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# The Sectoral Impact of the COVID-19 Crisis: An Unprecedented & Atypical Crisis

Erik Canton, Federica Colasanti, Jorge Durán, Maria Garrone, Alexandr Hobza, Wouter Simons and Anneleen Vandeplass

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# The Sectoral Impact of the COVID-19 Crisis

## An Unprecedented and Atypical Crisis

By Erik Canton, Federica Colasanti, Jorge Durán, Maria Garrone, Alexandr Hobza, Wouter Simons and Anneleen Vandeplas

### Summary

The COVID-19 pandemic has triggered the largest and most abrupt contraction in economic activity in recent European history. This brief discusses the sectoral impact of the pandemic. Partly as a result of the nature of the containment measures, contact-intensive services have suffered disproportionately. Abrupt demand shifts and disruptions in global value chains have also affected sectors differently. The prospects for a quick and strong recovery are good but differ across sectors, calling in some cases for a reallocation of resources within and possibly across sectors. The pandemic will also accelerate existing trends such as digitalisation, the green transition, and changes in global value chains. Appropriate policy responses are needed to ensure these transitions are sustainable and inclusive.

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**Contact:** Jorge Durán, email: [jorge.duran-laguna@ec.europa.eu](mailto:jorge.duran-laguna@ec.europa.eu); Maria Garrone, email: [maria.garrone@ec.europa.eu](mailto:maria.garrone@ec.europa.eu). European Commission, Directorate-General for Economic and Financial Affairs, Economics of Structural Reforms and Investment.

## Introduction

The COVID-19 pandemic and the measures taken to contain it have triggered the largest and most abrupt drop in economic activity in recent European history. After an initial contraction that exceeded 11% in 2020Q2, there was a strong rebound (+12%) in 2020Q3, after which the EU economy slightly contracted again. It is projected to keep expanding achieving a growth rate of 5%, 4.3% and 2.5% in 2021, 2022 and 2023 respectively.<sup>1</sup> The impact of the pandemic has varied dramatically across sectors.<sup>2</sup> Contact-intensive services, such as tourism, have suffered disproportionately, and continue to show much lower activity levels. Services facilitating non-contact activities, like ICT support, were quick to recover. Sectors not directly targeted by containment measures after the initial broad-based lockdowns (e.g. manufacturing and construction) were affected indirectly by disturbances in global value chains or drops and shifts in demand, but have by mid-2021 almost reached their pre-crisis activity levels again.

The prospects for a quick and strong recovery differ across sectors. As was observed in the third quarter of 2020, demand can quickly rebound even in the most affected sectors once the pandemic is contained. Nonetheless, the sheer size and the persistence of the shock is likely to spur business failures and a decrease in employment in the most affected sectors.<sup>3</sup> The crisis is likely to cause a reallocation of resources within, and possibly also across sectors. The crisis has also intensified trends that were already underway before the lockdown, and some sectors are better placed to benefit from them than others. For instance, the pandemic has forced companies to develop more flexible workplace models and accelerated the digital transformation with permanent impacts in sectors such as retail.

This brief discusses the sectoral impact of the COVID-19 crisis, the different recovery prospects across sectors, and the potential policy implications. The exceptional nature of this crisis has the potential to disrupt or enhance long-run sectoral trends. Given the high degree of uncertainty, the analysis is largely speculative. It examines the short-term impact of COVID-19 by inspecting economic performance at sectoral level in 2020 and 2021, based on available data and tentative projections. It then discusses the potential long-term sectoral effects of the pandemic through its impact on the most important trends: digitalisation, the green transition and changes in

global value chains. To this purpose, it draws on views of sectoral professional associations and business consultants. Finally, the brief points to relevant implications for policy.

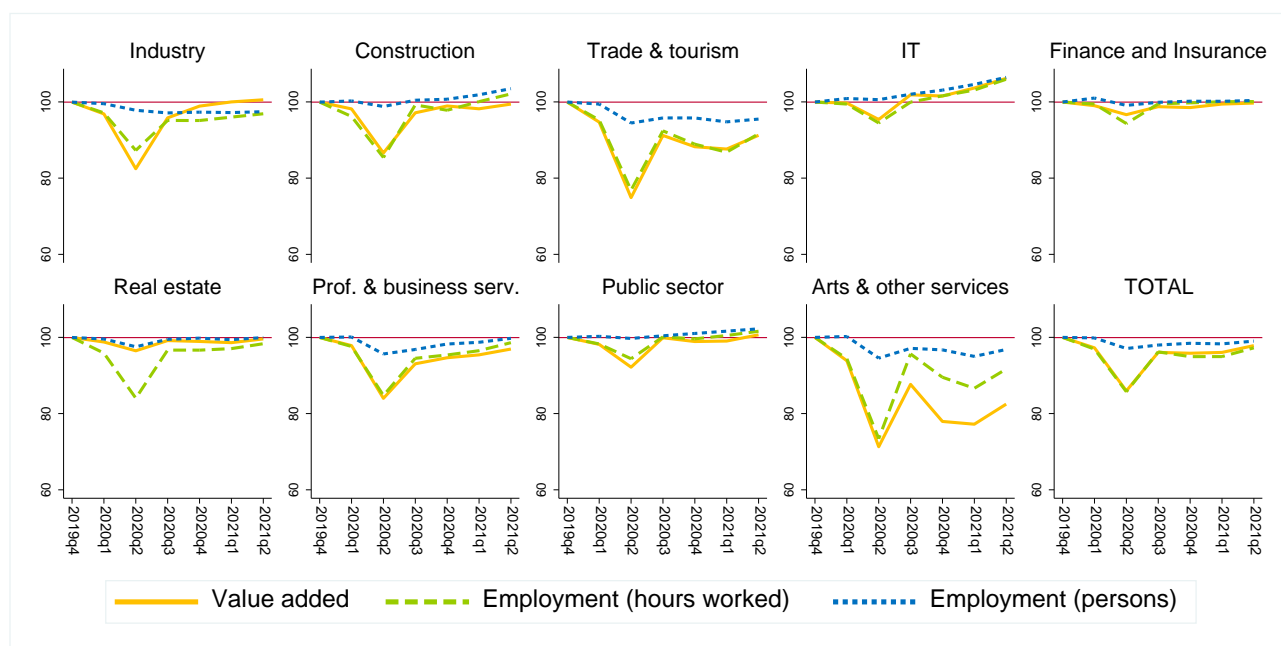
## An atypical sectoral recession

### A dramatic and uneven contraction of economic activity

The outbreak of the pandemic has had a huge impact on a vast majority of sectors, particularly services.<sup>4</sup> The most affected sectors were personal contact-intensive services such as retail, hospitality, transport, arts and entertainment, and some other service activities (personal services, household activities, etc.). At the height of the first wave in the second quarter of 2020, economic activity in these sectors was 25% below the pre-COVID-19 level (see Graph 1). Sectors that require less physical contact with customers or between workers were less affected. Nevertheless, industry contracted by a still substantial 17% and construction by 13%. Services with high-skilled workers and high scope for remote work like ICT, finance, and real estate were more moderately affected, and contracted by less than 5%.

The pattern of the sectoral reaction to aggregate changes has been very different from past recessions. In past recessions, some of the hardest hit sectors mentioned above turned out to be relatively insensitive to the economic cycle. That is, changes in GDP induced smaller changes in value added in these sectors (sectors with coefficients smaller than one in Graph 2). For instance, the 12% contraction of total activity in the second quarter of 2020 would have induced a mere 5% contraction during the financial crisis in arts, entertainment and recreation, and other service activities (R-U) (Graph 2). Instead, the sector contracted by a staggering 24%, i.e. four times deeper than the equivalent during the financial crisis. At the other extreme, sectors like information, communication or banking have evolved pro-cyclically in the past but reacted much less during the current crisis. In the case of communication (J), this observation is clearly linked to the lockdown effect on the demand for these services. For banking (K), the drop in some types of activities could have been compensated by the need for financial services by firms and households in financial stress, besides the ability of the sector to provide services without physical interaction with clients.

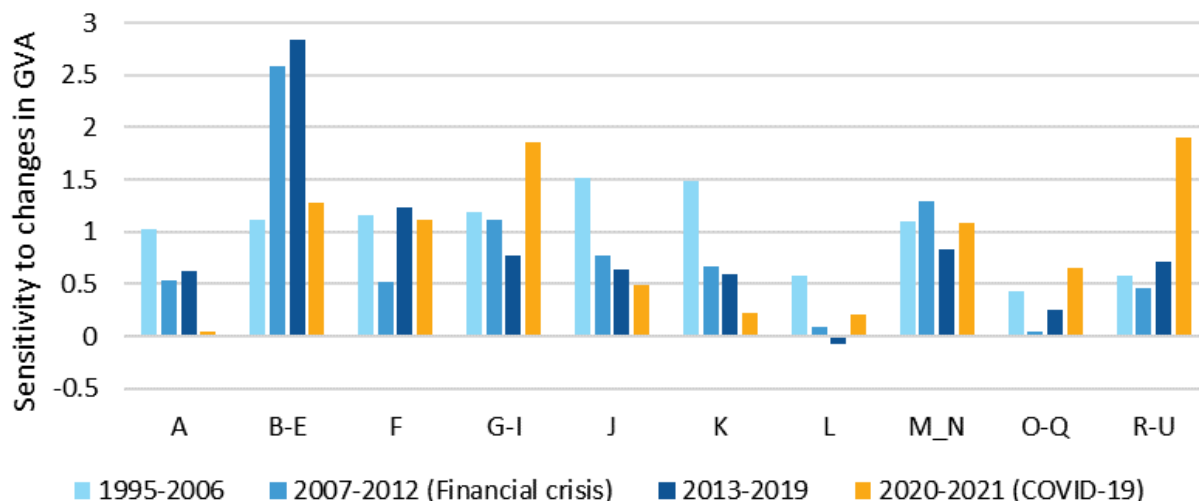
Graph 1: Changes in sectoral value added, employment, and hours worked, EU27 average



Note: Performance is expressed as an index (2019q4=100). Data are seasonally and calendar adjusted. Value added is calculated based on gross value added in chain linked volumes (index 2015=100). Employment, measured in hours worked and in persons, are based on domestic concepts. Following the NACE code nomenclature, considered sectors are respectively: Industry (B-E); Construction (F); Trade and tourism (G-I); IT (J); Finance and insurance (K); Real estate (L); Professional and business services (M-N); Public sector (O-Q); Arts, entertainment and other services (R-U).

Source: Own calculations based on quarterly national accounts data (Eurostat).

Graph 2: Sectoral sensitivity along the business cycle, selected periods

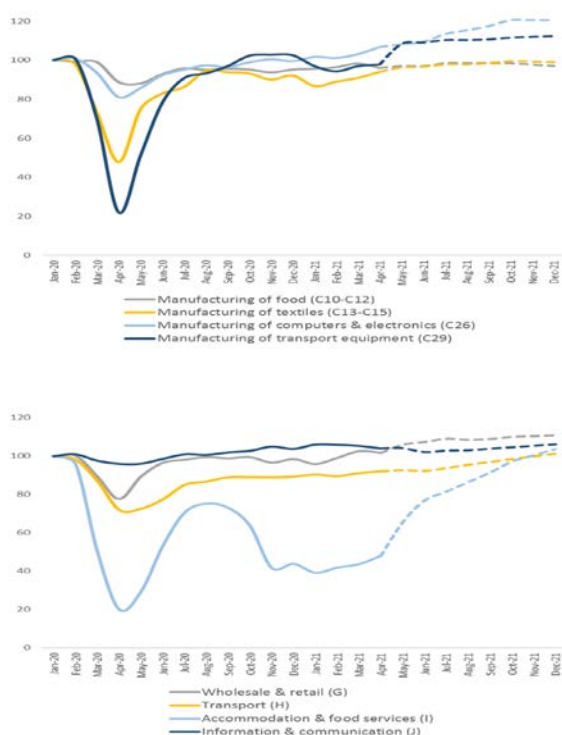


Note: The chart reports the sensitivity of growth of sectoral real value added relative to changes in total value added. A value greater than one means that the sector is more volatile than average. In particular, it displays the slope  $\beta_i$  in the regression  $g_{i,t} = \alpha_i + \beta_i g_t + \varepsilon_{i,t}$  where  $g_{i,t}$  is the growth rate of sectoral value added and  $g_t$  the growth rate of GVA.

Source: Eurostat and own calculations.

Over the course of 2020, the evolution of the economic contraction varied even at the level of subsectors (Graph 3). At the height of the first wave, reduced demand for e.g. textiles and automobiles (in addition to supply-side restrictions) caused reductions in turnover of more than 50% in these manufacturing industries. After the first wave, most manufacturing sectors rebounded quickly, as pent-up demand was unleashed. Automotive sales, for instance, exceeded pre-crisis levels by the autumn of 2020. The recovery was less pronounced in the service sectors, in particular among the hardest hit accommodation and food services.

Graph 3: Turnover in selected sectors, EU average



Note: EU turnover-weighted average for all countries except CY and MT.

Source: Archanskaia et al. (2021).

The resurgence of the pandemic at the end of 2020 and throughout the first half of 2021 had a more muted impact on most sectors. Businesses and workers adjusted to the pandemic after the first wave, as improved working conditions (at the workplace and at home) helped to preserve economic activity in most sectors.<sup>5</sup> Indeed, while the epidemiological situation and lockdown measures since the autumn of 2020 have been of a similar nature as in spring, the economic contraction was less pronounced. This suggests that, in most sectors, both companies and consumers were better prepared

at the onset of the subsequent waves, which helped to largely preserve economic activity. Yet, the hospitality sector (I) continued to experience serious disturbances to its activity throughout the first half of 2021 due to the restrictions on gatherings and international travel. The sector is estimated to take longer to recover, barely reaching pre-crisis turnover levels by the end of 2021 (Archanskaia et al., 2021).

### A contraction of hours but not jobs

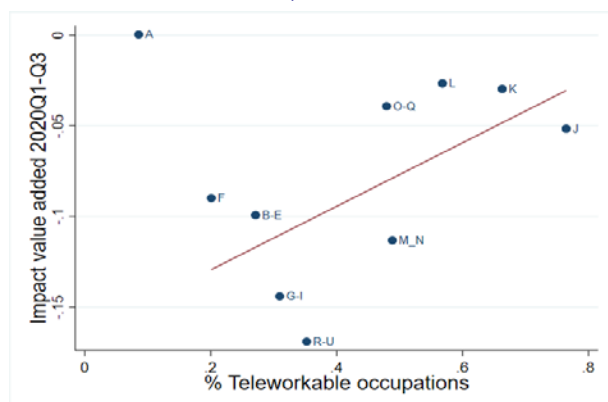
The impact on labour has been cushioned by policy support measures, notably short-time work schemes. At the height of the crisis (2020Q2), the contractions in hours worked across sectors largely mirrored the contraction in economic activity. Fortunately, the impact on jobs has been more muted. The reason is that extensive public support measures have been targeted at preserving jobs. The EU has supported these schemes via the Support to mitigate Unemployment Risks in an Emergency (SURE) providing financial assistance up to EUR 100 billion in the form of loans from the EU to affected Member States to address sudden increases in public expenditure for the preservation of employment. Still, between 2019-Q4 and 2020-Q2, around 3% of employment or almost six million jobs were lost in the EU. By end of 2021-Q2, employment remained around 2 million below its 2019-Q4 level.

This average pattern masks important differences across sectors. Graph 4 shows how certain job characteristics have been instrumental in explaining the initial impact of the pandemic on activity by sector. Notably, the impact of the pandemic has been mitigated in sectors where contact is easier to avoid or teleworking is an alternative to face-to-face work (see Graph 4). In general, workers in sectors such as finance and insurance (K) and IT (J) can easily telework. This is much less the case in industry (B-E) or construction (F), and even more difficult in trade, transport and accommodation (G-I) and arts, entertainment and recreation (R-U). The last two sectors (G-I and R-U) are also particularly contact-intensive, which is why they were completely shut down as part of the early containment measures. While the public sector (O-Q) also includes a high share of contact-intensive occupations (such as in health or education), these were often considered as “essential” and therefore not (or only partially) shut down during the pandemic. As a result, the impact on added value was much less pronounced than in other sectors (see also Fana et al., 2020).

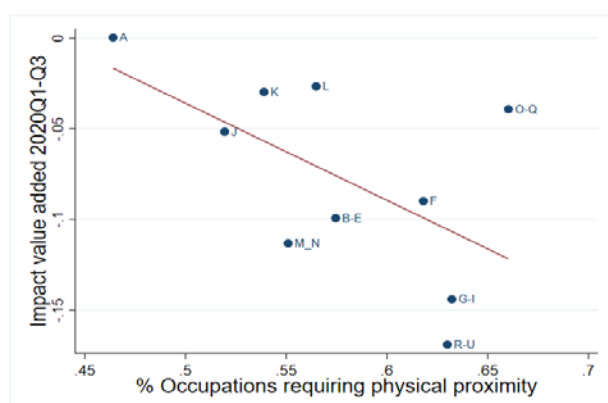
The observed sectoral contractions in hours worked were very much in line with the declines in economic activity. Large reductions in hours worked were observed particularly in contact-intensive services (hospitality, arts and entertainment: around -25% at the trough) but also in professional and business support services, industry and construction (around -15%) (see again Graph 1).

Graph 4: Factors driving the contraction in sectoral value added, EU average

(a) % of teleworkable occupations



(b) % of occupations requiring physical proximity



Note: Impact is calculated as in Graph 1. Occupational variables are calculated combining LFS data at ISCO 2-digit level with O\*NET-based information on the ability to telework and physical proximity requirements at the occupational level. For the linear fit (red lines), the agricultural sector is excluded in panel (a) for being an outlier.

Source: Eurostat, O\*NET and own calculations.

Reductions in employment in terms of persons were more muted, but largely falling on the same sectors. At the same time, some sectors saw an exceptionally weak response of employment compared to the drop in value added and/or working hours. This may point at differences in job security, stemming either from specific employment protection regulations (e.g. in

the public sector) or from the high-skilled nature of the jobs in the sector (e.g. in the finance and insurance sector) which makes a temporary reduction of employment contracts more costly in terms of firm-specific human capital and recruitment costs. In agriculture, on the other hand, the mobility restrictions that hindered the recruitment of foreign labour may contribute to explaining why employment was more strongly affected than value added (which was hardly impacted).

The impact of the pandemic has also been uneven across types of workers. Job losses have been more significant for younger workers and low-skilled workers, who were already in more fragile labour market positions before the pandemic. Young workers are more likely to work in hospitality and retail. Young and low-skilled workers are also more likely to work on temporary contracts, and be affected by the broad halt in recruitment during the pandemic (see also Fana et al., 2020). Contrary to what was feared in the early stages of the pandemic, job losses in the EU have been slightly more frequent among male than among female workers. Nevertheless, early research suggests that the increased burden of childcare resulting from widespread school closures has disproportionately fallen on women, which may have affected their ability to perform at work and their career prospects going forward.

### Effects on households and firms

The crisis has affected both the level and the composition of consumption. Containment measures induced directly and indirectly deep shifts in demand across sectors. Demand for some goods and services declined (e.g. visits to the cinema or restaurants or trips abroad) while for others it increased (e.g. office equipment, outdoor activities or home entertainment). In some cases, the sudden shift in demand caused supply shortages (see the discussion below). Added to this, containment measures and general uncertainty about the evolution of the pandemic took a direct toll on the income of many households and induced an increase in precautionary savings. The household saving rate spiked to a staggering 24% of gross disposable income in 2020-Q2 in the EU. On an annual basis, it increased to more than 18.5%, up from its long-term average of around 12%.<sup>6</sup> This impact on the level of demand was also felt in sectors whose production was not directly impacted by containment measures.

Given that the pandemic has resulted in more employment disruptions and job losses among vulnerable workers, we would expect poorer households to have been impacted disproportionately by job and income losses. This would affect the composition of demand, with a disproportionate impact on non-essential goods and services, as poorer households tend to spend relatively more on essential items such as food, medicines and housing.

From the supply side, the pandemic and the measures to contain it are having an important impact on the financial health of corporations although differing across sectors. Without policy support, the financial troubles widely felt by entrepreneurs could have triggered a wave of bankruptcies causing lasting economic and social damage. Simulations show the extent of liquidity problems faced by firms since the outbreak of the pandemic (see Connell-Garcia and Ho (2020) and Archanskaia et al., 2021). They show that almost 60% of firms (with 10+ employees) have incurred losses over 2020. More than half of them, or 34% of all firms, did not have sufficient cash buffers at the beginning of 2020 to cover these losses, which makes them particularly vulnerable. Moreover, a high share of illiquid firms had been financially vulnerable before the COVID-19 crisis, which further limits their access to external sources of finance. To have an idea of the sheer size of the potential disruption at the firm-level without any support, in accommodation and food services 97% of all firms are estimated to have incurred net losses over 2020. At the same time, close to 80% of firms in the sector would have depleted the cash buffers they held at the beginning of the year.

Policy support at both national and EU level has prevented large-scale business failures or an upsurge in unemployment so far. Providing broad-based support to viable businesses across all sectors and keeping workers attached to their firms has been vital to prevent irreversible losses in know-how and productivity, and hence to preserve Europe's competitiveness.

On the way forward, a key policy challenge will be to gradually withdraw the existing support measures and/or to better target them. This will be crucial not only to limit additional increases in public debt, but also to allow for the reallocation of resources towards more productive uses and avoid the "zombification" of failing businesses. Whilst it is sensible to link the phasing out of support measures to the lifting of containment measures. In some sectors (such as tourism), demand will take time to

recover. Not least because of fear of the disease, even after containment measures are lifted. In some other sectors (such as business travel), demand may not recover fully, even after epidemic risks have disappeared

### Medium to long-term sectoral perspectives – Acting on existing trends

The effects of the COVID-19 crisis are likely to manifest through different channels. The economic hardship and resulting business failures could spur important reallocation of resources within as well as across sectors. The pace of the recovery will depend mostly on health risks, containment measures, government support, the speed of vaccination campaigns, the ability of businesses to meet demand, and consumer confidence (OECD, 2020a). However, the recovery may be faster than expected given the commitment of Member States and the EU to actively support the recovery. The general escape clause of the Stability and Growth Pact has been activated, giving slack to governments to spend on support and the recovery, and NextGenerationEU stimulates directly the economy via traditional means like InvestEU but also via the novel Recovery and Resilience Facility (RRF), a package to support Member States to the tune of EUR 723.8 billion.

Faster or slower, industry associations and business consultants expect the recovery to be uneven across sectors, with some recovering relatively swiftly to normal levels of activity and others languishing for some years to come. For instance, the tourism industry is expected to recover to pre-COVID-19 levels between 2022 (domestic travels) and 2024 (international travel) (ETC, 2021). Still, business travel is unlikely to recover completely, and even in the absence of permanent behavioural changes, it would not be expected to recover before 2024 (ETC, 2020a). In the retail sector, activity may take around five years to recover to pre-COVID-19 levels and digitalisation may entail large reallocations within the sector (for the US, see KPGM, 2020). Large firms may recover faster than small firms (Dua et al., 2020).

Second, the crisis can interact with ongoing trends, such as digitalisation, the green transition, and changes in global value chains. The pandemic can strengthen some of these trends, and hence magnify or bring forward their effects. Table A1 in the annex below summarises the main channels through which



the pandemic affects these three secular trends. Table A2 includes some sectoral disaggregation according to industry associations, consultants, and other experts.

### The digital transition: A potential silver lining of the COVID-19 crisis

The strong uptake of digital technologies has become one of the salient features of the COVID-19 crisis. These technologies have been crucial in mitigating the impact of physical distancing measures in a number of sectors. The crisis has substantially sped up digital uptake and raised the demand for digital technologies, e.g. teleworking, videoconferencing, online schooling, automation, data analytics and e-commerce, and home entertainment. Some of these phenomena may be temporary, like online schooling, but others such as an increased uptake of remote working methods are likely to stay. Barrero et al. (2021) have estimated that 20% of working hours will shift permanently online.

The digital uptake boosted by Covid-19 has the potential to produce substantial sector transformations. The ICT industry is expected to reinforce its key role in the economy and emerge stronger. Other sectors, like wholesale and retail, are likely to undergo important restructuring and supply chain reorganisation, including through the increased adoption of e-commerce and omnichannel marketing strategies.<sup>7</sup>

The acceleration of the digital transition can generate significant productivity improvements, although some sectors are likely to benefit more than others. For example, manufacturing industries can gain substantially from digitalisation directly and indirectly: productivity can increase via automation of the production process but also because digitalisation may facilitate the ongoing *servicification* and the outreach to international markets.<sup>8</sup>

However, the productivity effects of the digital transformation will take time to materialise. Despite the ongoing digitalisation, labour productivity has stagnated over the past decades. While this may seem paradoxical, it also reflects the fact that the links between the adoption of digital technology and productivity are complex. In particular, this is due to the need for complementary investments, such as the reorganisation of production structures, development of new business models, skills for the digital economy, as well as complementary policies

promoting competition and an efficient allocation of resources in the economy (see Gal et al., 2019).

Moreover, in specific sectors, the digital transition can have secondary negative effects, e.g. productivity growth may be negatively affected by reduced agglomeration effects due to teleworking and de-urbanisation. This may particularly be the case for high-tech industries and knowledge-intensive services. Agglomeration economies are indeed associated with the creation, diffusion, and accumulation of new knowledge and ideas within and between industries (e.g. Gornig and Schiersch, 2019). Finally, in some activities digitalisation may partially crowd out existing services. For instance, the rise of home entertainment may go at the expense of other types of arts, entertainment and recreation services. Even within narrow sectoral categories, large retail companies may benefit more from e-commerce, at the expense of smaller brick and mortar businesses.

Opportunities will not come without challenges. A faster digital transition can give rise to policy challenges because of the rise of market power or potential labour market mismatches. Digital technologies, characterised by low reproduction costs and strong network effects, are prone to winner-takes-most dynamics, potentially lowering competition in some markets. In the wholesale and retail sector, the ability to invest in digital tools is expected to increase the market power of major retail firms—although omnichannel marketing strategies could still help the offline retail to compete with pure e-commerce players. The increased adoption of automation technology and teleworking might also further skew labour market demand towards high-skilled, high-wage employment with less jobs at the lower-end of the skills and wage distribution, especially in the service sector. Skill gaps and labour market mismatches can ensue in the absence of effective reskilling and upskilling programmes to support people moving to other sectors and occupations (e.g. away from routine tasks in manufacturing). Such concentration and labour market mismatches could also generate policy challenges with respect to income dispersion and regional inequalities. These dynamics underline the need to address remaining gaps in skills (including digital skills) among EU citizens and digital infrastructure.

## Green transition: A transformative impact on many sectors

The COVID-19 crisis has acted as an accelerator for the political support to the green transition, which was already high on the EU agenda with the European Green Deal. Some have argued that the pandemic increased citizens' awareness on the importance of climate action policies (Kachaner et al., 2020). The crisis may have a negative impact on low-carbon investment in the short-term because of the uncertainty and reduced financial resources. However, strong and decisive policy action by the Union and Member States aims at counteracting this, and even accelerating the green transition. With a view to deliver on the UN's 2030 Agenda for Sustainable Development and on the Paris climate agreement, the Commission recently committed to an ambitious climate target to set Europe on the path to becoming climate neutral by 2050 – namely, to cut greenhouse gas emissions by at least 55% by 2030. It also committed to implement the Green Deal roadmap as a new growth strategy "to build a more resilient, sustainable and fair Europe" (European Commission, 2020c).

Achieving the agreed climate and environmental EU-level targets and objectives will require significant changes in all sectors, also depending on the availability of mature technology. It will also necessitate the development of sector-specific pathways for these transitions. Changes in consumer behaviour will also matter to achieve climate-neutrality and the environmental ambition of the Green Deal. Greener consumption practices are estimated to reduce the EU CO<sub>2</sub> footprint by 25%, even though this will also depend on policy support (Moran et al., 2020). For example, a stable regulatory framework and investment in infrastructure along with incentives to support production and purchase of electric vehicles will be crucial to accelerate their market penetration.

Furthermore, the green transition, based on a stronger reliance on clean and renewable energy, higher demand for energy efficiency and a faster rate of building renovation, would particularly affect energy, transport, construction and manufacturing. For the construction sector, for example, restoring confidence of property owners and investors, tackling skills mismatches, and providing financial and economic incentives will be crucial in the short-term to accelerate investment in deep renovation. However, in the long-term, commercial real estate might be heavily affected as a result of teleworking.

In addition, sustainable consumption could be boosted thanks to shifts in consumer preferences towards energy and resource efficiency, supported by financial incentives from the government. The green transition may boost low- and medium-skilled employment (e.g. for the renovation of buildings and the production of renewable energy), counteracting some of the negative impacts on demand for lower skilled workers and social cohesion by the digital transition. At the same time, for many workers the transition would require some reskilling in order to be able to adopt alternative production methods or shift to other sectors and occupations.

## Changes in global value chains

The outbreak of the COVID-19 crisis severely disrupted production and trade. The lockdowns closed many plants, and the disturbances to trade routes still reverberate today (mid-2021) with shipping costs at an all-time high. There were shortages of masks and other protective equipment, and of other key items required to treat Covid-19 patients (e.g. ventilators and pharmaceuticals). Moreover, there were problems with the supply of strategic items used in key industrial supply chains such as the automotive or the chemical industry (Barbieri, 2020).

In some globalised sectors, supply is still struggling to meet demand. One illustration concerns microprocessors, which have been in short supply since 2020 and are expected to remain so for a few years to come. The shortage of microprocessors is due to the increase in teleworking and consumption of home entertainment with the ensuing increase in demand for home electronics. Initially the shortage was due to a temporary delay in supplies as factories shut down because of the lockdowns. Relatively soon production went back to normal, but then a surge in demand due to changing habits during the pandemic and other factors increased demand (The Guardian, 2021, Burkacky et al., 2021).

Another example concerns the shortage of bicycles. The closure of bars and restaurants has increased outdoor activities and created a shortage of bicycles because manufacturers have not been able to follow the spike in demand. The shortage is expected to last until the end of 2022 (Annis, 2020). In other instances, supply disruptions were quickly compensated by the swift rebuilding of capacity in the home market, or the swift resumption of imports from the rest of the world (Norberg, 2021).

The observed shortages have further fuelled debates on the possible reshoring of offshore production. Already before the crisis, some firms (mostly in the manufacturing sector) were reshoring some production activities back to Europe or North-America. This happened either as a deliberate strategy (e.g. rising production costs in emerging economies, emerging global supply chain or intellectual property risks, digitalisation and robotisation in the home country), or as a result of a perceived 'failure' of the offshoring strategy (e.g. problems with quality, availability of raw materials and local skilled workforce) (Barbieri, 2017; Lund and Steen, 2020).

In some countries, among which a few major trade partners of the EU, there was already some evidence of a secular trend towards a declining reliance on foreign trade. The global share of the overall value of trade flows of intermediate inputs at any stage of the value chain over final output has declined slightly since 2011 (OECD, 2020b). In the EU, however, exports of intermediate goods as share of GDP have continued to grow since the global financial crisis, particularly within the EU (see Darvas, 2020).

As the pandemic disrupted global value chains, it has revealed some of Europe's dependencies on a limited number of suppliers for certain important goods and raw materials. In response, some have highlighted the risks associated with international production and suggested to make global value chains more resilient by diversifying their supply base and/or reshoring some activities (OECD, 2020b; Javorcik, 2020). Also in Europe, discussions started on the possible need to reduce dependency on international trade partners for certain strategically important products.<sup>9</sup>

A recent ECB survey of leading companies in the euro area shows that in the short term, intentions to reshore remain scant. To better manage risks, some companies may consider further diversifying their supply chains, combining the advantages of domestic supply with the opportunities from offshoring and international trade (ECB, 2021). Similarly, Maqui and Morris (2021) find that many companies are not seeking to internalise more parts of the supply chain.

A major reason for the prudence shown by firms with reshoring is the considerable efficiency costs that such strategy may imply if implemented strictly. In the automobile industry, for instance, it would be difficult to avoid importing raw materials and

intermediate products from other regions (especially for electric cars) (Fechner, 2020). Similarly, the semiconductor industry estimates that achieving "self-sufficient local supply chains in each (world) region would require at least \$1 trillion in incremental upfront investment and result in a 35% to 65% overall increase in semiconductor prices".<sup>10</sup> At the aggregate level, Eppinger et al. (2021) argue that the welfare losses of partial reshoring would be considerable while not being effective in shielding economies from foreign shocks. Miroudot (2020) underlines that the key to global value chain resilience is not the location of production, but rather the global ability to scale up production when required. In case of an economic shock, access to international production networks can actually also help firms and countries recover faster (OECD, 2020b).

Still, autonomy in the production of an input of critical importance is also a matter of geostrategic relevance. For this reason, a number of measures have been taken recently by governments to reshore the production of semi-conductors. China has pledged US\$ 1.4 tr over six years to secure a lead in sectors like chips, artificial intelligence and autonomous driving. South Korean companies are committing US\$ 450 bn over a decade on chip research and expansion, while TSMC alone has earmarked US\$ 100 bn over the next three years. The US will devote US\$ 50 bn to reshore semiconductors' manufacturings and has called for export controls to "protect U.S. national security interests by limiting advanced semiconductor capabilities in countries of concern". In this context President von der Leyen has announced a state-of-the-art European chip ecosystem to ensure security of supply for European firms.<sup>11</sup>

At the same time, there are several economic, social and political developments that could reshape global production processes. Some new technologies, such as automation and additive manufacturing (also known as 3D printing), have the potential to reduce the need for trade in some goods while fuelling growth in services trade (McKinsey, 2019). Consumer preferences are shifting towards local and sustainable consumption, boosting the process of regionalisation. Some of the demand shifts caused by the COVID-19 crisis might become more entrenched. Changes in the configuration of the tourism sector, such as traveller preferences towards domestic destinations, could be persistent even after the recovery. This shift combined with a wider adoption of videoconferencing (as a substitute for

business travel) could also reduce air transportation. On the other hand, some developments may actually favour globalisation. For instance, the increased use of digital means in reaction to the COVID-19 pandemic has made it easier to work closely with service providers and experts located far away and may thereby provide a boost to offshoring and outsourcing in services.

## Conclusions

Looking ahead, most sectors are expected to reach pre-crisis activity levels over the next 1-3 years – but the pace of recovery will vary across sectors. At the same time, the COVID-19 crisis is likely to provoke a reallocation of resources within sectors, for example from brick-and-mortar towards online shops, or from holidays abroad to domestic destinations.

The pandemic has been acting as a catalyst for longer term structural changes, such as the green and the digital transition. The acceleration of the digital transformation is already being felt across all sectors, but with different impacts across sectors: some are likely to expand (e.g. ICT), others are likely to see significant changes in their organisational structure (e.g. retail) and/or production patterns (e.g. manufacturing). Some of these changes may lead to substantive gains in productivity. In this respect, the COVID-19 crisis is likely to potentially have a silver lining after all. However, we have also discussed how some concerns may arise over concentration and increased wage inequality and skill gaps, especially in the services sectors, that call for policy action.

As the pandemic has impacted sectors in a different way, in the short run there is a need to promote reallocation of resources away from sectors where activity remains depressed, towards sectors that are growing and in need of labour. Indeed, in many sectors, labour shortages are already emerging. The pandemic may speed up reallocation through an increase in business churn and firm restructuring, once support measures are withdrawn. There remains considerable uncertainty around the extent to which this business churn will occur, as for now (2021Q2), the overall rate of bankruptcies remains 25% below pre-crisis levels as a result of policy support measures that remain in place, even if in some sectors, notably accommodation and food services, bankruptcies have taken up fast.

Policy can facilitate, where necessary, the reallocation of capital and labour between sectors. For example, the reallocation of capital can be helped through an attractive business environment, a modern public administration, effective corporate solvency regulations and fair and transparent tax-benefit systems. Similarly, the reallocation of labour can be fostered by investing in training to support workers' professional transitions; modernising public employment services to provide high-quality job search assistance, drawing on up-to-date labour market intelligence; and through effective labour market institutions that are responsive to changing labour market conditions, in line with the recently adopted Commission Recommendation for Effective Active Support to Employment (EASE).<sup>12,13</sup>

The recovery instrument NextGenerationEU, with the RRF as its centrepiece, will help Member States undertake crucial reforms and boost investments for the green and digital transformations.

## Annex A

Table A1: Summary of main long-term trends potentially affected by the COVID-19 pandemic

Digital transition	Changes on Global Value Chains	Green transition
<p>COVID-19 will lead to <b>acceleration</b> through:</p> <ul style="list-style-type: none"> <li>• Teleworking and telepresence (+)</li> <li>• Digital technologies and services (+)</li> <li>• E-commerce (+)</li> <li>• Automation (+)</li> <li>• Data analytics/processing (+)</li> </ul> <p><b>Productivity: potential efficiency gains</b>  <u>Automation and data analytics/processing</u> (+)                      → BUT scope debated/delayed.  <u>Teleworking</u> (+/-)                      Agglomeration effect due to de-urbanisation (-)                      Reduced commuting time and increased connectivity (+)                      Reduced creativity (-) due to less face-to-face contacts.  <b>Concentration: increase</b>                      Network effects (+)                      High fixed costs &amp; low marginal costs (+)                      Larger edge between more and less productive firms (+).  <b>Digital skills premiums: positive</b>                      Deeper skills gaps and mismatches.                      → BUT investment boost on re/up skilling.  <b>Distributional effects: econ. Inequality</b>  <u>Automation &amp; tele-presence/working</u>:                      Skew towards high-skilled/high-wage jobs.                      Losses for lower-skilled jobs in specific sectors, e.g. horeca</p>	<p>COVID-19 will have a <b>mixed effect</b>:</p> <ul style="list-style-type: none"> <li>• Shortening GVCs and ‘strategic autonomy’ (-)</li> <li>• Reshoring (mostly intermediates) and regionalisation (-)</li> <li>• Offshoring of services (+)</li> </ul> <p><b>(De) globalisation effect on productivity: negative</b>                      Lower competition (-)                      Lower exposure to foreign technology (-)                      → BUT increased reliance on own resources                      Higher global competition in services (+)</p> <p><b>FDI investment:</b>                      From inward global trend to regional FDI.</p> <p><b>shortening global value chains on sustainability: mixed</b>                      Boost to circular economy (+)                      “Lean infrastructures” for green economy (+)</p> <p>Delay of renewable energy capacity due to GVC disruption (-)</p>	<p>COVID-19 will have a <b>mixed effect</b>:</p> <ul style="list-style-type: none"> <li>• “Green behaviour” (changes in energy consumption and emission reduction) (+) - E.g. domestic tourism, teleworking, more local consumption, short VCs, demand for energy-efficiency at home etc.</li> <li>• De-urbanisation (+/-)</li> <li>• Low-carbon/green investment (+/-):</li> <li>• Economic uncertainty (-)</li> <li>• Low financial availability (-)</li> <li>• Demand for greening (+)</li> <li>• Boost from policy action (+)</li> </ul> <p><b>Productivity: mixed</b>                      Green costs of reaching the targets → BUT mitigation                      Learning by doing (+)                      R&amp;D investments in green tech (+)                      subsidies and tax-credits for green R&amp;D investment (+)</p> <p><b>Capital/labour reallocation:</b> from dirty to clean; different types of skills</p> <p><b>Distributional effects:</b> risk of job and regional disruption → investment needs, e.g. in re/up skilling.</p> <p><b>Crucial role of policies in placing green transition at the heart of post-Covid19 recovery reform packages in EU &amp; MS.</b></p> <p>EU aim to world leader in clean energy production → net carbon-neutral target by 2050</p>

Table A2: Potential long-term effects of the COVID-19 crisis, selected sectors

SECTOR	Digitalisation	Changes on Global Value Chains	Green Transition
<p><b>INDUSTRY</b> (Manufacturing and Power Industries)</p>	<p><u>Manufacturing</u>: acceleration on adoption of advanced manufacturing technologies (e.g. 3D) and Artificial Intelligence. Higher reliance on connectivity and data analytics + Increment in human-machine interaction (McKinsey, 2020a).</p> <p><u>Power industries</u>: Take up of new renewable technologies in the energy sector (e.g.: wind and solar power generation, smart grids)</p> <p><u>Employment</u>: Potential for more automation + possible ‘cleansing effect’ due to labour cost increase and lower capital costs → big changes in skill demand: <u>need for worker up/reskilling</u></p> <p><u>Productivity</u>: positive effect of teleworking, <i>servicification</i> and digital solutions to automation <b>VS</b> negative disagglomeration effect on high-tech manufacturing</p> <p><u>Concentration</u>: increment due to deeper digital divide between leaders and laggards (e.g. textile) and rationalised and consolidated capacity (e.g. cars) (Deloitte, 2020)</p>	<p>Incentives to reinforce EU crucial manufacturing segments for national resilience and sustainability (COM, 2020a)</p> <p>BUT → Limited scope for ‘self-sufficiency’ in some segments - e.g. limited scope for “self-sufficiency” in cars with existing supply chains unlikely to be re-engineered. (ING, 2020)</p> <p>In power industries, <b>high acceleration on EU</b> aspirations to become world leader in the production of clean energy.</p>	<p>Goal of net-zero emissions by 2050, 55 % by 2030 (COM, 2018)</p> <p><u>Strong acceleration in specific segments</u> - e.g. big incentives to electro-voltaic production for car industry BUT postponement of car purchases due to the economic constrains, or uncertainties about the regulatory developments.</p> <p><u>Opposing driving factors</u>: downwards pressure on investment in alternative energy due to low fossil fuel prices + high financial constraints <b>VS strong RRFs support to clean energy investments.</b></p> <p><u>Employment</u>: Boost in job demand in some segments - e.g. clean and renewable energy <b>VS</b> losses in sectors linked to fossil fuel-based car industry (ILO, 2018). Overall positive impact on low-medium skill workers.</p>
<p><b>TOURISM</b> (with food and accommodation services)</p>	<p><u>Acceleration</u> in new technologies (contactless payments, 3D printing, AI, the Internet of Things, virtual reality) (UNWTO, 2020), + higher reliance on digital platforms, connectivity and data analytics to tailor on new consumers’ habits and preferences and also to serve demand - e.g. take-away and delivering in food services</p> <p><u>Employment</u>: Higher demand for worker digital skills due to digital marketing strategies + labour demand likely to remain depressed for years</p> <p><u>Productivity</u>: possible increment due to ‘cleansing impact’ and use of digital tools <b>VS</b> unwillingness to invest due to economic uncertainty</p> <p><u>Concentration</u>: Difficult for SMEs to survive and stay competitive in the long-run (OECD, 2020a).</p>	<p>Changes in geographical configuration of the sector: shift from international and long-haul travel destinations to domestic and short-haul destinations (ETC, 2020).</p> <p>If permanent shift towards telework and less commuting → geographical distribution of food services about to change.</p>	<p>Little effect of COVID-19 on the trend but it could mitigate the negative impact of over-tourism on the environment (ETC,2020).</p>

<p><b>WHOLESALE and RETAIL</b></p>	<p>High acceleration in e-commerce and <i>omni-channel</i> (Bourlier, 2020), probably retail more so than wholesale</p> <p><u>Employment</u>: Higher skills demand - e.g. shop managers' digital skills or chain management skills. Employment gains in e-commerce but losses in offline retail.</p> <p><u>Productivity</u>: Possible increment in labour productivity thanks to e-commerce practices (Falk et al., 2015). Possible boost also due to reduction of shops costs, higher flexibility in business and supply chain, and competition across locations.</p> <p><u>Concentration</u>: Stronger market power of retail titans (Forbes, 2020) <b>BUT</b> hitherto offline retailers can compete with pure players, thanks to omni-channel sales.</p>	<p><u>Opposing driving factors</u>: re-orientation of consumers' preferences towards local production <b>VS</b> internationalisation of VC due to stronger power of retail titans</p>	<p>Reorientation of consumers' preferences towards sustainable production (McKinsey, 2021).</p> <p>Need to comply with circular economy principles (COM 2020b).</p> <p><u>Employment</u>: Increment in job demand due to energy transition - with the exception of motor vehicles and motorcycles segments (ILO, 2018).</p>
<p><b>CONSTRUCTION and REAL ESTATE</b></p>	<p><u>Construction</u>: mild acceleration on new technologies, e.g. Building Information Modelling (BIM), Internet of Things (IoT) + tracking technologies to map areas of work (McKinsey, 2020b).</p> <p><u>Real estate</u>: teleworking could influence buyers' preferences in choosing a home and reduce demand for office buildings (Caixa Bank, 2020) E-commerce could reduce demand for brick-and-mortar shops.</p> <p><u>Employment</u>: Need for worker upskilling to stay update with new technologies, including installation of digital infrastructure.</p> <p><u>Productivity</u>: digital technologies and data analytics could improve control of value chain and capacity to monitor environmental performance.</p> <p><u>Concentration</u>: larger scale required by specialisation and investments in innovation (McKinsey, 2020b) → most digitised companies will come out stronger (Caixa Bank, 2020)</p>	<p>In <u>construction</u>, COVID-19 will not reverse the ongoing process of internationalisation, BUT it may <b>slow it down</b> (McKinsey, 2020b).</p>	<p>Goal of net-zero emissions by the late 2040s (COM, 2018).</p> <p>In the short-term, need to restore confidence of property owners and investors to accelerate investments in deep renovation BUT in long-term, <u>expected boost in activity</u> due to faster rate of renovation and higher demand for energy efficiency.</p> <p><u>Employment</u>: High job demand growth due to energy transition + overall positive impact on low-medium skill employment (ILO, 2018)</p> <p>Pressure on <u>real estate</u> to commit to sustainability goals due to de-urbanisation (PWC, 2020).</p>

<p><b>TRANSPORT</b></p>	<p>Mild acceleration on new technologies and data analytics (e.g. IT and cybersecurity software (KPMG, 2020b) and real time public transports applications.</p> <p><u>Employment</u>: Higher demand for high-tech workers → strong need for up/reskilling + The decreasing importance of physical strength may increase workforce diversity - e.g. gender balance.</p> <p><u>Productivity</u>: possible positive effect due to digitalisation and broader use of (real-time) data</p>	<p>Drop in commuting transport - e.g. trains and bus, due to spread in telework.</p> <p>Reduction in air transportation due to spread of videoconferencing and shift of travel preferences.</p> <p>Possible drop in demand for transport services - mostly air and sea, less so road and rail - due to lower intensity of extra-EU trade.</p>	<p><u>Climate neutrality by 2045</u> (COM, 2018).</p> <p>In about 10y reduction in emission in private transportation (McKinsey, 2020c), but higher reliance on individual transport solutions due to de-urbanisation. Emission reduction due to aircraft, heavy duty road transport, and ships more difficult.</p> <p><u>Opposing forces</u>: reduced willingness/financial resources to invest + higher health risks + less commuting and international mobility → lower demand and investment in public transport <b>VS</b> investment in high-tech public transport incentivised by RRFs</p> <p><u>Employment</u>: energy transition to favour low-medium skills employment, BUT up-reskilling requirement (ILO, 2018).</p>
<p><b>HIGH SKILL SERVICES</b> (Professional and Scientific, ITCs and Financial services)</p>	<p><u>ICT industry</u>: highly reinforced by being the producers of digital services and products, such as AI, machine learning, app and innovation ecosystems</p> <p><u>Employment</u>: automation technology, teleworking and consequent potential de-urbanisation could skew further labour markets towards high-skilled and high-wage employment</p> <p><u>Consolidation</u>: general trend towards consolidation in the various segments with big players about to get out stronger.</p>	<p>Accelerated diversification in supply chains away from single source/single region suppliers to minimise operation risks(CISA, 2020).</p> <p>Boost in services offshoring → easier to work closely with service providers and experts located far away.</p> <p>Workers in services exposed to international competition due to globalisation.</p>	<p>Financial services: the EU set a strategy to make finance more sustainable - e.g. taxonomy compliant.</p> <p>Service sectors generally expected to benefitting from increased economic activity attribute to green transition (ESDE, 2019).</p>



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<sup>1</sup> ECFIN’s Autumn 2021 Economic Forecast

<sup>2</sup> Similarly, different countries experienced very different contractions in economic activity, which can be explained by a combination of factors. First, countries differed in the severity of the pandemic, the depth and persistence of the epidemiological waves and the measures they took to mitigate the impact of the crisis. [While countries like Spain and Italy imposed a full lockdown during the first wave, other Member States (e.g. Finland) could resort to less stringent measures to contain the propagation of the virus. Second, the sectoral structure of the economy, and the relative weight of some of the hardest hit sectors like tourism, exacerbated the economic contraction in some Member States. Finally, other factors such as the health of the corporate sector, the strength of the government’s monetary and fiscal policy response, and institutional differences played an important role in mitigating the impact of the shock.

<sup>3</sup> This final draft of this paper was closed during the first half of June 2021. At this point data for the first quarter of 2021 is only available for some countries. For monthly series, the month of February 2021 is partially available.

<sup>4</sup> Throughout this note we mostly focus on broad sectors: A Agriculture, forestry and fishing; B-E Industry (except construction); C Manufacturing; F Construction; G-I Wholesale and retail trade, transport, accommodation and food service activities; J Information and communication; K Financial and insurance activities; L Real estate activities; M\_N Professional, scientific and technical activities; administrative and support service activities; O-Q Public administration, defence, education, human health and social work activities; R-U Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organisations and bodies.

<sup>5</sup> The projections in Graph 3 allow for an adjustment of economic agents to the “new normal” after the first wave. Indeed, simulations are based on a model that accounts for a structural break in July 2020 in most sectors.

<sup>6</sup> See Eurostat variable *nasa\_10\_ki* (*Gross household saving rate*).

<sup>7</sup> Omni-channel is the simultaneous use of different channels (stores, websites, apps, and so on) to engage the consumer with the retailer. For details see, for example, Bourlier (2020).

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<sup>8</sup> *Servicification* refers to an increasing reliance of the manufacturing sector on services, whether as inputs, as activities within firms, or as final goods. Not to mistake with the more general phenomenon of the growing weight of services in the economy.

<sup>9</sup> As part of the effort to increase economic resilience, policy discussions are ongoing to promote industrial and open strategic autonomy in the EU by securing the supply of critical raw materials and pharmaceuticals and by supporting the development of strategic digital infrastructures and key enabling technologies. Details of these analyses and policy initiatives can be found in the recent communication *A New Industrial Strategy for Europe* (European Commission, 2020a).

<sup>10</sup> Semiconductor Industry Association, "Study Identifies Benefits and Vulnerabilities of Global Semiconductor Supply Chain, Recommends Government Actions to Strengthen It," 01 April 2021 (available [online](#)).

<sup>11</sup> For a detailed analysis of the industry in the EU see Fleming et al. (2021) and for the geostrategic stakes see, for example, Bloomberg (2021). The 2021 State of the Union Address by President von der Leyen is available [online](#).

<sup>12</sup> Latest available Eurostat data on quarterly registrations of new businesses and declarations of bankruptcies at the time of writing this note refer to 2021Q1 (see [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quarterly\\_registrations\\_of\\_new\\_businesses\\_and\\_declarations\\_of\\_bankruptcies\\_-\\_statistics&oldid=529262](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quarterly_registrations_of_new_businesses_and_declarations_of_bankruptcies_-_statistics&oldid=529262)).

<sup>13</sup> Commission Recommendation for Effective Active Support to Employment (EASE) | European Commission (europa.eu).

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