

I. The structural economic impact of the COVID-19 pandemic on the euro area: a literature review

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This section provides a brief literature review of the structural economic impact of the COVID-19 pandemic on the euro area. The pandemic and the risk of its recurrence are expected to increase private savings and lower private investment and in so doing exert additional downward pressure on interest rates and inflation. Downward risks to the well-functioning of markets are expected to stem from scarring effects caused by the underutilisation of labour and capital, lack of investment and distortions of global supply chains. Upward risks are expected to arise from the acceleration of the ongoing transformations such as digital workplaces, e-commerce and FinTech services. A recovery path out of the COVID-19 crisis based on a large-scale economic transformation that favours the green and digital transition is generally expected to temper the adverse legacy of the COVID-19 crisis (1).

I.1. Introduction

The COVID-19 pandemic represents a major global shock of unseen speed and intensity. On impact, it had a direct adverse effect on economic activity as its spread was being contained by social distancing and lockdowns that severely hindered the capacity of economic agents to consume and produce. The outcome was an unprecedented contraction in output and international trade across the globe as illustrated by, for instance, the economic forecasts reported by several international institutions (2).

At the same time, the pandemic's impact was not spread evenly as infection rates differed markedly across countries, while countries' capacity to withstand this shock also differed notably - as documented by, for instance, the European Commission (2020) and the OECD (2020) (3).

Based on a literature review, this section provides an assessment of the structural economic impact of the COVID-19 pandemic on the euro area once the pandemic has subsided.

The review suggests that there is a broad consensus in the economic literature that the COVID-19 pandemic and its possible recurrence will have a lasting impact on fundamental macro-economic factors such as potential output and economic resilience via various transmission channels that do not all point in the same direction.

The following four sections summarise the main macro-economic channels through which the pandemic is expected to leave its mark, i.e. macroeconomic stability, the well-functioning of product, labour and financial markets as well as international trade.

Important structural economic changes that are expected to persist include the expansion of digital workplaces, e-commerce and FinTech services, as well as the changes in production networks and risk of rising inequality. While these structural changes create both down- and upward risks, many of them are not new. What is different is how fast some of the underlying developments have accelerated and interact.

The sixth section reviews briefly the literature on how to re-ignite growth, in a sustainable and inclusive way, and overcome scarring effects in the aftermath of the pandemic. The last section draws some conclusions.

It should be noted that until there is a better sense of when and how the COVID-19 crisis will be resolved, the subsequent analysis will be tentative and very time-sensitive. Therefore, it may be

(1) The authors wish to thank Moises Orellana, Erik Canton, Martina Krobath, Mirko Licchetta, Kieran Mcmorrow, Allen Monks, Plamen Nikolov, Silwia Nowak, Alessio Terzi and Bořek Vašíček and an anonymous reviewer for useful comments. The drafting of this section was finalised on January, 4 2021.

(2) See for instance European Commission (2020), Autumn 2020 Economic Forecast: Rebound interrupted as resurgence of pandemic deepens uncertainty, International Monetary Fund (2020), World Economic Outlook, A Long and Difficult Ascent, International Labour Organisation (ILO) (2020), COVID-19 and the world of work, World Trade Organisation (WTO) (2020), COVID-19 and world trade.

(3) European Commission (2020), *op. cit.* and OECD (2020), 'The territorial impact of COVID-19: Managing the crisis across levels of government', *OECD Policy Responses to Coronavirus (COVID-19)*.

subject to (major) revisions as new important information becomes available (4).

I.2. Macro-economic stability challenges

One of the most severe crises (5)

The pandemic has had a strong impact on the macro-economic aggregates. For instance, the available data show that the household savings rate rose sharply across the euro area in the wake of the pandemic, up from 12.5 % of gross disposable income in the last quarter of 2019 to 24.5% in the second quarter of 2020. See Graph I.1.

At the same time the investment rate of firms fell from 25.6% of gross value added in the last quarter of 2019 to 23.19% in the second quarter of 2020. See Graph I.1.

For 2020 and 2021, the increase in private savings is forecast to largely outweigh the increase in private savings observed during the global economic and financial crisis, i.e. 5¾ pps. versus 1¾ pps. of GDP respectively (6).

Simultaneously, public borrowing and debt (as percentage of GDP) increased sharply during the pandemic and are forecast to rise respectively from 0.6% of GDP in 2019 to 8.8% in 2020 and from 85.9% of GDP in 2019 to 101.7% in 2020 (7).

Looking forward

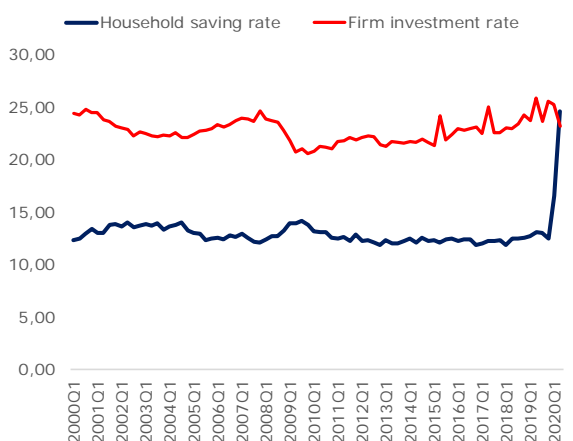
There is a strong expectation in the economic literature that the COVID-19 outbreak and the fear of its recurrence will lower private investment and increase private savings even after the pandemic has phased out. At the same time, the public sector is expected to come under increasing pressure to deleverage its debt. However, there is no consensus in the literature on its pace.

It is also broadly agreed that while the pandemic affected some Member States more than others, the euro area's overall external position is expected to remain fairly stable as the rest of the world experiences similar pressures. However, the risk of getting trapped in a deflationary spiral (8) may intensify if the private sectors' skewed savings-investment balance does not get corrected.

I.2.1. Persistently weaker private sector investment

The pandemic is expected to have a persistent negative impact on private investment for several reasons. First, Malmendier and Nagel (2020) (9) argue that the propensity to invest decreases persistently in the face of major shocks as risk taking such as investment decisions is strongly affected by life-time experiences.

Graph I.1: Household saving rate and firm investment rate – euro area



(1) Seasonally adjusted. The household saving rate is defined as gross saving, which is not spent as final consumption expenditure divided by gross disposable income. The firm investment rate is defined as gross fixed capital formation (buildings, machinery etc.) divided by gross value added of non-financial corporations.

Source: Eurostat, National Accounts (nasq_10_ki).

Furthermore, the surge in corporate indebtedness following the lockdown may also hamper future investments as it hinders a smooth access to capital

(4) Apart from the usual lags in the release of data to the public, the statistical authorities face serious constraints collecting and processing data in the traditional manner such as face-to-face interviews. See Eurostat's COVID-19: support for statisticians <https://ec.europa.eu/eurostat/data/metadata/covid-19-support-for-statisticians>.

(5) De Grauwe, P. and Y. Ji (2020), 'A tale of three depressions', VoxEU.

(6) European Commission (2020), 'The 2020 Stability & Convergence Programmes', An Overview, with an Assessment of the Euro Area Fiscal Stance, *Institutional paper* No.131

(7) European Commission (2020), *op. cit.*

(8) For instance, Fornaro, L. and, M. Wolf (2020), 'Covid-19 Coronavirus and Macroeconomic', *CEPR Discussion Paper* No. DP14529, argue that with interest rates hitting their lower-bound, self-fulfilling pessimistic animal spirits triggered by the pandemic may drive the economy towards an equilibrium of low growth and high unemployment.

(9) Malmendier, U. and S. Nagel (2020), 'Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking?', *NBER Working Paper* No. 14813

markets and bank funding (Mersch (2020))⁽¹⁰⁾. For instance, Revoltella et al. (2020) estimate that the pressure of deleveraging and hence reducing the debt accumulated during the pandemic will result in private investment falling at around twice the fall recorded during the financial crisis, when corporate investment fell by 19%⁽¹¹⁾.

The pandemic also reduces the labour supply⁽¹²⁾ without a parallel destruction of capital as happens during wars or natural disasters. As such, private investment is expected to decrease as the return on capital falls (Jordà et al. (2020))⁽¹³⁾.

In addition, the pandemic has accelerated the use of digital technologies, such as teleworking and e-commerce⁽¹⁴⁾. As such, massive investments in physical capital such as offices and brick-and-mortar retailers could go down if these changes in work organisation would persist (Bloom et al. (2015))⁽¹⁵⁾. Although investments in ICT platforms will increase, they are generally less capital-intensive than investments in physical infrastructure (as shown in analyses relative to capital intensity by sector).

Even so, the productivity of the existing capital stock is likely to decline as the lockdown left it unused. This will then reduce the incentive for investment. At the same time, new innovative firms may be prevented from entering the market and investing as their access to capital would remain weak in the wake of the pandemic (ECB (2020))⁽¹⁶⁾.

I.2.2. Persistently higher private savings rates

Conversely, while pent-up demand may decrease temporarily household savings once the restrictions

are fully lifted, precautionary savings will remain high for some time (Dossche and Zlatanos (2020))⁽¹⁷⁾ - in line with an overall rise in uncertainty about future income and employment (Campos and Reggio (2015))⁽¹⁸⁾. Nevertheless, the phasing out of income support measures and business failures that would further raise unemployment may force households to save less.

Moreover, continued voluntary social distancing in the post-COVID-19 economy could temper social consumption. The effect of this could then be propagated to the rest of the economy via input-output linkages between sectors, as for instance, less restaurants visits will reduce demand for maintenance and repair services for dishwashers (Guerrieri, et al. (2020))⁽¹⁹⁾.

I.2.3. The public debt legacy of COVID-19

While private sector investment has decreased and private sector savings have increased during the pandemic, public expenditures have increased sharply and tax revenue dropped notably. Governments have helped credit-constrained but viable firms to survive, supported households hardest hit, and increased expenditures on health care⁽²⁰⁾. At the same time, public revenues have decreased following a sharp fall in economic activity, further aggravated by tax reliefs and payment holidays. Simultaneously nominal GDP has contracted sharply, so that fiscal deficits and public debt as a percent of GDP have increased notably in several Member States, see Graph I.2.

Several authors (e.g. Grund, et al. (2020))⁽²¹⁾ argue that once the COVID-19 pandemic has subsided, the sharp increases in public debt carry the risk that either some Member States do not spend as much as needed, or they spend as much as needed but then face high debt and market risks.

⁽¹⁰⁾ Mersch, Y. (2020), 'The World Economy Transformed', speech delivered at the Reinventing Bretton Woods Committee Webinar Series.

⁽¹¹⁾ Revoltella, D., L. Maurin and R. Pal (2020), 'After COVID -19: How can we support investment without excessive debt?', European Investment Bank.

⁽¹²⁾ As discussed below, a distinction can be made between temporary (e.g. sick leave/travel restrictions for cross-border workers) and permanent losses (mortality impact of pandemic, though mostly affected are older people) in labour supply.

⁽¹³⁾ Jordà, O., Singh, S. and A. Taylor (2020), 'The Long Economic Hangover of Pandemics, History shows COVID-19's economic fallout may be with us for decades', *IMF Finance & Development*, Vol. 57, No. 2, pp.

⁽¹⁴⁾ See sub-sections 3 and 4 below.

⁽¹⁵⁾ Bloom, N. et al. (2015), 'Does Working from Home Work? Evidence from a Chinese Experiment', *The Quarterly Journal of Economics*, Vol. 122, No. 4, pp. 1351-1408.

⁽¹⁶⁾ ECB (2020), Survey on the access to finance of enterprises

⁽¹⁷⁾ Dossche, M. and S. Zlatanos (2020), 'COVID-19 and the increase in household savings: precautionary or forced?', *ECB Economic Bulletin*, Issue 6.

⁽¹⁸⁾ Campos, R. and I. Reggio (2015), 'Consumption in the shadow of unemployment', *European Economic Review*, Vol. 78, pp. 39-54.

⁽¹⁹⁾ Guerrieri, V., Lorenzoni, G., L. Straub, and I. Wernin (2020), 'Viral recessions: Lack of demand during the coronavirus crisis', *VoxEU*.

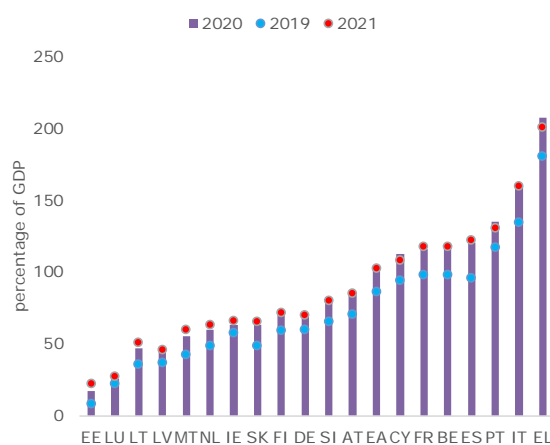
⁽²⁰⁾ European Commission (2020), 'COVID-19: Commission sets out European coordinated response to counter the economic impact of the Coronavirus', and Lane, P., 'The Monetary Policy Package: An Analytical Framework', *ECB Blog*

⁽²¹⁾ Grund, S., L. Guttenberg and C. Odendahl (2020), 'Sharing the fiscal burden of the crisis: A Pandemic Solidarity Instrument for the EU', *VoxEU*.

It is also expected that fiscal measures to boost demand and flank structural reforms will become more effective in the first years after the pandemic as more people are allowed to leave their homes and go back to work (Gopinath (2020)) (22).

Even so, some authors (e.g. Krugman (2020) (23)) argue that strong public spending could help reverse the trend towards secular stagnation, especially as long as the annual cost of servicing the debt is below nominal GDP growth. Nevertheless, a strong fiscal stimulus could stoke expectations of future fiscal consolidation, thereby tempering its boosting effect (Bartsch et al. (2020)) (24).

Graph I.2: **Public debt**



(1) General government consolidated gross debt: excessive deficit procedure.
Source: AMECO.

I.2.4. Uncertain inflation dynamics

While disinflationary pressures have been at play since the onset of the global financial crisis, there is a consensus in the economic literature that the COVID-19 pandemic and its possible recurrence may reinforce ongoing disinflationary pressures.

In the short run, the rate of price inflation may slow down for several reasons, (25) such as a

widening negative output gap, rising unemployment, and falling commodity prices as stressed by the IMF (2020) (26).

In the medium term, as uncertainty is expected to continue to put downward pressure on expenditures such as investment and consumption, Blanchard (2020) (27) expects that inflationary pressures arising from excess aggregate demand should be unlikely.

However, pent-up demand could temporarily stoke inflationary pressures. Even so, if some sectors would already be operating at full capacity, then untargeted demand stimulus could increase inflationary pressures. Conversely, targeted policies that stimulate spending in demand-constrained sectors could increase output without raising prices excessively (Baqae and Farhi (2020)) (28).

The upward inflation risk could strengthen if a series of (recurrent) virus-related negative supply shocks such as disruptions in global value chains were to reduce potential growth permanently (IMF (2020) (29); or if trade barriers imposed in the wake of the pandemic were to persist (Panetta, F. (2020)) (30).

Even so, Goodhart (2020) (31) argues that a strong increase in the velocity of money, which may occur when people have more opportunities to spend money, could give rise to significant inflationary pressures.

measurement during COVID-19', report that once they take account of reduced product variety, month-to-month inflation in the first month of lockdown increased by over 3 percentage points relative to the same month in prior years.

(26) IMF (2020), 'Global Prospects And Policies', chapter 1 in *World Economic Outlook*, May 2020.

(27) Blanchard, O. (2020), 'High inflation is unlikely but not impossible in advanced economies', *PIIE RealTime Economic Issues Watch*.

(28) Baqae, D, and E Farhi (2020), 'Supply and Demand in Disaggregated Keynesian Economies with an Application to the Covid-19 Crisis', *NBER Working Paper* No. 24007.

(29) International Monetary Fund (01/04/2020) at <https://blogs.imf.org/2020/04/01/economic-policies-for-the-covid-19-war/>

(30) Panetta, F. (2020), 'The price of uncertainty and uncertainty about prices: monetary policy in the post-COVID-19 economy', keynote speech at a Capital Markets webinar organised by the European Investment Bank and the European Stability Mechanism.

(31) Goodhart, C. (2020), 'Inflation after the pandemic: Theory and practice', *VoxEU*. He notes that since the emergence of the pandemic the velocity of broad money has been decreasing just about as fast as its overall supply has been increasing. The former was triggered by increased uncertainty and because people could not spend their money on social consumption such as tourism and restaurants.

Last but not least, persistent low inflation rates also carry the risk of a long-term de-anchoring of inflation expectations, possibly pushing the economy into a deflationary spiral in the face of a new anti-inflationary shock (Lane (2020)) (32).

I.2.5. Very low interest rates persist

Extra downward pressure on interest rates

Before the outbreak of the COVID-19 pandemic, nominal interest rates were already low mainly due to too-low inflation and subdued growth reinforced by adverse demographic developments (e.g. Ferrero et al. (33)). By leaving policy rates close to the zero lower bound and providing extra liquidity with unconventional monetary policies, the monetary authorities aimed at averting the risk of deflation (Draghi (2016)) (34).

If low private investment and high private savings persist, then they may continue to put downward pressure on interest rates (The Economist (2020)) (35). However, some argue that strong increases in public debt may exert an upward pressure on interest rates (e.g. Cochrane (2020)) (36) and raise the risk of an adverse feedback loop between high public debt and the risk premium (Lian et al. (2020)) (37).

Important macro-economic feedbacks

Nominal interest rates close to their effective lower bound may have important macroeconomic feedbacks of an ambiguous nature. On the one hand, lower interest rates may stimulate economic activity as it lowers financing costs for investment, raises asset prices that stimulate private consumption and may trigger higher multipliers for

government expenditure and investment (Di Serio et al. (2020)) (38). Once negative, interest rates may incentivise high cash-holding firms to reduce their liquid assets and invest more in tangible and intangible assets (Altavilla et al. (2019)) (39).

On the other hand, however, Brunnermeier and Koby (2019) (40) argue that very low or negative nominal interest rates may have a negative impact on bank sector stability, the cleansing of “zombie” firms, as well as on the effectiveness of monetary policy because the pass-through of policy rates to loan rates is lower at lower rates. In turn, this may lower economic activity.

Furthermore, low interest rates may support the survival of nearly-insolvent firms especially in the presence of inefficient insolvency procedures and weak banks that continue to lend to nearly-insolvent firms (Schnabel (2020)) (41). This could then create excess capacity, postpone the reallocation of resources, and crowd out lending to more productive firms (Andrews and Petroulakis (2019)) (42). However, compared with the global financial crisis such risks are assessed to be low as the pandemic is hitting firms in sectors that are generally viable, and banks have high capital positions so that they are less prone to “zombie” lending (Laeven et al. (2020)) (43).

In addition, Lane (2020) (44) argues that if market interest rates are very low then the short-term

(32) Lane, P. (2020), ‘Low inflation: macroeconomic risks and the monetary policy stance’, keynote speech at the financial markets workshop of the Economic Council.

(33) Ferrero, G., M. Gross and S. Neri (2017), ‘On secular stagnation and low interest rates: demography matters’, ECB Working Paper Series No. 2088.

(34) Draghi M. (2016), ‘Addressing the causes of low interest rates’, speech delivered at the Annual Meeting of the Asian Development Bank, Frankfurt am Main, 2 May 2016.

(35) The Economist (2020), ‘The eternal zero’, Special report October 8 2020.

(36) Cochrane, J. (2020), ‘The Grumpy Economist: Perpetuities, debt crises, and inflation’, linking inflation referring to the fiscal theory of inflation whereby unsustainable public debt and persistent structural deficits require at some time in the future strong inflation to lower the real debt burden. In turn, this would then trigger monetary authorities to raise interest rates.

(37) Lian, W, Presbitero A. and U. Wiradinata (2020), ‘Public Debt and r-g at Risk’, IMF Working Paper 20/137

(38) Di Serio, M., Fragetta, M. and E. Gasteiger (2020), ‘The Government Spending Multiplier at the Zero Lower Bound: Evidence from the United States’, *Oxford Bulletin of Economics and Statistics*, Vol. 82, No. 6, pp. 1262-1294.

(39) Altavilla, C., Burlon, L., Giannetti, M. and Holton, S. (2019), ‘Is there a zero lower bound? The effects of negative policy rates on banks and firms’, ECB Working Paper Series, No 2289.

(40) As discussed by Brunnermeier, M. and Y. Koby (2019), ‘The Reversal Interest Rate’, *NBER Working Paper No. 25406*, the “reversal interest rate” is the rate at which accommodative monetary policy reverses and becomes contractionary for lending. Its determinants are i) banks’ fixed-income holdings, ii) the strictness of capital constraints, iii) the degree of pass-through to deposit rates, and iv) the initial capitalisation of banks.

(41) In combination with inefficient insolvency procedures and weak banks that continue to lend to weak firms. See, for instance, Schnabel, I. (2020), ‘Narratives about the ECB’s monetary policy – reality or fiction?’, speech delivered at the Juristische Studiengesellschaft 11/02/2020.

(42) Andrews, D. and F. Petroulakis (2019), ‘Breaking the shackles: Zombie firms, weak banks and depressed restructuring in Europe’, *ECB Working Paper Series* No 2240.

(43) Laeven, L., G. Schepens and I Schnabel (2020), ‘Zombification in Europe in times of pandemic’, *VoxEU*.

(44) Lane, P. (2020), ‘The monetary policy toolbox: evidence from the euro area’, keynote speech at the 2020 US Monetary Policy Forum.

policy interest rate will hit its effective lower bound more often and remain longer at this bound.

Furthermore, ESRB (2016) ⁽⁴⁵⁾ highlights that low interest rates increase risk-taking by banks, making the bank sector more vulnerable to shocks ⁽⁴⁶⁾.

Finally, low interest rates may weaken the intermediary function of the financial sector, because low interest rates compress banks' net interest margins ⁽⁴⁷⁾, so that they may try to restore profits by increasing fee income and cut costs including human resources that are crucial for intermediation.

I.3. Product markets: uneven sectoral disruptions and innovations

Economic activity in the euro area fell dramatically with euro-area GDP in the second quarter of 2020 14.8% below its level in the second quarter of 2019. The sectors hardest hit were entertainment and recreation down by almost 27% as well as retail trade, transport, accommodation and food services down by about 25%.

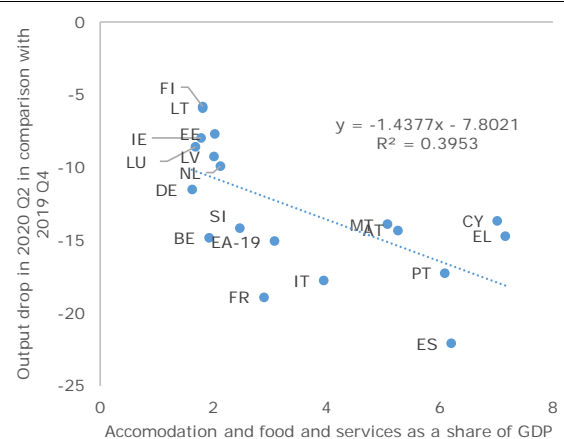
Structural changes in product markets that will affect potential output once the pandemic has subsided include: (i) a change in sectoral composition, (ii) the accelerated use of digital platforms, (iii) disrupted global value chains and (iv) a heterogeneous, uncoordinated mix of national state aid programmes.

I.3.1. Sectors set to struggle in the wake of the pandemic

Two types of sectors were especially hard hit by the pandemic: (i) the sectors highly integrated in GVCs ⁽⁴⁸⁾, and (ii) many 'contact-intensive'

sectors ⁽⁴⁹⁾ such as hospitality or collective transport (e.g. airlines) where physical proximity is hardly avoidable. The former are likely to be more resilient as they depend less on the movement of people ⁽⁵⁰⁾. While strongly affected by the first lockdown measures, these companies have adapted to carry on their activities during the resurgence of the virus ⁽⁵¹⁾. Conversely, some 'contact-intensive' sectors, such as the healthcare sector ⁽⁵²⁾, experienced notable growth during the pandemic.

Graph I.3: Share of accommodation and food in 2018 relative to the fall in GDP in the second half of 2020



Source: Eurostat.

The Member States with the strongest specialisation in accommodation and food services, such as Greece Cyprus, Spain or Portugal, experienced the strongest output contraction (and thus also loss of revenues) in the first half of 2020. See Graph I.3.

Furthermore, McKinsey & Company (2020) ⁽⁵³⁾ estimate that the COVID-19 recovery could take

⁽⁴⁵⁾ ESRB (2016), 'Macroprudential policy issues arising from low interest rates and structural changes in the EU financial system'.

⁽⁴⁶⁾ Such risk taking can take many forms such as increasing the duration of bond portfolios, stronger reliance on wholesale funding markets (if deposit rates cannot drop below zero) or lending more to emerging economies yielding a higher return but also a higher risk. See for instance IMF (2017), 'Low Growth, Low Interest Rates, and Financial Intermediation', Chapter 2 in *Global Financial Stability Report* April 2017.

⁽⁴⁷⁾ While lower interest rates may raise the value of banks' assets, such one-off effects will dissipate if low interest rates persist and risk taking will increase.

⁽⁴⁸⁾ OECD (2020), 'COVID-19 and global value chains: Policy options to build more resilient production networks', *OECD Policy Responses to Coronavirus (COVID-19)* and OECD (2020), 'Evaluating the initial impact of COVID-19 containment measures on economic activity', *OECD Policy Responses to Coronavirus (COVID-19)*.

⁽⁴⁹⁾ There are different terminologies that have appeared in the economic literature that looked at the sectoral impact of the pandemic in 2020: 'contact-intensive', 'nonessential client-facing', 'pandemic-sensitive', 'virus-sensitive', 'person-to-person', 'face-to-face' (etc...). They regroup the sectors, which are the least 'essential' and were more directly affected by the lockdowns. The COVID-19 virus has affected them more directly because of the physical proximity that such activities imply.

⁽⁵⁰⁾ European Commission Summer 2020 (Interim) forecast and Miroudot, S. (2020), 'Resilience versus robustness in global value chains: Some policy implications', *VoxEU*.

⁽⁵¹⁾ Hatzius J. (2020), 'Global Views: Cavalry Coming', *Goldman Sachs Economic Research*

⁽⁵²⁾ The healthcare sector is projected to increase by around 0.6 % of EU GDP in 2020. See, European Commission (2020), 'Identifying Europe's recovery needs', SWD(2020) 98 final.

⁽⁵³⁾ McKinsey & Company (2020), 'US small-business recovery after the COVID-19 crisis'.

more than 5 years in hardest-hit sectors. Many in those industries are small businesses.

Such dramatic product market disruptions may trigger adverse scarring effects as they can force viable firms to close, leading to a permanent loss of firm-specific human capital (Graham et al. (2013))⁽⁵⁴⁾ as well as organisational capital (Stiglitz (2020))⁽⁵⁵⁾.

At the same time, they may prevent new innovative firms from entering the market as their access to capital or intermediary inputs gets cut off when firms have to close or reduce production⁽⁵⁶⁾. Moreover, such disruptions may also weaken investment in R&D and foreign direct investment (Dieppe (ed., 2020))⁽⁵⁷⁾.

I.3.2. Increased use of e-commerce

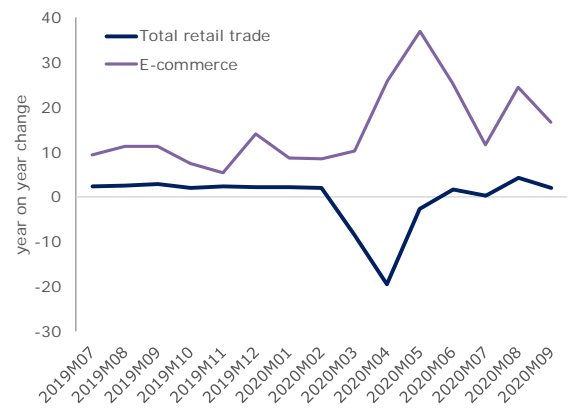
Lockdowns, social distancing and closure of borders increased online sales. For instance, internet retail trade across the European Union peaked in May 2020 at 37% above its May 2019 volume, but it levelled off afterwards. See Graph I.4.

Moreover, depending on individual characteristics, such as income level or concerns about health, the propensities to purchase online had been very divergent (Unnikrishnan and Figliozzi, (2020)⁽⁵⁸⁾). More particularly, house deliveries were more limited among households who were cost-conscious, while households concerned about health were more likely to spend more online and have more home deliveries.

An increased use of e-commerce is expected to have an important structural impact on the well-functioning of product markets. First, it may intensify competition in product markets (Goolsbee and Klenow (2018)⁽⁵⁹⁾). As a

consequence, (relative) prices may show a stronger responsiveness to changes in demand and supply improving the transmission of the information necessary to reallocate production factors in the face of shocks (Cavallo (2018)⁽⁶⁰⁾).

Graph I.4: **Impact of the COVID-19 crisis on retail trade in the euro area**



(1) Turnover in constant prices; year on year change.

Source: Eurostat.

Furthermore, e-commerce makes demand for goods and services less vulnerable to domestic idiosyncratic shocks, because it lowers search and transaction costs as well as the cost incurred by firms when changing prices (Cavallo and Rigobon, 2016)⁽⁶¹⁾. It also provides firms with more geographically diverse and stable markets.

A strong uptake in e-commerce is also likely to accelerate structural changes in other parts of the economy, such as the labour market, especially in the logistics sector and affect urban planning and the environment⁽⁶²⁾. However, network effects in e-commerce⁽⁶³⁾ could also lead to market concentration and market dominance that undermines price flexibility (Schnabel (2020))⁽⁶⁴⁾.

⁽⁵⁴⁾ See for instance Graham J., K. Hyunseob K., S. Li and J. Qiu, 2013. 'Human Capital Loss In Corporate Bankruptcy', Center for Economic Studies, U.S. Census Bureau Working Papers 13-37.

⁽⁵⁵⁾ Stiglitz, J. (2020), 'Priorities for the COVID-19 Economy', *Project Syndicate*.

⁽⁵⁶⁾ Such as limited access to credit and capital during an economic downturn its aftermath

⁽⁵⁷⁾ Dieppe, A. (ed., 2020), *Global Productivity. Trends, Drivers, and Policies*.

⁽⁵⁸⁾ Unnikrishnan A. and M. Figliozzi, (2020), 'A Study of the Impact of COVID-19 on Home Delivery Purchases and Expenditures' *Portland State University Working Paper, 2020*.

⁽⁵⁹⁾ Goolsbee, A. and P.J. Klenow (2018), 'Internet Rising, Prices Falling: Measuring Inflation in a World of E-Commerce', *NBER Working Paper No. 24649*.

⁽⁶⁰⁾ Cavallo, A. (2018), 'More Amazon Effects: Online Competition and Pricing Behaviors', Paper prepared for the 2018 Jackson Hole Economic Policy Symposium, September 7, 2018.

⁽⁶¹⁾ The so-called 'menu' costs. Cavallo, A. and R. Rigobon (2016), 'The Billion Prices Project: Using Online Prices for Measurement and Research', *Journal of Economic Perspectives*, Vol. 30(2), pp. 151-78.

⁽⁶²⁾ Pettersson F., L. Winslott Hiselius and T. Koglin (2018), 'E-commerce and urban planning – comparing knowledge claims in research and planning practice', *Urban, Planning and Transport Research*

⁽⁶³⁾ Network effects imply that the larger the number of users on a platform, the larger the benefits it produces for all users.

⁽⁶⁴⁾ Whereby large cash-rich firms absorb liquidity-strapped start-ups, see, for instance, Schnabel (2020), *op. cit.*

1.3.3. Reorientation of international trade

By 2019, more than two-thirds of world trade occurred through global value chains (GVCs) (World Bank (2019))⁽⁶⁵⁾. However, in the wake of the pandemic, international trade contracted sharply as firms and borders were closed, giving rise to notable changes in both the level and composition of international trade ((Jean (2020))⁽⁶⁶⁾ and (World Economic Forum (2020))⁽⁶⁷⁾).

More particularly, the World Trade Organization (WTO)⁽⁶⁸⁾ expects a significant downturn in global trade of 9.2% in 2020 and an increase of 7.2% in 2021. Transport equipment and electrical machinery turn out to be hardest hit (DG TRADE's Chief Economist (2020))⁽⁶⁹⁾, and trade will likely contract the most in sectors with complex value chains (WTO (2020))⁽⁷⁰⁾.

It is widely agreed in the literature that one of the legacies of the pandemic may be that lead firms of global value chains will bring the critical elements of the production process closer to home (World Economic Forum (2020))⁽⁷¹⁾, or preserve the long chains but start to accumulate strategic reserves of vital intermediary inputs and diversify suppliers (Seric and Winkler (2020))⁽⁷²⁾.

Moreover, there is also the risk that if the political equilibrium were to shift towards a more protectionist stance, then the temporary measures to slow the spread of the virus would persist (Baldwin (2020))⁽⁷³⁾.

In a European context, Javorcik (2020)⁽⁷⁴⁾ expects that it is primarily the countries located in Eastern Europe and the Southern Mediterranean that will benefit from 're-shoring' or 'near-shoring'. While not necessarily offering the lowest costs, they can offer geographical proximity as well as a more stable and predictable environment (notably in terms of trade policy).

However, shorter and less complex global value chains may reduce countries' opportunities to specialise in those activities in which they have a comparative advantage, which lowers overall productivity. Nevertheless, at the same time shorter GVCs may create more incentive to better integrate emerging technologies (Vyas, (2016))⁽⁷⁵⁾, such as machine learning, 3-D printing⁽⁷⁶⁾ and robotics. However, it is an empirical matter to determine which of these factors will dominate.

1.3.4. State aid and increased importance of the public sector

During the pandemic, state aid has aimed to support those hardest hit companies that were viable. In practice, the support provided under the temporary state aid framework has differed strongly across the euro area⁽⁷⁷⁾. In addition to state aid, euro-area governments have also increased their shares in private companies.

However, the support in Member States depends highly on their available fiscal capacity (Motta and Peitz (2020))⁽⁷⁸⁾. As such, it may generate unfair competitive advantages or interference with business decisions (Abate et al. (2020))⁽⁷⁹⁾,

⁽⁶⁵⁾ See for instance World Bank (2019), 'Global Value Chain Development Report 2019: Technological Innovation, Supply Chain Trade, and Workers in a Globalized World'. This outcome was mainly driven by innovations in communication and coordination technologies starting in the early 1990s as well as by reduced trade barriers and decreases in transportation costs.

⁽⁶⁶⁾ Jean, S. (2020), 'How the COVID-19 Pandemic Is Reshaping the Trade Landscape and What to Do About It', *Intereconomics*, Vol. 55, No. 3, pp. 135–139.

⁽⁶⁷⁾ World Economic Forum (2020), 'Managing COVID-19: How the pandemic disrupts global value chains'.

⁽⁶⁸⁾ https://www.wto.org/english/news_e/pres20_e/pr862_e.htm

⁽⁶⁹⁾ DG TRADE's Chief Economist (2020), 'The impact of the Covid-19 pandemic on global and EU trade, April 2020

⁽⁷⁰⁾ WTO (2020), *op. cit.*

⁽⁷¹⁾ World Economic Forum (2020), 'Coronavirus is disrupting global value chains. Here's how companies can respond'.

⁽⁷²⁾ Seric and Winkler (2020), 'COVID-19 could spur automation and reverse globalisation – to some extent', *VoxEU*.

⁽⁷³⁾ Baldwin, R. (2020), 'Hysteresis in Globalisation: What will COVID have wrought?', doi: https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/162224/VN_2020_13_Liite2_Baldwin.pdf?sequence=3&isAllowed=y.

⁽⁷⁴⁾ Javorcik B, (2020), 'Global supply chains will not be the same in the post-COVID-19 world' in Baldwin, R. and S. Evenett (eds., 2020), *COVID-19 and Trade Policy: Why Turning Inward Won't Work*, VoxEU.

⁽⁷⁵⁾ Vyas, N. (2016), 'Disruptive technologies enabling supply chain evolution', *Supply Chain Management Review*, pp. 36-41.

⁽⁷⁶⁾ 3-D printing, which represents less than 0.1% of global manufacturing revenues, has a potential for penetration in mainstream industries, which is still unclear; see Cernat, L. (ed., 2020), 'Trade policy reflections beyond the COVID19 outbreak', Chief Economist Note DG Trade (European Commission), Issue 2, June 2020

⁽⁷⁷⁾ European Commission (2020), 'Coronavirus Outbreak - List of Member State Measures approved under Articles 107(2)b, 107(3)b and 107(3)c TFEU and under the State Aid Temporary Framework'

⁽⁷⁸⁾ Motta, M. and M. Peitz (2020), 'State Aid Policies in Response to the COVID-19 Shock: Observations and Guiding Principles', *Intereconomics*, Vol. 55, No. 4, pp. 219–222.

⁽⁷⁹⁾ Abate, C, A Elgouacem, T Kozluk, J Stráský and C Vitale (2020), 'State ownership will gain importance as a result of COVID-19', *VoxEU*

adversely impacting the well-functioning of the Single Market.

Moreover, as argued by the OECD (2020) ⁽⁸⁰⁾, it may also increase moral hazard risks unless governments impose strict recovery plans on the firms benefiting from these interventions, set clear conditions for exit from state ownership, and rely on independent advisory to ensure sound valuations of investments and divestments.

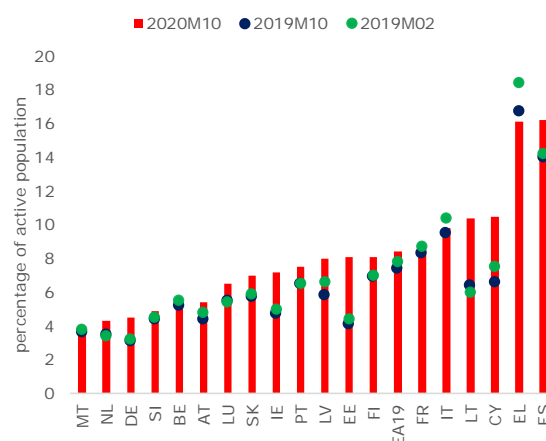
I.4. Labour markets: possible scarring effects and digital uptake

Following the outbreak of the pandemic, strict lockdown measures affected directly the functioning of labour markets. However, the increases in unemployment were less sharp than the drops in output, but the hours worked dropped notably in some Member States ⁽⁸¹⁾ while youth unemployment (15-24) increased markedly and the share of young people not in employment nor in education or training (NEET) soared ⁽⁸²⁾. Such an outcome was partly triggered by the strong uptake of short-time working arrangements and temporary lay-offs (European Commission (2020) and Dias da Silva et al. (2020) ⁽⁸³⁾).

Furthermore, work organisation changed dramatically as a large part of the work force started to telework (Pierri and Timmer (2020)) ⁽⁸⁴⁾; but not all workers were affected in the same way (European Commission (2020) and Eurofound (2020)) ⁽⁸⁵⁾.

The channels through which recent labour market developments may affect potential output well beyond the current pandemic include: i) digitalisation of the work place, ii) human capital formation, and iii) increased inequality of opportunity and income.

Graph I.5: Unemployment rate – euro area



(1) EE and EL 2020 M09 instead of 2020 M10.

Source: Eurostat (une_rt_m).

I.4.1. Accelerated digitalisation of work organisation

While the introduction of ICT applications in the workplace has been a gradual process since the late 1980s, (voluntary and involuntary) teleworking surged during the pandemic, though with strong differences across Member States and sectors.

For instance, by early April 2020 ⁽⁸⁶⁾ slightly more than 60% of employed persons started to work from home in Finland in comparison to 15.2% before the Pandemic. On the other side of the spectrum, the shares of employed persons teleworking are much smaller in Slovenia (23%) and Greece (26%), but much higher than before the outbreak of the pandemic (8.6% in Slovenia and 11.7% in Greece) ⁽⁸⁷⁾. See Graph II 6.

⁽⁸⁰⁾ See, for instance, OECD (2020), 'The COVID-19 crisis and state ownership in the economy: Issues and policy considerations', *OECD Policy Responses to Coronavirus (COVID-19)*.

⁽⁸¹⁾ The activity rate (age group 20-64) dropped by 1.6% while total hours worked saw a sharp reduction of some 12.8% in Q2 2020. See European Commission (2020), 'Analysis of the euro area economy', SWD/2020/276.

⁽⁸²⁾ The quarterly NEET rate increased up to 12% in the euro area in Q2-2020 (from a minimum of 9.9% in Q2-2019).

⁽⁸³⁾ European Commission (2020), *Proposal for a Joint Employment Report 2021*, and Dias da Silva, A., M. Dossche, F. Dreher, C. Foroni and G. Koester (2020), 'Short-time work schemes and their effects on wages and disposable income', *ECB Economic Bulletin*, Issue 4/2020.

⁽⁸⁴⁾ Pierri, N. and Y. Timmer (2020), 'IT Shields: Technology Adoption and Economic Resilience during the COVID-19 Pandemic', *IMF Working Paper* WP/20/208 estimate for the US that if the pandemic had hit the world 5 years ago, the resulting unemployment rate would have been 2 percentage points higher during April and May 2020 (16% vs. 14%), due to the lower availability of IT.

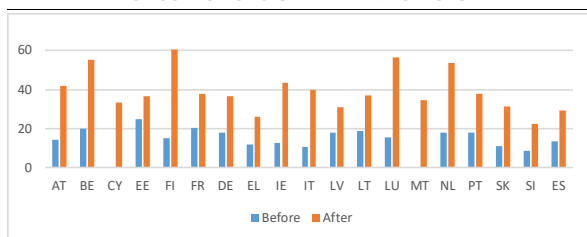
⁽⁸⁵⁾ Eurofound (2020), *Living, working and COVID-19, COVID-19 series*.

⁽⁸⁶⁾ See, Eurofound (2020), *Living, working and COVID-19 dataset*, Dublin. As indicated in the introduction, this section provides recent evidence within the limits set by data availability. As of August 2020, there were no more recent telework data available.

⁽⁸⁷⁾ Eurostat (2020), *op cit.* identifies several factors driving this diverse outcome across Member States, including a country's affinity for technology; the availability and quality of its technological infrastructure; management culture and the drive for higher productivity within companies; and employees' needs for spatial and temporal flexibility to balance work demands with family commitments and other personal responsibilities.

The uptake in teleworking was strongest in sectors with better educated, high-paid employees, and weakest in sectors with mainly manual employees such as agriculture, construction, industry or personal care sectors (European Commission (2020), Eurofound (2020), Brynjolfsson et al. (2020) and Bartik (2020))⁽⁸⁸⁾.

Graph 1.6: **Work from home: before versus after the COVID-19 crisis**



Source: Eurofound (2020), Living, working and COVID-19 dataset, Dublin, <http://eurofound.link/covid19data>.

Several authors argue that the intensified use of teleworking during the pandemic has accelerated its use on a permanent basis as people learned at an unprecedented pace new ways to work remotely. Businesses reorganised their operational mode and voluntary social distancing is expected to continue well beyond the acute COVID-19 phase (See Ozimek (2020), Barrero et al. (2020) and Global Workplace Analytics (2020))⁽⁸⁹⁾.

New opportunities and challenges for employment

There is broad consensus in the literature that such changes in work organisation will have an important structural economic impact. First, an increased use of digital workplaces may raise

overall labour supply as it facilitates the labour market participation of the older workers, workers with family responsibilities or workers with disabilities (European Commission (2015))⁽⁹⁰⁾.

In addition, such work arrangements give more autonomy and responsibility to workers, while facilitating new forms of contractual arrangements, such as iPros (Leighton (2015))⁽⁹¹⁾. With a reduction in sick-days taken by home workers, longer working time and an increased use of digital training platforms, teleworking may also raise labour productivity (Bloom (2004))⁽⁹²⁾. In turn, this may then strengthen the economy's productivity and innovation capacity.

Downward risks of telework

However, the uptake of telework also presents downsides and requires careful design to maximise its benefits (OECD (2020))⁽⁹³⁾. Workers' well-being may decrease because of increased spatial distance among employees or distorted work-life balance leading to hidden overtime. Telework may dampen innovation because personal interactions or exchanges of knowledge are less effective in a virtual environment.

The pandemic made also bare the insufficient levels of digital skills of adults and the wide gaps between countries (European Commission (2020))⁽⁹⁴⁾. The risk exists that the digital workplace supports job opportunities mainly for high-skilled workers or is limited to specific occupations or sectors (OECD Skills Outlook (2019))⁽⁹⁵⁾.

Furthermore, the fear of a recurrence of the pandemic may strengthen the incentives to substitute especially low-skilled workers with computers and robots (Chernoff and Warman

⁽⁸⁸⁾ Brynjolfsson, E. et al. (2020), 'COVID-19 and Remote Work: An Early Look at US Data', *NBER Working Paper* No. 27344, surveying a sample of the US population, report that US states with a higher share of employment in information work including management, professional and related occupations were more likely to shift toward working from home and had fewer people laid off or furloughed. See also Bartik, A. (2020), 'How the COVID-19 crisis is reshaping remote working', *VoxEU*.

⁽⁸⁹⁾ Ozimek, A. (2020), op. cit., surveying US firms, reports that the remote working experiment has proceeded better than expected from the perspective of working conditions, and there is potential for improving productivity. Based on US survey data, Barrero, J., Bloom, N. and S. Davis (2020), 'COVID-19 and labour reallocation: Evidence from the US', *VoxEU*, report that several factors are giving teleworking a more permanent character, including a sharp fall in the stigma of working from home, huge amounts of time and resources spent to make teleworking effective, and its strong performance. Global Workplace Analytics (2020), 'Work-at-home After Covid-19—Our Forecast' estimates that 56% of the U.S. workforce holds a job that is compatible (at least partially) with remote work.

⁽⁹⁰⁾ European Commission (2015), *Employment and Social Developments in Europe*.

⁽⁹¹⁾ Independent professionals (iPros) are self-employed without employees who are flexible and innovative and operate in high-value, high-knowledge professional sectors. See, for instance, Leighton, P. (2015), 'Future Working: The Rise of Europe's Independent Professionals (iPros)'.

⁽⁹²⁾ Bloom, N. (2004), 'To raise productivity, let more employees work from home', *Harvard Business Review*, Vol. 92, N.1-2, pp. 28-29.

⁽⁹³⁾ OECD (2020), *Productivity gains from teleworking in the post COVID-19 era: How can public policies make it happen?*, *OECD Policy Responses to Coronavirus (COVID-19)*.

⁽⁹⁴⁾ European Commission (2020), 'Proposal for a Joint employment Report 2021'

⁽⁹⁵⁾ OECD Skills Outlook (2019), 'Thriving in a Digital World'.

(2020))⁽⁹⁶⁾. In addition, an increased use of teleworking may also reduce the demand for local services related to the workplace such as catering that are often delivered by low-skilled workers (Goos et al. (2014))⁽⁹⁷⁾.

New opportunities and challenges for work organisation

Increased ICT based mobile work also creates new opportunities for offshoring and further specialisation, in as well as outside the euro area (Baldwin (2019))⁽⁹⁸⁾. Anecdotal evidence suggests also that the pandemic has accelerated practices such as ‘globotics’⁽⁹⁹⁾ making it easier to digitally outsource tasks across the world (Baldwin and Forslid (2020) and Baldwin (2019))⁽¹⁰⁰⁾. Nevertheless, since services are less tradable than goods and represent only a fraction of global trade, the overall net trade effect, i.e. the balance between re-shoring and offshoring, is difficult to predict⁽¹⁰¹⁾.

Furthermore, as international business travel involving face-to face contacts is an important channel for conveying specific types of knowledge, its downsizing in the expanding digital workplace may adversely affect productivity (Coscia et al. (2020))⁽¹⁰²⁾.

Finally, a more intensive use of the digital workplace will make economic activity more

vulnerable to cybersecurity risks (Andrade (2020))⁽¹⁰³⁾ but less vulnerable to other shocks such as strikes in the public transport sector.

1.4.2. Human capital formation

Challenges

The impact of the pandemic on human capital formation is ambiguous. On the one hand, the pandemic adversely affects human capital formation. First, the young generations’ opportunities to learn have adversely been affected by the disruptions in the delivery of educational services (OECD (2020))⁽¹⁰⁴⁾; and available evidence suggests that children with disadvantaged backgrounds are hardest hit (Schleicher (2020))⁽¹⁰⁵⁾ and (European Commission (2020))⁽¹⁰⁶⁾.

In addition, social distancing prevents workers from gaining practical experience on the work floor, while persistent unemployment spells may erode the skills of the unemployed or discourage them from searching for a job (Tumino (2015))⁽¹⁰⁷⁾.

In this context, it should also be noted that the increased use of short-term working arrangements (STWA) mitigated part of the job loss and skill erosion (European Commission (2020))⁽¹⁰⁸⁾ because STWAs preserve existing employer-employee relationships, provide income support and often encourage or oblige workers to take training.

However, if not well-designed such schemes may also delay the necessary structural adjustments, lead

⁽⁹⁶⁾ Chernoff, A. and C. Warman (2020), ‘Covid-19 and Implications for Automation’, *NBER Working Paper* No. 27249, examining US data, estimate that females are in occupations that are about twice as likely at risk of disappearing in the wake of the COVID-19 pandemic and automation.

⁽⁹⁷⁾ Goos, M., A. Manning and A. Salomon (2014), ‘Explaining job polarization: routine-biased technological change and offshoring’, *American Economic Review*, Vol. 104, No 8, pp. 2509–26.

⁽⁹⁸⁾ Telemigration was already a growing trend before the COVID-19 crisis. See, for instance, Baldwin R (2019), ‘The globotics upheaval

⁽⁹⁹⁾ I.e. telemigrants working in our offices while sitting abroad (the globalisation part), and software robots replacing particular office-tasks (the robotics part). See, Baldwin, R. (2020), ‘Covid, hysteresis, and the future of work’, *VoxEU*.

⁽¹⁰⁰⁾ Baldwin, R. and R. Forslid (2020), ‘Covid 19, globotics, and development’, *VoxEU*, and Baldwin, R. (2019), *The Globotics Upheaval: Globalisation, Robotics and the Future of Work*, Sheridan Books

⁽¹⁰¹⁾ The lack of systematic data available makes it difficult to estimate and predict this phenomena, see Filippo Albertoni F., S. Elia, S. Massini, L. Piscitello (2017), ‘The reshoring of business services: Reaction to failure or persistent strategy?’, *Journal of World Business*, Volume 52, Issue 3

⁽¹⁰²⁾ For instance, Coscia, M., Neffke, F., and R. Hausmann, ‘Knowledge Diffusion in the Network of International Business Travel’, *Nature Human Behaviour*, Vol. 4, pp. 1011–1020, provides empirical evidence that suggests that a permanent shutdown of international business travel would reduce global gross product by 17%.

⁽¹⁰³⁾ Andrade, R., Ortiz-Garcés, I. and M. Cazares (2020), ‘Cybersecurity Attacks on Smart Home During Covid-19 Pandemic’, 2020 Fourth World Conference on Smart Trends in Systems, Security and Sustainability

⁽¹⁰⁴⁾ Its significance is difficult to assess at the moment.

⁽¹⁰⁵⁾ Schleicher, A. (2020), ‘The Impact of Covid-19 on Education. Insights from Education at a Glance 2020’, OECD.

⁽¹⁰⁶⁾ European Commission (2020), Proposal for a Joint Employment Report 2021.

⁽¹⁰⁷⁾ These risks are strongest for young people and increase in a non-linear way with the duration of the unemployment spell. See Tumino, A (2015), ‘The scarring effect of unemployment from the early ‘90s to the Great Recession’, *Institute for Economic and Social Research Working Paper* 2015-5.

⁽¹⁰⁸⁾ For an overview of short-time working arrangements in the wake of the pandemic see European Commission (2020), ‘Section 3.1.2. Measures taken by Member States’, in *Proposal for a Joint Employment Report 2021*.

to an excessive take-up by firms⁽¹⁰⁹⁾, support “zombie” jobs and become an undue financial burden on national unemployment insurance schemes (European Commission (2020), Schnabel (2020) and Arpaia et al. (2010))⁽¹¹⁰⁾.

Opportunities

On the other hand, for those who stay employed, remote working could sharpen their ICT skills, which may make them also more receptive to future ICT innovations in the work place.

In addition, the pandemic also provided an impetus for the development of digital learning platforms, not only for students but also for workers, making it easier and cheaper to train workers (World Bank (2020))⁽¹¹¹⁾.

I.4.3. Inequality and poverty

The COVID-19 pandemic affects socio-economic groups differently in terms of income and job opportunities (Furceri et al. (2020))⁽¹¹²⁾.

The most vulnerable groups include (i) the young as they usually face higher rates of unemployment and underemployment when labour demand decreases, (ii) women as they are over-represented in more affected sectors (such as services), (iii) the self-employed, casual and gig workers as they do not have access to paid or sick leave mechanisms, and are less protected by conventional social protection mechanisms and other forms of income smoothing and (iv) migrant workers (European Commission (2020), Torrejón Pérez et al (2020)⁽¹¹³⁾ and Hynes et al. (2020)⁽¹¹⁴⁾).

These workers are also most likely to lack the financial buffers to absorb a sudden income loss (See Furceri et al.)⁽¹¹⁵⁾.

If such developments were to persist, rising inequality and poverty may have an adverse structural impact (Dabla-Norris et al. (2015) and Ostry et al. (2014))⁽¹¹⁶⁾. For instance, inequality and poverty could lead to underinvestment in human capital and health for the low-income workers who would lack access to private credit or public financing for education and training. Furthermore, socio-economic instability stemming from rising inequality may also lower investment, especially foreign direct investment (ILO (2017)⁽¹¹⁷⁾, or lead to higher marginal taxes that discourage innovation (Akcigit et al. (2018) and Bredemeier et al.)⁽¹¹⁸⁾.

I.5. Stabilising financial markets and expanding FinTech services

The COVID-19 outbreak had an immediate adverse impact on financial markets across the globe: equity markets experienced turmoil and corporate credit markets deteriorated sharply (IMF 2020, and Roubini (2020))⁽¹¹⁹⁾. In this environment, fostering financial market stability and maintaining the supply of bank credit across

⁽¹⁰⁹⁾ Excessive use can be tempered by experience rating schemes whereby firms contribute to the scheme on the basis of past/expected use of the scheme.

⁽¹¹⁰⁾ European Commission (2020), *Proposal for a Joint Employment Report 2021*, Schnabel, I. (2020), ‘The ECB’s policy in the COVID-19 crisis – a medium-term perspective’, remarks at an online seminar hosted by the Florence School of Banking & Finance and Arpaia, A., Curci, N., Meyermans, E., Peschner, J. and F. Pierini (2010), ‘Short time working arrangements as response to cyclical fluctuations’ *European Economy Occasional Paper* No. 64.

⁽¹¹¹⁾ World Bank (2020), ‘How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the COVID-19 pandemic’.

⁽¹¹²⁾ Furceri D., Loungani P., J., Ostry and P. Pizzuto (2020): ‘COVID-19 will raise inequality if past pandemics are a guide’, *VoxEU*.

⁽¹¹³⁾ Torrejón Pérez, S., Fana, M., González-Vázquez, I., and E. Fernández-Macías (2020), ‘The asymmetric impact of COVID-19 confinement measures on EU labour markets’, *VoxEU*.

⁽¹¹⁴⁾ Employees especially hard hit are those working in the gig-economy, who often work on short contracts, sometimes with weak or no social protections, and with limited options for working remotely. See, for instance, Hynes, W., I. Linkov, and B. Trump (2020), ‘A Systemic Approach to Dealing with Covid-19 and Future Shocks’, *OECD Policy Responses to Coronavirus (COVID-19)*.

⁽¹¹⁵⁾ Pérez, T. et al. (2020), *op. cit.*. However, families at the bottom of the income distribution are less likely to income loss as they are also most likely not to have members in employment – as is, for instance, reported for the case of Ireland by Beirne, K et al. (2020), ‘The Potential Costs and Distributional Effect of Covid-19 Related Unemployment in Ireland’, *EUROMOD Working Papers* EM5/20.

⁽¹¹⁶⁾ Dabla-Norris, E. et al. (2015), ‘Causes and Consequences of Income Inequality: A Global Perspective’, *IMF Staff Discussion Note* SDN/15/13, estimate that making the rich richer by one percentage point lowers GDP growth in a country over the next 5 years by 0.08 percentage points—whereas making the poor and the middle class one percentage point richer can raise GDP growth by as much as 0.38 percentage points. See also Ostry, J., A. Berg and Ch. Tsangarides (2014), ‘Redistribution, Inequality, and Growth’, *IMF Staff Discussion Note* SDN/14/02.

⁽¹¹⁷⁾ International Labour Organisation (2017), *World Employment and Social Outlook: Trends 2017*.

⁽¹¹⁸⁾ Akcigit, U. et al. (2018), ‘Taxation and Innovation in the 20th Century’, *NBER Working Paper* No. 24982 and Bredemeier, C., Juessen, F. and R. Winkler (2020), ‘Cutting labour taxes brings back the jobs lost to COVID-19’, *VoxEU*.

⁽¹¹⁹⁾ IMF (2020), ‘Economic Policies for the COVID-19 War’, *IMF Blog*, and Roubini (2020), ‘A Greater Depression?’, *Project Syndicate*.

the euro area were high on the agenda of policy makers (Lagarde (2020) and Lane (2020) ⁽¹²⁰⁾).

While it is too early to assess the full impact of the COVID-19 pandemic on the amount of non-performing loans (NPLs) ⁽¹²¹⁾, it is to be expected that NPL resolution could be fast if these NPLs mainly relate to viable illiquid firms, rather than unviable “zombie” firms as was the case of the global financial crisis (Ari et al. (2020)) ⁽¹²²⁾. However, banks’ NPL ratios are expected to increase once debt moratoria and liquidity support schemes for corporates expire.

At the same time, the pandemic has also accelerated the transition towards digital financial services, especially digital payment triggered by an increased online shopping as well as the fear that the virus could be spread by cash (Carletti, et al. (2020)) and Auer et al. (2020)) ⁽¹²³⁾. For instance, SPACE survey data indicate that by July 2020, 40% of the respondents replied that they had used less cash since the start of the pandemic, and almost 90% of them stated that they would continue to pay less with cash after the pandemic was over ⁽¹²⁴⁾.

Habit formation and network effects are likely to trigger self-reinforcing increases in FinTech services as they lower costs and increase acceptability of digital currencies (Crouzet et al. (2019), Fernandez et al. (2020) Auer et al. (2020)) ⁽¹²⁵⁾.

In turn, this increased use of digital financial services is expected to affect how and where

economic agents consume, produce and sell goods and services. This will then create new opportunities and challenges.

Opportunities

FinTech services such as digital payment systems may facilitate cross-border trade, and provide firms and households access to a more diversified supply of credit at a lower cost (IMF (2017)) ⁽¹²⁶⁾.

Moreover, FinTech services also have the potential to promote access to financial services by underserved groups (Sahay et al. (2020) ⁽¹²⁷⁾), better and more tailored banking services, lower transaction costs, faster banking services, and increased competition leading to lower prices (Basel Committee on Banking Supervision (2018)) ⁽¹²⁸⁾.

In addition, as these FinTech innovations also entail a shift from paper to digital cash, monetary policy’s effectiveness could strengthen as the effective lower bound on interest rates would become less binding (Mancini-Griffoli et al. (2018) and Rogoff (2016)) ⁽¹²⁹⁾.

Challenges

However, ongoing developments in FinTech services accelerated by the pandemic may also carry downward risks in terms of competition, financial stability, consumer protection and cybersecurity.

Network effects could lead to the emergence of dominant platforms for digital (cross-border) payment. Such dominant positions could then adversely affect competition and innovation in

⁽¹²⁰⁾ Lagarde, C. (2020), ‘How the ECB is helping firms and households’, *ECB Blog*, and Lane, P. (2020), ‘The monetary policy response to the pandemic emergency’, *ECB Blog*.

⁽¹²¹⁾ Non-performing loans (NPLs) tend to lag GDP growth by 12-18 months as estimated at <https://www.eib.org/en/readonline-publications/covid-econ-weekly-briefing-15-april.htm>

⁽¹²²⁾ Ari, A., Chen, S. and Ratnovski, L. (2020), ‘The dynamics of non-performing loans during banking crises: a new database’, *ECB Working Papers* No 2395, label NPL levels “high” once NPLs exceed 7% of total loans.

⁽¹²³⁾ Carletti, E., Claessens, S., Fatás, A. and X. Vives (2020), ‘The Bank Business Model in the Post-Covid-19 World’, Centre for Economic Policy Research and Auer, R., Cornelli, G. and J. Frost (2020), ‘Covid19, cash and the future of payments’, *BIS Bulletin* No 3, pp. 1-7.

⁽¹²⁴⁾ ECB (2020), Study on the payment attitudes of consumers in the euro area (SPACE).

⁽¹²⁵⁾ See for instance Crouzet et al. (2019), Fernandez, S., Jenkins, P. and B. Vieira (2020), ‘Europe’s digital migration during COVID-19: Getting past the broad trends and averages’, *McKinsey Digital*, and Auer, R., Cornelli, G. and J. Frost (2020), ‘Rise of the central bank digital currencies: drivers, approaches and technologies’, *BIS Working Papers* No 880.

⁽¹²⁶⁾ IMF (2017), ‘FinTech and Financial Services: Initial Considerations’, *IMF Staff Discussion Note*, SDN/17/05.

⁽¹²⁷⁾ Sahay, R. et al. (2020), ‘The Promise of FinTech Financial Inclusion in the Post COVID-19 Era’, *IMF Monetary and Capital Markets Department Paper* No. 20/09

⁽¹²⁸⁾ Basel Committee on Banking Supervision (2018), ‘Sound Practices: implications of FinTech developments for banks and bank supervisors’

⁽¹²⁹⁾ Mancini-Griffoli, T. et al. (2018), ‘Casting light on central bank digital currencies’, *IMF Staff Discussion Note* SDN/18/08 and Rogoff, K. (2016), *The Curse of Cash*, Princeton University Press.

finance (BIS (2019) ⁽¹³⁰⁾, Carletti et al. (2020) ⁽¹³¹⁾ and Panetta (2020) ⁽¹³²⁾).

Moreover, an increased use of digital wallets denominated in private digital currency with weak links to a sovereign currency, could weaken monetary sovereignty (Lagarde (2020) and Official Monetary and Financial Institutions Forum (2020)) ⁽¹³³⁾).

In addition, a more pro-cyclical credit provision is likely if FinTech credit provision were to occur outside of the purview of financial regulation and supervision (FSB and BIS (2017)) ⁽¹³⁴⁾.

Finally, ongoing FinTech innovations, accelerated at an unprecedented speed by the pandemic, may also carry important risks in terms of consumer protection and cybersecurity (World Bank and CCAF (2020)) ⁽¹³⁵⁾. This calls then for double-pronged financial and ICT regulations that provide a better alignment of EU financial services regulation to the digital age (European Commission (2020)) ⁽¹³⁶⁾ fostering secure digital services for everyone such as regulation of digital ID in FinTechs (Ehrentraud and Garcia (2020)) ⁽¹³⁷⁾.

I.6. The shape of the recovery: mitigating scarring effects and strengthening growth

The previous sub-sections summarised the scarring effects and adaptation responses in labour, product and financial markets that may persist once the pandemic has subsided and may have an impact on

potential output. The persistence of these effects are expected to be proportional to the speed and depth of the recovery.

Initially, the literature identified various shapes that the recovery could take, ranging from a V (e.g. Sharma et al.) ⁽¹³⁸⁾ and W shape (e.g. Frankel (2020)) ⁽¹³⁹⁾ to an L shape (e.g. Roubini (2020)) ⁽¹⁴⁰⁾. However, by mid-2020, some authors (e.g. Summers (2020) ⁽¹⁴¹⁾) argued that the pandemic and the risk of its recurrence would reinforce secular stagnation as it increases households precautionary savings and decreases businesses investment in a persistent way (Jordà et al., (2020) ⁽¹⁴²⁾). See also sub-section I.2 above.

In order to radically strengthen growth expectations and confidence and avoid secular stagnation, several authors call for a strong policy response that supports investment and innovation (e.g. Benigno et al, 2018 ⁽¹⁴³⁾).

More particularly, recognising the strong synergies with other pressing major challenges such as climate change, several authors argue that targeted investments should pave the way towards a large-scale economic transformation favouring the green and digital transitions while tempering scarring effects and promoting sustainable and inclusive growth.

For instance, the Stern–Stiglitz report ⁽¹⁴⁴⁾ highlights that forward-looking green fiscal policies such as renewable energy investments have a high multiplier effect generating many jobs especially during their construction phase ⁽¹⁴⁵⁾. This has then

⁽¹³⁰⁾ Bank for International Settlements (BIS) (2019), 'Big tech in finance: opportunities and risks', chapter III in *BIS Annual Economic Report*, pp.55-79.

⁽¹³¹⁾ Partly steered by the BigTech companies with access to big data. See for instance Carletti, E., Claessens, S., Fatás, A. and X. Vives (2020), 'The Bank Business Model in the Post-Covid-19 World', Centre for Economic Policy Research.

⁽¹³²⁾ Panetta, F. (2020), 'On the edge of a new frontier: European payments in the digital age', speech delivered at the ECB Conference 'A new horizon for pan-European payments and digital euro'

⁽¹³³⁾ Lagarde (2020), *op cit.*, and Official Monetary and Financial Institutions Forum (2020), 'Digital Currencies: A question of trust'.

⁽¹³⁴⁾ Financial Stability Board (FSB) and Bank for International Settlements (BIS) (2017), 'FinTech credit. Market structure, business models and financial stability implications'.

⁽¹³⁵⁾ World Bank and CCAF (2020), 'The Global Covid-19 FinTech Regulatory Rapid Assessment Report', World Bank Group and the University of Cambridge.

⁽¹³⁶⁾ European Commission (2020), 'Digital finance strategy for the EU', COM(2020) 591 final.

⁽¹³⁷⁾ Ehrentraud J. and D. Garcia (2020), 'Managing the winds of change: policy responses to FinTech', *VoxEU*.

⁽¹³⁸⁾ Sharma, D., Bouchaud, J-P, Stanislao Gualdi, M. Tarzia, and F. Zamponi (2020), 'V-, U-, L-, or W-shaped recovery after COVID: Insights from an Agent Based Model', Papers 2006.08469, arXiv.org, revised Sep 2020.

⁽¹³⁹⁾ Frankel, J. (2020), 'How to Avoid a W-Shaped Recession', *Project Syndicate*.

⁽¹⁴⁰⁾ Roubini, R. (2020), 'The Coming Greater Depression of the 2020s', *Project Syndicate*.

⁽¹⁴¹⁾ Summers, L. (2020), 'Larry Summers on COVID-19 and the Global Economy', Princeton Webinar on 22 May 2020,

⁽¹⁴²⁾ Jordà, O et al. (2020), *op cit.*

⁽¹⁴³⁾ Benigno G., L. Fornaro (2018), 'Stagnation traps', *Review of Economic Studies*, Vol. 85, No. 3, pp. 1425-1470.

⁽¹⁴⁴⁾ Hepburn C, O'Callaghan B, Stern N, Stiglitz J, and D. Zenghelis (2020), 'Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?', *Oxford Review of Economic Policy*, Vol. 36, Supplement 1, pp. S359–S381.

⁽¹⁴⁵⁾ High multipliers are also reported by Lahcen, B., Brusselaers, J., Vrancken, K., Dams, Y., Da Silva Paes, C., Eyckmans, J and S. Rousseau (2020), 'Green Recovery Policies for the COVID-19 Crisis: Modelling the Impact on the Economy and Greenhouse Gas Emissions', *Environmental and Resource Economics*, Vol. 76, pp. 731–750, who estimate that in the case of Belgium for emissions

a strong potential to limit the negative scarring effects described in previous subsections.

At the same time, a green recovery can make the most of the shifts in human habits and behaviour accelerated by the pandemic. For instance, on impact, the COVID-19 pandemic caused a notable reduction in greenhouse gas (GHG) emissions as, for instance, telework and a dramatic decrease in travelling limited transport-related emissions, i.e. GHG emissions down by 8% in 2020 in comparison to 2019 (International Energy Agency (2020))⁽¹⁴⁶⁾.

However, such reductions are still too small to have an impact on climate change mitigation (Dechezleprêtre et al. (2020)⁽¹⁴⁷⁾). Moreover, Lahcen et al. (2020)⁽¹⁴⁸⁾ demonstrate, for instance in the case of Belgium, that while the COVID-19 pandemic damages economies considerably, the associated reduction in GHG emissions is less than proportionate. This is because the sectors affected most have the smallest carbon intensities.

As such, in the medium to long run, it is green investments and structural reforms that will ultimately drive the impact of the COVID-19 pandemic on climate change (Hepburn et al. (2020))⁽¹⁴⁹⁾.

Moreover, in previous sub-sections, it was argued that private investment is expected to decrease in the wake of the pandemic as overall uncertainty is expected to remain high. Such underinvestment creates then opportunities for policies aimed at replacing old and polluting infrastructure with a modern, clean and efficient one without the risk of crowding out other investments⁽¹⁵⁰⁾.

Finally, the debate in the literature on shaping the recovery and limiting scarring effects also covers ‘green money’ such as green refinancing operations that provide banks with cheap funding if they lend in accordance with the EU’s taxonomy of green activities (van ’t Klooster and van Tilburg (2020) de Santis (2018) and Lagarde (2020))⁽¹⁵¹⁾. Though the impact of this channel is expected to remain limited⁽¹⁵²⁾.

I.7. Conclusion

This section provided a brief literature review of the structural economic impact of the COVID-19 pandemic on the euro-area economy. The literature identifies downward as well as upward risks.

The downward risks stem from factors such as scarring effects caused by underutilisation of labour and capital, bankruptcies, a lack of private sector investment and disruptions of value chains.

The upward risks stem from the acceleration of digital applications such as the increased use of digital workplaces and e-commerce, as well as from the structural reforms and policies centred around the digital and green transitions such as the European Green Deal.

The literature review suggests that addressing these risks requires (i) preserving the well-functioning markets, (ii) well-designed social and active labour market policies to support the hardest-hit and (iii) investments that accelerate the replacement of old and polluting infrastructure with modern, clean, and efficient infrastructure across all sectors that tackle the green and digital transitions in a more forceful way and at the same time limits the scarring effects of the pandemic.

to fall by 1 percentage point, GDP has to fall by 2.17 percentage points, whereas if a policy aimed at investing in the renovation of housing units is introduced GDP increases by 0.2 percentage points for each 1 percentage point reduction in emissions.

⁽¹⁴⁶⁾ The International Energy Agency (2020), *Global Energy Review 2020* estimates that GHG emissions will have dropped by 8% in 2020 in comparison to 2019.

⁽¹⁴⁷⁾ Dechezleprêtre, Elgouacem, Kozluk, Kruse (2020), ‘COVID-19 and the low-carbon transition: Impacts and possible policy responses’, OECD Policy Responses to Coronavirus (COVID-19).

⁽¹⁴⁸⁾ Lahcen et al., *op cit*.

⁽¹⁴⁹⁾ Hepburn et al. (2020), *op cit*.

⁽¹⁵⁰⁾ However, it should be recognised that several other factors may also hold back private green investments during a pandemic, such as the very long time horizon of infrastructure investments, low fossil-fuel energy prices reducing the incentives for investment in low-carbon technologies or the absence of market signals such as in the case of biodiversity. See Biller, D. (2007), ‘The Economics

of Biodiversity Loss’, in B. Lomborg (ed.), *Solutions for the World’s Biggest Problems: Costs and Benefits*, Cambridge University Press.

⁽¹⁵¹⁾ van ’t Klooster, J. and R. van Tilburg (2020), ‘Targeting a sustainable recovery’, Positive Money Europe, De Santis, R., K. Hettler, M. Roos, M. and F. Tamburrini (2018), ‘Purchases of green bonds under the Eurosystem’s asset purchase programme’, ECB Economic Bulletin, Issue 7/2018, and the interview with Christine Lagarde, President of the ECB, conducted by Léa Salamé and Thomas Sotto on 4 June 2020.

⁽¹⁵²⁾ De Grauwe, P. (2020), ‘Green money without inflation’, CEP Council on Economic Policy argues that such instruments could favour environmental investments without endangering price stability