

REVIVING PRODUCTIVITY GROWTH IN URBAN ECONOMIES

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Abstract

The COVID-19 pandemic is affecting productivity growth in many ways (e.g. through human capital, investment, resource reallocation, frictions to global value chains, etc.) and is likely to leave scars. Fostering digitalisation and intangible investment can help the recovery thanks to their overall positive impact on productivity. Key policies to unlock productivity growth include: high-quality investments in innovation, human capital and infrastructure, well-functioning labour and product markets to facilitate resource reallocation also across sectors, to absorb the shock of the crisis, facilitating access to finance and liquidity, and a supportive business environment. There must be strong value added in international cooperation for productivity-enhancing policies: international cooperation can allow the sharing of information on lessons learnt and best practices. Moreover, common efforts and joint initiatives (for example, in investment) can maximise the impact of the measures and the positive spillovers.

Keywords: *productivity growth; intangible investments; digitalisation; innovation.*

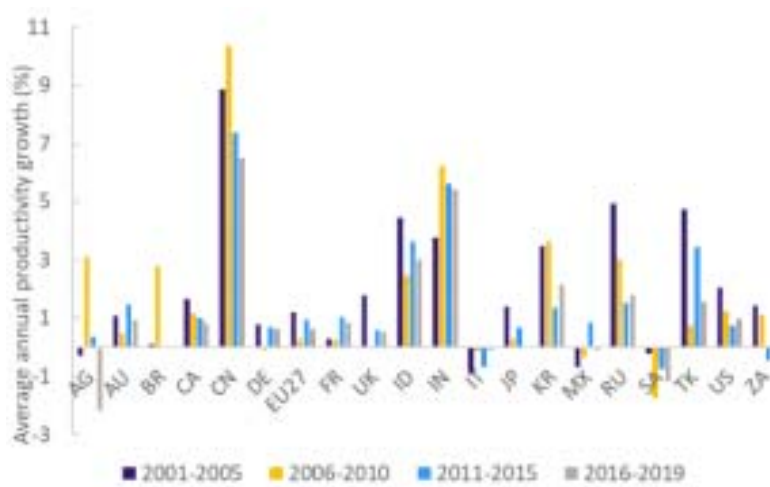
JEL Classification: E20, E22, E24, E30, E60, E66

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Introduction

Productivity growth has been slowing down in recent decades. Both labour productivity and total factor productivity (TFP) growth have been sluggish since the early 2000s, and in some regions, like the European Union, for even longer. Since labour productivity growth results from TFP growth and capital accumulation, the fact that also TFP growth has been declining implies that low labour productivity growth is not only due to weak investments. Across the G20 countries, annual average labour productivity growth has been trending downwards since the beginning of the 2000s in advanced and emerging market economies alike, although with somewhat different patterns (Graph. 1).

Graph. 1: Average annual labour productivity growth G20, 2000-2019



Source: World Bank

In addition, the COVID-19 pandemic and associated economic crisis might have a long-lasting impact on productivity growth, due to the related shocks on digitalisation, investment, labour, education and global supply chains, to name but a few, that will affect productivity with different signs.

Productivity growth is a key driver of prosperity and convergence. Increasing productivity is crucial from a policy perspective since it is the main driver of GDP

per capita growth. With ageing societies, the role of increasing productivity in improving living standards is even more relevant.

The economic literature has extensively investigated the reasons behind weak productivity growth, and no clear consensus has emerged. The jury is still out on how much of the slowdown can be attributed to structural as opposed to temporary factors. The main debated causes include a weaker impact on productivity of recent IT-driven innovation cycles, the gradual adoption of the new technologies – which would require complementary investments –, a slower pace of technological change, declining growth rates of skill acquisition in advanced economies (as the gains from better education run their course), and even measurement issues. Since the global financial crisis, these headwinds have been compounded by low investment coupled with high corporate saving. The COVID-19 crisis has increased uncertainty, placed a strain on corporate liquidity and led to a decline in corporate investment that might further depress productivity growth in the future. [Banerjee et al., 2020]

Whether the productivity growth slowdown is temporary or structural, or a combination of both, its implications are a cause of policy concern. Lower productivity growth is associated with lower business dynamism and an increased divergence between the most and the least productive firms. This divergence, in turn, is associated to higher wage inequality and market concentration and even more so in sectors providing information and communication technology (ICT) services and industries intensive in intangible assets. Population ageing comes along with increasing health and pension spending, putting a strain on public finances that productivity growth can mitigate (European Commission 2018). The COVID-19 shock and its impact on productivity, as well as the acceleration in the use of digital services by the private and public sector, make these challenges even more relevant. This explains the focus on the digital transition of the EU's long-term budget for the period 2021-2027, coupled with Next Generation EU - the temporary instrument designed to boost the recovery and facilitate the transitions towards a greener, more digital and just economy.

1. The COVID-19 pandemic and productivity growth

The greater take-up of digital technologies due to the COVID-19 pandemic may accelerate the structural change the pandemic has triggered and can provide both opportunities and challenges for urban economies.

COVID-19 crisis on productivity growth can be grouped into: (1) within-firm productivity growth, (2) resource reallocation across firms (e.g. firms in the same

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sector that can weather this crisis as opposed to the ones that will be forced to exit the market), and (3) resource reallocation across sectors (see below Table 1).

Table 1. Summary of the channels by which COVID-19 affects productivity growth

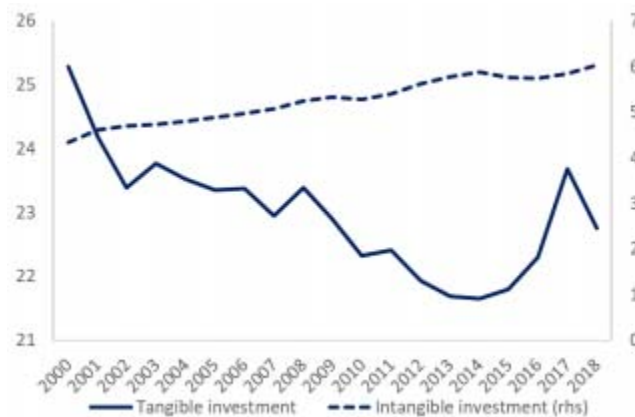
Channels	Potential positive drivers	Potential negative drivers	
<i>Within-firm reallocation</i>	Hysteresis and human capital	Increase in digital take-up by individuals; incentive to training from reduced working hours	Labour hoarding; erosion in firm-specific human capital; deterioration of workers' skills in case of slow reallocation; disruptions to schooling and training; missing positive spillovers in the workplace.
	Investment		Falling investment due negative macroeconomic prospects
	Business-specific intangible assets		Business closures destroy e.g. buyer-supplier trust, employer-employee relations, organisational effectiveness
	Innovation and digitalisation	Digitalisation, e-commerce, e-government and e-health, new business models, higher automation, teleworking diffusing at large scale	Distraction, addiction and other negative effects of digitalisation
	Frictions in global value chains		Higher transaction costs; repatriation of activities might reduce efficiency, curtailed cross-country labour mobility.
	Macroeconomic burden		Fiscal/monetary consolidation in the medium term
<i>Reallocation across firms</i>	Firm size	Composition effect (exit of smaller, less productive firms)	
	Firm churning	Higher firm churning as low-productive firms exit the market and more productive firms enter or expand.	Higher concentration/lower competition, decline in early-stage venture capital reduces innovative start-ups, sizeable public support might go to "zombie" firms
	Financial constraints		Credit crunch risk, viable illiquid firms becoming insolvent
<i>Reallocation across sectors</i>	Changes in sectors' shares	Cross-sector reallocation of economic activity as some sectors shrink and others expand. The sign is difficult to predict due to differences across sectors and countries.	

Source: European Commission

2. Digitalisation, intangible investment and productivity growth

One of the defining features of the digital economy is the shift away from physical capital towards intangible capital. Intangible assets include computerised information (software, databases), innovative property (R&D, mineral exploration, copyrights and trademarks, product development, architectural and engineering designs) and economic competences (advertising, market research, training, management consulting). [Corrado et al., 2009] Intangible investment is key to enhance firms' innovation performance and productivity growth (Bontempi and Mairesse, 2015). R&D investment and digital technologies are also at the core of the response to the COVID-19 pandemic, as also discussed in the previous sections. However, the ability of an economy to invest in intangibles and innovate depends on country-specific characteristics, including the countries' economic structure and economic policies, institutions and governance.

Graph. 2: Intangible vs. tangible investments in selected G20 countries



Source: OECD

Intangible investment in G20 countries has been increasing relative to GDP over the period 2000- 2018, and it was more resilient to the global financial crisis than tangible investment. Whereas, across the G20 countries for which data are available, intangible investment represents about 6% of GDP compared to 23% for tangible investment (i.e. dwellings, infrastructure investments, machinery and equipment), the share of intangible investment in GDP has been increasing

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between 2000 and 2018. The share of tangible investment, instead, declined markedly over the same period (Graph 2).

R&D investment, digital investment and skills acquisition are at the core of the productivity and competitiveness of an economy. R&D investment boosts innovation, by helping firms to develop new products, services or processes, or to improve existing ones (Crépon et al. 1998). ICT investment has a decisive effect on both the propensity to innovate and productivity gains. Once a new technology is produced, its diffusion throughout the economy and across firms is a key productivity driver, and skills acquisition is necessary for innovation absorption and diffusion (Diaz-Chao et al. 2015). It may be worth noting that half of the investment in intangibles is not accounted for in national accounts, e.g. advertising, market research and branding; design and product developments; purchased organisational capital; vocational training; and own-account organisational capital. Some estimates attribute to non-national accounts intangibles the bulk of productivity growth due to investment in intangibles in the business economy.¹

Intangible assets have some specific characteristics affecting their financing and their use. Since they present informational asymmetries and large sunk costs, and are harder to pledge as collaterals, intangible investments face more financial constraints than tangible assets, and rely more on internal rather than external capital. Easing financing conditions may thus spur firms' productivity and more efficient resource allocation in intangible-intensive sectors.

The combination of declining aggregate productivity growth and progress in ICT in recent decades has given rise to the "productivity paradox" (Solow 1987). Contrary to what one would expect a priori, in fact, economic studies, especially those using data at the aggregate or sectoral level, have failed to find a strong positive empirical relationship between digitalisation and productivity growth.²

Aggregate developments hide important dynamics at the micro level. The presence of strong economies of scope favours the development of digital networks and gives incumbents strong competitive advantage. Productivity dispersion across firms has increased, with a few frontier firms becoming more productive and a

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¹ See section 4.2 in Sanchez Martinez et al. (2021)

² The economic literature has provided a number of explanations for this paradox. Van Ark (2016) suggested that productivity benefits from ICT-related innovations do not yet show up in aggregate figures, and productivity effects will show up in the "deployment phase". Ahmad and Schreyer (2016) mentioned possible measurement issues including prices in the services sector.

large mass of laggard firms with dismal productivity growth. This suggests that technological diffusion has been weak. Divergence across firms has been stronger in highly digitalised industries, where winner-takes-all dynamics have compounded the rise of global technological champions, with increasing market concentration and mark-ups.

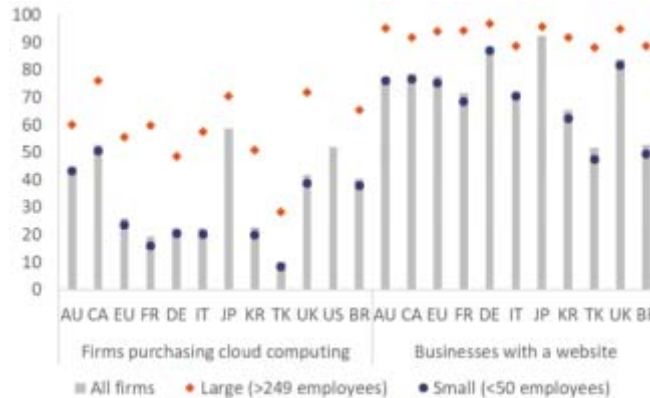
Digital technologies support productivity in combination with organisational capital, management skills, R&D and intangible investments, human capital and ICT related skills, and a supportive regulatory environment. Different digital technologies are complementary, and productivity gains from digitalisation can show up with a lag. The relationship between digitalisation and productivity also tends to be higher in manufacturing than in services. Industries that are intensive in routine tasks present a stronger effect of digitalisation on productivity, which suggests that digital adoption can streamline production processes, reinforcing the view that it is a substitute for routine labour input.

The productivity gains from digitalisation were captured by few, highly productive firms. Digital adoption is consistently higher in large firms than it is in SMEs (Graph 3). Economic research has also found that the relationship between the adoption of digital technologies and productivity is stronger for highly productive firms, which are likely to benefit from organisational and technical skills. This implies that digitalisation might exacerbate the dispersion in firms' outcomes. Moreover, it confirms the view that there is an issue of technological diffusion. The digital revolution is thus creating new markets and changing existing markets in a way that challenges both competition policy and data protection, though increasing corporate market power in recent years has been rather a feature of advanced economies than emerging market economies (IMF 2018).

Digitalisation affects the demand for skills, and the lack of such skills can prevent countries from reaping all the benefits of digitalisation. An immediate consequence of digitalisation is higher demand for digital and technology-related skills. In this respect, science, technology, engineering and mathematics (STEM) skills, including ICT skills, are crucial. The demand for digital skills created by the digital transformation is however higher, since the widespread use of digital technologies makes some level of digital skills necessary for most jobs. This is the case for certain routine tasks that are more easily automated (e.g. accounting and clerical work). In addition, to complement technology and to adapt to changes in tasks and jobs, workers need a broad set of skills, which include non-cognitive ones like communication, managing skills, creativity, and critical thinking, the shortage of which may hinder the positive effects of digitalisation on productivity.

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Graph 3: Digital adoption of businesses across the G20



Source: OECD

Higher penetration of digital technologies also has labour market implications. Increasing technological adoption, including the development of artificial intelligence (AI), can displace jobs, but is also able to create new jobs. The displacement effect is stronger in routine tasks-intensive industries. At the same time, on balance, new technologies do not necessarily destroy jobs, since the overall effects of technologies on productivity and the overall wealth also create jobs elsewhere. Instead, most likely digitalisation will have an impact on the distribution of earnings across sectors and skills, and the size of employment across sectors.

3. Digital platforms

Digital platforms contribute to innovation and productivity growth. They make learning, sharing, and profiting from good ideas and information easier and faster. A clear example is the app stores, which offer application programming interfaces and software development kits. By making it easier for developers to create and profit from ideas and innovations, app stores raise the incentive for app developers to invest in innovation. The platforms themselves can be major innovators too, including by generating new and improved business models. In addition, digital platforms enhance productivity by helping economies to allocate resources faster

and more efficiently, mainly because of the enhanced competitive pressure that they bring. Platforms have been proved to be efficient at matching one side of a market with another side, in so doing putting resources to more productive uses.

Via stronger innovation and productivity, digital platforms could contribute to economic growth. First, the greater market access for retailers made possible by digital platforms translates into those retailers being able to contribute more to GDP, notably to the benefit of small and medium-sized enterprises (SMEs). Second, the greater competition in both input and output markets leads to lower prices as well as greater production and consumption. But there is a fundamental difference between types of platforms. “Aggregator” platforms that connect existing service providers to consumers (e.g. Booking.com, TheFork) tend to push up productivity, profits and employment of existing service firms. In contrast, more disruptive platforms that enable new types of providers to compete with existing ones (e.g. Uber, Airbnb) were not found to have had a significant effect on the productivity of existing providers, but tended to reduce their mark-ups (which is positive for excessively concentrated markets), employment and wages.

The relative novelty of digital platforms raises a number of questions and challenges both on the demand and supply side. On the supply side, digital platforms affect the organisation of production, including the organisation of work (OECD 2016). Keeping transaction costs low, digital platforms enable new suppliers to enter markets previously dominated by few large firms. In addition, workers in digital platform markets often benefit from low entry barriers and high flexibility. On the flip side, pay, job security, social protection, and upskilling options tend to vary greatly and may be poorer for people in a digital platform environment than for people in the same or similar sectors in the ‘traditional’ economy. In connection with this, there remain questions about the employment legal status of such people. A number of rulings in European courts have deemed these to be ‘false selfemployed’. This might have consequences for those platforms’ business models which are found to be based on misclassification of workers as independent contractors, rather than employees. On the demand side, digital platforms have induced new consumption behaviours and fuelled trade in goods and services among peers. In contrast to traditional markets, consumers often take on a more active role in digital platforms, for example by providing reviews of or by producing and/or selling goods or services themselves. While ratings and reviews may support consumers’ choices, peer transactions challenge traditional consumer protection frameworks, raising additional policy questions (OECD 2017).

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Some platforms may raise competition and privacy concerns. Beyond delivering innovative services, algorithms and big data may be used to increase market power and enable anti-competitive conduct. Given the characteristics of platforms, digital networks, and the data economy, it can be claimed that a number of established concepts, approaches and methodologies might need to be adjusted, concerning e.g. market definition, the measure of market power, and the competition framework. At the same time, high market concentration alone does not necessarily imply less competition. By the nature of digital platforms, size may at times bring benefits to users. For example, the quality of a search algorithm increases as more people use it. Still, few times have new entrants displaced or seriously challenged major platforms, suggesting challenges to competition in the market once competition for the market has taken place. Competition issues due to abuse of dominant position have also been raised concerning the activity of app stores.³

3. Key policies for productivity growth

Appropriate and well-designed crisis and post-crisis policies are key to boost productivity and fully reap the gains from digitalisation. In the EU, the investments and structural reforms embedded in the national recovery and resilience plans under “Next Generation EU” will help Member States address key challenges. They will also support the digital transition, since a minimum of 20% of the funds under the Recovery and Resilience facility will be geared to this objective.

There is no single silver bullet policy for unlocking productivity growth, but rather there are productivity-friendly policy principles, requiring implementation at various government levels. Challenges to productivity growth and the optimal policy mix to enhance productivity. Broadly speaking, the key productivity drivers are (i) investments in innovation and infrastructure; (ii) human capital; (iii) digitalisation; (iv) dynamic and supportive business environment.

Investment in high-quality network infrastructure and innovation can have positive multiplier effects provided there is no overprovision (European Commission 2014). The transition towards greener and more digitalised economies will also require substantial investments. Lack of competition in network industries harms firms’ competitiveness and growth in the network industry and among providers and customers of the network. Public policies should thus support public investment, also through publicprivate partnerships, and leverage private resources

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³ See for example https://ec.europa.eu/commission/presscorner/detail/en/i_p_21_2061

while improving the quality and the efficiency of infrastructure investment. Improving the quality and composition of public finance would be warranted.

Knowledge production and diffusion are key to boost productivity growth. Policies should foster intangible investment, while promoting a supportive business environment and an innovation-friendly regulatory framework. This includes striking a balance between promoting flexible and competitive markets and modernising intellectual property rights. In turn, investment in intangible capital, including education and life-long learning, can speed up knowledge creation and diffusion. Intangible investments could be fostered through direct public support (e.g. public R&D), tailored taxation schemes, public procurement and improving links between academia, industry, citizens and policymakers.

Policy should maximise the potential benefits of digitalisation on productivity. First, appropriate investments in digitalisation are important. These include broader access to broadband connection, as well as investments in cloud computing services and other resource management services, which can unlock firm productivity. Second, effective education and training that provide attention to developing all the relevant cognitive and noncognitive skills in education and training curricula at all levels contribute to the economy's readiness to adapt to technological transformations.

Adequate and efficient investment in education is key to innovation and productivity growth. As job skills requirements are on the rise, partly because of digitalisation, productivity will be more linked with education than in the past. Highquality and inclusive education programs, as well as lifelong learning, can equip the workforce with the skills needed for the digital transition, and reduce skills gaps and mismatches. Training should also target the management of SMEs to facilitate adoption of new technologies and adaptation of production processes. Investments in human capital will also be crucial to ensure that the educational fallout due to the COVID-19 containment does not turn into a permanent drag for some groups of students. This is relevant since the forced move to distance learning may have exacerbated inequalities. In July 2020, the European Commission launched the European Skills Agenda, which acknowledges the higher demand for digital skills.

The digitalisation of the economy and its acceleration due to COVID-19 present challenges that need to be addressed with the appropriate policies. These challenges are in particular the increasing market concentration in sectors with high digital content and the issue of data protection. The latter is even more important as

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both governments and firms have quickly increased their activities online due to the COVID-19 pandemic. The current crisis has especially benefitted some digital companies, which have increased their market shares and profits while most traditional businesses were struggling. In addition, also for a matter of fairness, ensuring that all companies, including digital multinational ones, pay their share of taxes is also a priority.

These issues also concern the development of online platforms. Digital platforms are increasingly important for the economy, as discussed in the previous section. Finding the balance between consumer protection, data privacy and access to data to foster competition is crucial. Policy should also ensure a fair relation between large platforms and their small business users to avoid abuses of dominance, where such market position exists, or to tackle behaviour by gatekeeper platforms that could undermine contestability of markets in the digital sector or is unfair. The Commission proposed the Digital Markets Act with a series of obligations and prohibitions on such gatekeeper platforms to address some of these issues. At the same time, the Commission will continue with the vigorous enforcement of EU competition rules, which the Digital Markets Act complements. It is also necessary to build up statistics that are able to capture the differences among digital platforms and their evolution, with a view to improving collective decision-making.

In December 2020, the European Commission proposed a comprehensive set of new rules for digital services that operate in the EU that will foster innovation, growth and competitiveness and will provide users with new, better and reliable online services. The Digital Services Act and the Digital Markets Act are two draft Regulations that aim at (i) a safer and fairer online environment for users; (ii) a level playing field that will allow innovative digital businesses to grow and compete globally. The draft Regulations provide a benchmark for regulating digital services with clear obligations tailored to the societal and economic importance of the online platforms and their availability and reach to consumers. The new rules support the scaling up of smaller platforms, SMEs and start-ups, facilitate access to customers across the single market while lowering compliance costs and prohibit unfair conditions; they also tackle dissemination of illegal content and the sale of illegal goods and services through platforms, expected to be partially substituted by legal activities and fostering growth for lawful businesses. They will therefore contribute to foster innovation and the growth of digitalisation across the EU while tackling unfair behaviour by gatekeeper platforms that could undermine

contestability of markets in the digital sector. Finally, the new rules provide a framework for the provision of data from very large online platforms to vetted researchers and public authorities, which is critical for investigations on the online systemic societal risks as well as for risk mitigation.

Conclusions

A supportive business environment facilitates business dynamism (Calvino et al. 2020). Reforms that can unlock productivity growth include lowering the barriers to firm entry, growth and exit, including regulatory red tape; promoting openness to trade and foreign direct investment; implementing strong competition law and policy, including wellcalibrated intellectual property rights, and making the labour and product market more responsive to economic conditions. Increasing public administration efficiency is also crucial, e.g. by promoting effective public procurement and legislative simplification, enhancing transparency, and increasing the availability of e-government services.

Access to finance is important, especially for young and innovative firms and to prevent liquidity issues to turn into solvency problems. Lack of sources of finance alternative to bank financing reduce investment possibilities, hindering innovation and firm growth. Facilitating access to finance also implies fostering the development of sources of finance alternative to banking (e.g. crowdfunding, venture capital, etc.). Financial systems should ensure efficient capital allocation and prevent bubbles. Easing access to finance and liquidity to viable firms is especially relevant to overcome the COVID-19-related crisis.

Productivity-enhancing policies have a strong country dimension but there are benefits from international cooperation. Challenges to productivity growth are, to a certain extent, country-specific and many of the policies described in this note are defined by national regulations and preferences. However, given the high international economic and financial integration and the borderless nature of technological progress, international cooperation can contribute to maximise the benefits from productivity-enhancing policies.

Here are some avenues to work on for international cooperation, in particular (i) knowledge sharing (i.e. sharing best practices); (ii) improved coordination (e.g. developing new and internationally comparable relevant statistics); and (iii) common efforts (e.g. joint initiatives for investment in R&D and frontier innovation, measures for knowledge diffusion).

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References

- [1] Afman, E. (2021), "Impact of Covid-19 on productivity in the medium-run: An assessment of transmission mechanisms," forthcoming.
- [2] Ahmad, N. and Schreyer, P. (2016) "Are GDP and Productivity Up to the Challenges of the Digital Economy?," International Productivity Monitor, Centre for the Study of Living Standards, vol. 30, pages 4-27, Spring.
- [3] Anderton, R., Jarvis, V., Labhard, V., Morgan, J. Petroulakis, F., and Vivian, L. (2020), "Virtually everywhere? Digitalisation and the euro area and EU economy", ECB Occasional Paper 244.
- [4] Banerjee, R., Illes, A., Kharroubi, E., and Serena, J.-M. (2020), COVID-19 and corporate sector liquidity, BIS Bulletin No 10, 28 April 2020.
- [5] Di Mauro, Syverson (2020) The COVID crisis and productivity growth <https://voxeu.org/article/covid-crisis-andproductivity-growth>.
- [6] European Commission (2018), "The 2018 Ageing Report: Economic and Budgetary Projections for the EU Member States (2016-2070)", European Economy, Institutional Paper 079.
- [7] International Monetary Fund (2018) World Economic Outlook: Growth Slowdown, Precarious Recovery.
- [8] Morandini, M.C., Thum-Thysen, A., and Vandeplas, A (2020), Facing the Digital Transformation: are Digital Skills Enough? European Economy – Economic Briefs 054.
- [9] OECD (2019), An Introduction to Online Platforms and Their Role in the Digital Transformation, OECD Publishing, Paris.
- [10] Sokolyanskaya, A. and L. Lechardoy (2020), "COVID-19 and online platform economy", Observatory on the Online Platform Economy, <https://platformobservatory.eu/news/covid-19-and-online-platform-economy/>.