessons that companies and regulators are learning should stick, which will result in a smoother and faster process. Certain caveats remain – a clinical trial that takes two years to perform cannot feasibly be delivered in less time. The randomized clinical trial will remain pre-eminent.

Companies in the race for treatments

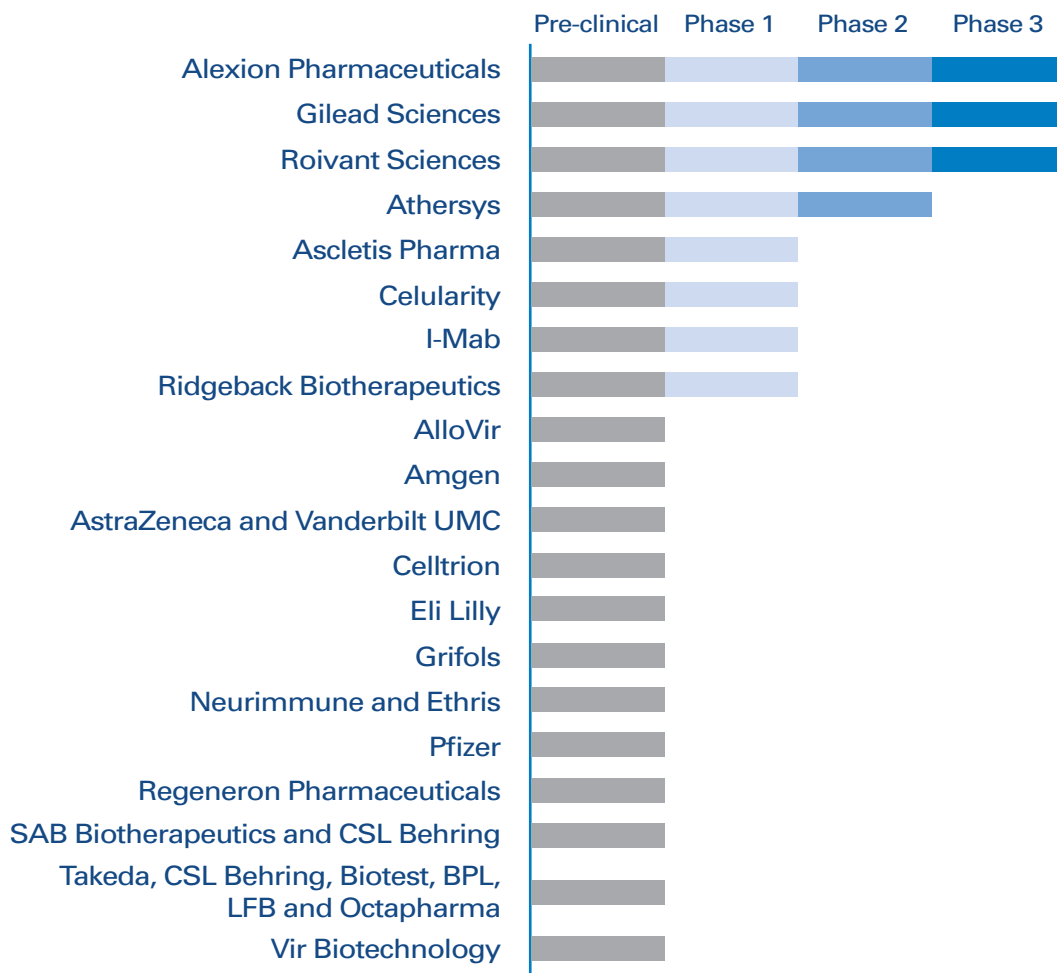


Figure 3: Biopharma companies and research organizations are racing to combat COVID-19

3. Rapid adoption of technology and transforming operations

The pharmaceutical industry is home to an interesting paradox. It has a well-deserved reputation for innovation, based on its R&D output and scientific prowess. However, when you shift from science to operations there is generally resistance to innovation and doing things differently. This means that while organizations have been looking at options for telehealth, virtual trials, wearables, etc., progress has been cautious and slow.

From an operational perspective, most of the pharma industry has rapidly adopted working from home, opening quite a few eyes along the way. Remotely selling medicines or conducting clinical trials is a lot harder, but significant efforts are being made to adapt operations. Research labs and manufacturing facilities need to maintain core operations on site, but the overall impact has been enough for pharma executives to start making plans for (radically) new ways of working:

- Pharma has been reluctant to adopt digital beyond iPads for sales reps and other logical applications. COVID-19 has radically changed this attitude, with future concepts now up and running. With pharma associates not allowed into hospitals to monitor clinical trials, sales reps not welcome at doctors' offices, and patients unwilling or unable to go to trial sites to get their medications or undergo their assessments, companies have had to be agile to maintain the integrity of trials and protect their major investments. This has opened the door to home visits (a key component of virtual trials) and implementation of telemedicine, which are expected to be here to stay.
- The same applies to working arrangements, with companies concluding that they can safely rethink these quite radically.

These are just two areas, and beyond innovation and operations, it may have a dramatic impact on culture. Taking risks in operations, rather than just in major development programs, will become acceptable. Companies will therefore need to develop new capabilities to manage these.

Long-term prognosis for the industry

Everyone now uses the already-cliché phrase “the new normal”. Pharma executives, who are used to thinking long term while, at the same time, providing shorter-term updates to Wall Street analysts, are looking well beyond the crisis and planning how to best position their companies to take advantage of the changed world.

Currently, it appears the life sciences sector is not going to be hit very hard financially. Although there is significant longer-term uncertainty, compared to other sectors pharma is positioned to come out well. There will be strategic opportunities for new operating models, increased productivity from new and accelerated technology, and potentially more efficient ways to market as regulators change how they operate.

However, the overall environment will change significantly and impact how well pharma companies can recover and grow:

- **The general economy:** Over 40 million people lost their jobs in the US due to the coronavirus outbreak by late May 2020⁵, and a study by the Kaiser Family Foundation estimates that more than 27 million Americans may lose health insurance, with almost 6 million of those not eligible for any subsidized coverage⁶. In Europe and Asia the impact will be different and slower, but governments everywhere have gone very deep into the red, which has led to increasing pressures on budgets. Healthcare costs are an obvious target, which means drug prices will be under close scrutiny. This will impact the top line, and executives have to look at how to maintain margins, including new opportunities uncovered during the crisis. Hospitals have been hard hit financially, which will impact their spending and ability to support clinical trials going forward.
- **Operational transformation:** Having been forced into wholesale adoption of technology much faster than anticipated or desired, life sciences companies will come out of the crisis with a new set of capabilities and a thirst for putting them to work. Telemedicine, artificial intelligence and machine learning, data science, and a range of digital tools are now being used in clinical trials, sales activities and other areas. The drive to implement and innovate outside R&D has become stronger. Full transformation will not happen overnight, but the industry will not return to pre-crisis operating methods.

5. New York Times – 28 May 2020

6. Kaiser Family Foundation – 13 May 2020

- **Coronaviruses are here for the long term:** Most experts expect that the current coronavirus, and potential new ones, will not depart soon. This means the pharma industry has a role to play in the long term, and a commercial model is needed. This needs to fit with public expectations to avoid impacting the industry’s reputation. For example, in early May, the pricing of Remdesivir by Gilead (the first therapy approved for COVID-19) was a hot topic. Of all the companies engaged in COVID-19-related trials, most will just come out of it with experience and goodwill. A few will be successful, and given the size of the market for both therapy and vaccines, blockbuster status seems assured. The global vaccine market has already been growing at a healthy rate (Figure 4), which is now likely to improve. Scaling fast and globally will be a challenge, but is a core competency of big pharma. Who “wins” could impact the whole industry – as shown by the share price of Moderna quadrupling in less than three months on high hopes for vaccine development.

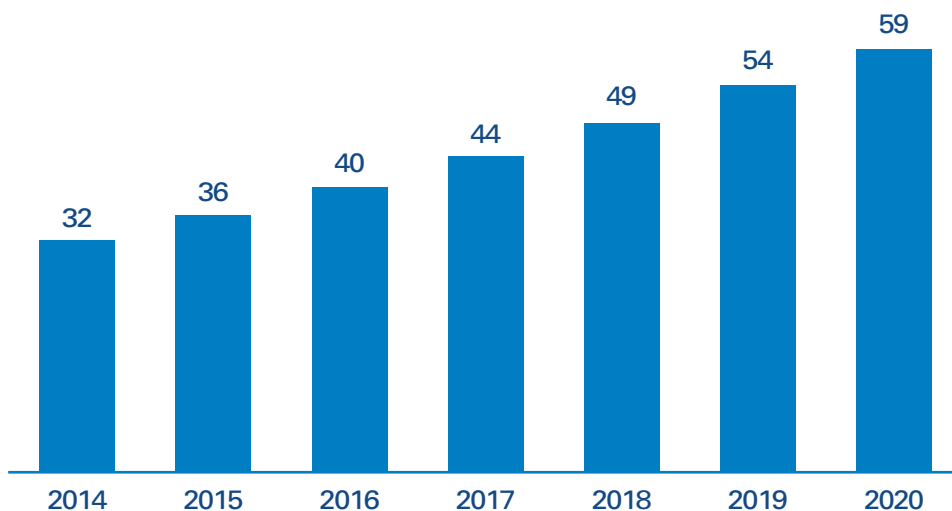


Figure 4: A view of global vaccine revenue (\$BN) with 2019 and 2020 projected. The COVID-19 vaccine, once available, will change this picture

Insight for the executive

The crisis is an opportunity for the pharmaceutical industry to do what it excels at – developing innovative therapies and vaccines by using its scientific and operational capabilities, and as a side benefit, enabling the sector to reshape its public image into something much more positive. In our view, the life sciences sector will come out of this crisis stronger, but this won't happen automatically. There are some takeaways for executives as they position themselves for the new normal:

- Consider current strategies relative to the new environment. What is changing in the therapeutic areas in which you are active, and do you need to adapt? Are there any assets out there that are complementary to your portfolios and can be acquired for good prices? Is the risk landscape changing?
- If the R&D timeline is shortened, what does that mean for you specifically? Where in your organization do you need to change and bolster capabilities so you can take maximum advantage of a shifting landscape and time lines? If you make those choices now, you will have a head start when the “new normal” becomes actually normal.
- Pharma needs to step up the development of data science and digital capabilities. Companies understand this, and although some have made progress, it needs to become ubiquitous. This will push pharma over the hump and turn it into the data industry it really wants to be.

Lastly, if you are not in the coronavirus rat race of developing COVID-19 therapies or vaccines, build an understanding of the areas de-prioritized by others, and execute your strategy to take advantage. Patients need it.

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