

How COVID-19 will change the way we produce

Today's economic headlines are focusing on the devastating economic impact that the COVID-19 crisis is having on the labour market, businesses and households, and on the steps being taken by more than half the world's governments and central banks to mitigate these effects. However, when everything passes, the changes that the current crisis is triggering more quietly and discreetly in many other aspects will become apparent. In this article, we focus on the changes that are likely to occur in the way we produce.

More robust global value chains

For years, the hyper-optimisation and hyper-globalisation of supply chains and the just-in-time strategy¹ have played a key role in the enormous efficiency gains achieved in the production of goods and services. However, the outbreak of the current pandemic has highlighted their fragility. An interruption in only one link in the chain can cause the entire production process to grind to a halt.

The automotive industry is already aware of this domino effect following the earthquake and tsunami that hit the east coast of Japan in 2011.² Since then, some of the firms in the sector that were affected by that disaster decided to increase their stocks of key components within their production chain or to diversify some of their production lines. Toyota, for instance, developed the RESCUE system, a complex database with information on all the distribution networks of each component, which shores up the production process in the event of unexpected events. However, these strategic changes are not exempt from risks: this greater robustness comes at the expense of reduced competitiveness.

The shock of the coronavirus could support a strategic shift towards more robust supply chains in many more sectors and companies. It is difficult to generalise about what features these new global supply chains will have, but they will no doubt be shorter and, therefore, less globalised; they will have more redundancy in terms of key components (i.e. with alternatives in the production of these components), and they will perform more checks at all stages of production. Also, in the field of logistics, there is likely to be greater investment in stocks.

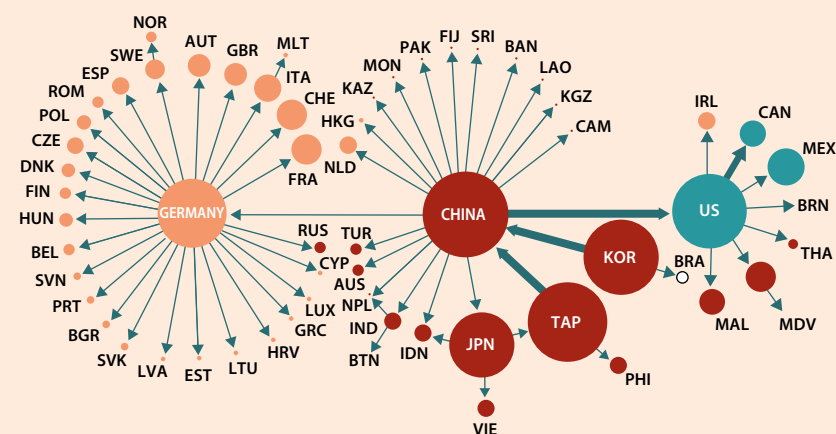
As for the dilemma of whether to maintain more processes or links in the chain in the country of origin or abroad, the inability to predict where the next black swan will occur (whether at home, abroad or worldwide) invites diversification within and beyond our borders. In any case, this diversification will offer more alternatives in the face of disruptions to activity.

On the note of this national/international dilemma, the fragility of supply chains was already revealed in February, when the COVID-19 epidemic was concentrated in Wuhan (China) and a global escalation of such intensity was not foreseen. Since then, and after activity ground to a halt in most of the Asian giant's factories and industries, the appropriateness of the world's high dependency on China was called into question. Indeed, this dependency is prevalent across most of the world's economies in a large number of global production and manufacturing chains, such as the electronic goods needed for information and communication technologies (see first chart).

Digitalisation and automation: supporting production and the fight against COVID-19

Another trend that the coronavirus crisis is revealing is the greater resilience of firms that are more digitalised and automated in disruptive contexts like the current one. Digitalisation and automation facilitate remote working and social distancing in factories, warehouses and shops, and there is ample scope for improvement in these areas. For instance, in terms of remote working, various studies estimate that, at present, between 20% and 35% of jobs can be performed remotely in the major advanced economies.³

Global value chain of Information and Communication Technology manufacturing



Note: The size of the circles represents the value added of the exports. The width of the arrows represents the size of the trade flow (in terms of value added) between countries.

Source: World Trade Organization («Global Value Chain Development Report 2019»).

1. A policy of maintaining stocks at their lowest possible level, whereby suppliers deliver what is needed at just the right time to complete the production process.

2. For more information about the significant impact that the earthquake and tsunami of 2011 had on production as a result of high proliferation of global supply chains, see H. Inoue and Y. Todo (2019). «Firm-level propagation of shocks through supply-chain networks». *Nature Sustainability*, 2(9), 841-847.

3. See T. Boeri, A. Caiumi and M. Paccagnella (2020). «Mitigating the work-security trade-off while rebooting the economy». *Covid Economics 2 VoxEU*. And also J.I. Dingel and B. Neiman (2020). «How many jobs can be done at home?». White Paper. Becker Friedman Institute (also NBER WP W26948).

There is no doubt that post-COVID-19 many companies will increase their investment in digital capital in order to facilitate remote services as well as remote working. This greater flexibility will allow them to shore up their production processes, similar to the redundancy that we highlighted in global supply chains. In addition, the flexibility of being able to work remotely on a regular basis has been associated with improvements in worker productivity, especially in more creative tasks.⁴

In the same vein, companies can also be expected to increase investment in automated machines in order to ensure greater social distancing both among their employees and their customers. McDonald's, for example, has accelerated the tests it was conducting to use such machines in its kitchens and in servicing customers. Furthermore, several studies show that automation in companies not only spreads gradually, but there are also surges at certain times, particularly after economic recessions.⁵ Thus, the need for social distancing combined with the sharp contraction in economic activity throughout the world will provide a double boost to the spread of automation.

Finally, capital in digital and automation technologies represents one of the key tools in the very fight against COVID-19 itself. The current international collaboration⁶ on the coronavirus in the scientific field has been largely made possible by the digital platforms that instantly share the information obtained by each team.⁷ In many hospitals, meanwhile, autonomous robots that emit ultraviolet light are helping in the disinfection of surfaces. Also, mobile phone geolocation technology could prove to be a very useful tool in containing the spread of the coronavirus. In Europe, for instance, a project using this technology has already been launched with the backing of the European Commission.⁸

A shift towards «made at home»?

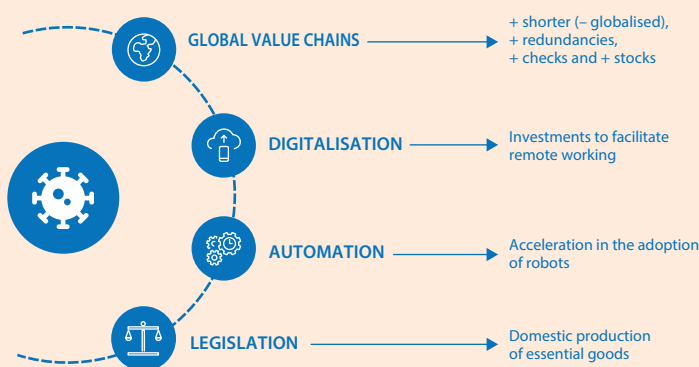
No doubt companies will also have to deal with regulatory changes in relation to their production models as a result of the health crisis. Governments could legislate that certain goods and services that are considered essential, such as primary healthcare equipment, must be produced locally. Even Adam Smith himself considered the possibility of certain exceptions in his argument

in favour of free trade, one of them being precisely when certain industries were necessary for a country's defence or national security (in this case, defence against an invisible enemy like the virus, but defence nonetheless).⁹

However, we must be very careful and precise when it comes to defining what constitutes a matter of national security in order to avoid an indiscriminate use that could open the door to protectionist policies on a large scale. This is what we have experienced repeatedly during the past two years in the trade policy of the Trump administration, which has often invoked national security to justify tariff hikes.

In the EU, on the other hand, we may witness a strengthening of coordination among member states. In the end, size could prove to be an advantage when dealing with unexpected shocks. Thus, it would make sense for the legislation on «essential» goods and services to be determined in the framework of the Union.¹⁰ If Europe

Changes in production post-COVID-19



Source: CaixaBank Research.

secured its self-reliance in the field of agriculture and food with the common agricultural policy as early as 1962, now it is key to achieve a stable supply of goods and services that are deemed essential.

In short, more robust value chains, a definite boost to digitalisation and automation, and adaptation to a new legislative environment that could become more protectionist are some of the changes that we may observe in the way we produce. Changes in value chains and in the way we work could help to accelerate the economic transition towards a more sustainable and environmentally-friendly system. However, we must also take into account the many other changes that will be driven by the consumption habits that arise and prevail after the health crisis: these could include the growth of e-commerce, a return to local products or greater demand for health services, to name just a few of the most likely candidates.

Clàudia Canals

4. See N. Bloom, J. Liang, J. Roberts and Z.J. Ying (2015). «Does working from home work? Evidence from a Chinese experiment». The Quarterly Journal of Economics, 130(1), 165-218. And E.G. Dutcher (2012). «The effects of telecommuting on productivity: An experimental examination. The role of dull and creative tasks». Journal of Economic Behavior & Organization, 84(1), 355-363.

5. See B. Hershbein and L.B. Kahn (2018). «Do recessions accelerate routine-biased technological change? Evidence from vacancy postings». American Economic Review, 108(7), 1737-72. And N. Jaimovich and H.E. Siu (2020). «Job polarization and jobless recoveries». Review of Economics and Statistics, 102(1), 129-147.

6. It is important to mention that this type of collaboration is a form of globalisation. As such, not all forces point towards deglobalisation with the outbreak of the pandemic.

7. See, for example, the article in the *New York Times* of 14 April «Covid-19 Changes How the World Does Science, Together».

8. Pan-European Privacy-Preserving Proximity Tracing (<https://www.pepp-pt.org/>).

9. See A. Smith (2010). «The Wealth of Nations: An inquiry into the nature and causes of the Wealth of Nations». Harriman House Limited.

10. The EU's still inadequate response to the needs of the COVID-19 crisis, however, could lead to a completely opposite scenario to the one we propose here.