JGP0054

Written evidence submitted by Professor Bart van Ark, Managing Director, The Productivity Institute

Introduction

1. The Productivity Institute is a newly established UK-wide research institute, made possible by an initial five-year investment by the Economic and Social Research Council (ESRC) supplemented with contributions from nine participating academic and research institutions. The Institute's purpose is to pinpoint the causes of stagnation in UK productivity growth and identify new and innovative solutions, laying the foundations for a new era of sustained and inclusive productivity growth (van Ark and Venables, 2020).[1]
2. Since September 2020 I have led The Productivity Institute as its Managing Director. I am also a Professor of Productivity Studies at the Alliance Manchester Business School at the University of Manchester. Previously I worked as Chief Economist for The Conference Board in New York, a think tank for the global business community, and I was a Professor of Economic Development and Technology at the University of Groningen in the Netherlands. I am specialised in the field of international comparisons of economic performance, in particular focused on productivity, technology and innovation.
3. In its first eight months, and at the request of the ESRC, The Productivity Institute has commissioned various projects looking at the productivity impact of the pandemic. Several of those papers insights, have been used for this evidence (Coyle et al., 2021; Halima et al., 2021; Geels et al., 2021), complemented with other evidence from participating institutions (especially NIESR 2021), as well as insights from own work (updated work on van Ark et al, 2020; van Ark 2021a, van Ark 2021b, van Ark 2021c).
4. This submission provides evidence relating to the following questions in the inquiry's call for evidence:
    - How successful has the Government's pandemic response been in protecting jobs to date, and how can it help reduce and mitigate the economic scarring effects of the pandemic going forward?
    - Does the Government have the right mix of policies and a coherent strategy to promote long-term productivity growth and create new high-quality jobs?
    - What policies are effective in helping people to reskill, move between occupations and sectors and take advantage of new opportunities? How could these be best implemented in the aftermath of the pandemic, and as technological developments such as artificial intelligence change the nature of work?
    - Is the UK well placed to take advantage of future technological breakthroughs and translate them into economic opportunities?
    - Can monetary and fiscal policy improve employment, growth and/or productivity outcomes by 'running the economy hot'?
    - How much difference can government policy make to economic growth?

    Rather than addressing these questions in turn, the submission is structured to first provide a summary, followed by a section addressing the impacts of the pandemic on productivity

[1] The nine institutions include the University of Manchester, where the Institute is headquartered, the University of Cambridge, Cardiff University, the United of Glasgow, King's College London, the National Institute of Economic and Social Research, Queen's University Belfast, the University of Warwick, and the Economic Statistics Centre of Excellence (ESCoE).

and then, in turn, sections discussing the short-, medium- and long-term policies that could support growth and productivity as part of the recovery.

5. Disclaimer: The evidence provided below is based on my own interpretation and analysis of the data and insights, and do not represent a joint view by The Productivity Institute or by anyone affiliated with it except myself.

SUMMARY OF KEY POINTS: The impact of the pandemic on productivity and policy responses

6. As we are emerging from the pandemic, the potential impact of the crisis on productivity is beginning to emerge. Some of the key causes of the pre-pandemic productivity slowdown in the UK, in particular workforce skills and innovation capabilities, may become even more critical to the recovery. Other factors, especially the lack of aggregate demand (consumption and investment) and limited innovation potential are less likely to be major constraints during the recovery. However, the relative importance of those and other sources of productivity growth may change over time during the next decade. The timing of the policy agenda is important to support the sources most critical to improve productivity and mitigate any headwinds for a productivity recovery.
7. In the short-term (2021 and 2022), aggregate demand growth (impacting the numerator of the productivity equation) is unlikely to be a deterrent in the same way it was for much of the past decade. Surplus savings are likely to generate a pro-cyclical upside to the recovery. There are also signs that investment intentions may translate into faster capital formation, as business support programmes have put many firms in a better position to regain growth. However, key bottlenecks on the supply side (impacting the denominator of the productivity equation) will become more critical to the recovery in 2021 and 2022. This involves resolving frictions in the labour supply of workers for specific occupations and skills, which arise from the aftermath of the pandemic as well as Brexit.[2] A positive factor is that an increase in digital technology usage both by consumers and by businesses during the pandemic may remove some bottlenecks on the supply side by resolving labour supply frictions through automation.
8. An important policy implication for the ***short-term*** is to avoid cutting short the demand recovery, e.g. by an abrupt ending of business support programmes. Instead a more gradual, target-driven winding down of such programmes is recommended. Furthermore, the government should facilitate the structural adjustments in the labour market by supporting FE colleges and other institutions to work with local and regional business communities to identify critical skill mismatches and provide adequate training modules. Changes in mobility patterns of workers and businesses, notably because of the effects of hybrid work-from-home-and-office models, need to be identified and anticipated.
9. In the ***medium-term***, demand factors will resume their key role to sustain a recovery in productivity beyond 2022. A key risk is that the pandemic may have raised inequalities between particular occupational groups and places in terms of access to jobs and potential for productivity growth. This could potentially create large pockets of weak demand and slow investment across the economy. Any signs of a K-shaped recovery should be addressed early on by addressing the issues in regional or local context. The implications of rising inequalities go far beyond the world of work. They impact communities more widely, for example in terms of people's living conditions, including the provision and quality of education, health and housing conditions. Addressing such inequities should be an integral part of the levelling up agenda.

[2] For lack of space, the impact of Brexit on productivity is not addressed in more detail in this document.

10. In the ***long-term*** (2025 and beyond) important technological, societal and environmental transitions, which are already underway, will provide opportunities for faster productivity growth. But if not addressed in a systematic and coordinated way they can also prevent an improvement in the productivity trend, or even exacerbate the productivity slowdown. While new technologies offer great potential for faster productivity growth, slow and uneven adoption pose direct risks to productivity growth as well as to the distribution of its gains across the workforce and the population as a whole. Key labour market and demographic trends, such as the drop in job security and the aging population, should be better understood from the perspective of its impact on productivity. Similarly, without appropriate policy coordination of activities the drive towards net-zero carbon emissions could be detrimental to productivity.
11. It is critical for the government to recognise the complexity of the policy framework is raising productivity growth in the UK in an inclusive manner and with a differentiated view on short-, medium- and long-term effects. There is also a need to coordinate a wide range of productivity-related policy domains (horizontal coordination) and allocate the governance of policies at the right level of (devolved) national, regional or local government.
12. As any productivity agenda will require a long-term focus, the policy framework needs to provide safeguards to withstand the pressures of daily economic and political issues, and manage the tension between economic and political cycles. The productivity agenda requires guidance on how those risks will be managed, built-in flexibility, frequent resets on the basis of emerging evidence, updates of forecasts and the development of policy scenarios.
13. The Productivity Institute is setting up a Productivity Commission, as an independent academic forum to provide evidence on policies related to productivity and act as a focal point for Whitehall initiatives and those from devolved nations in the area of productivity. This work does not only involve fiscal policy, but also important policy areas of a structural nature, including education, infrastructure, and innovation.

Productivity performance during the pandemic

14. The COVID-19 crisis and the recession have created an unprecedented fall in output and extraordinary volatility in productivity growth rates during 2020. According to the latest figures from the Office of National Statistics (ONS, 12/5/21), GDP has declined at -9.8% in 2020 over 2019. In the first quarter of 2021, GDP continued to contract but at a much slower pace (-1.5%) than during the 2nd quarter of 2020 (-19.5%) when the first wave of the pandemic hit. By the end of Q1-21, the level of GDP was still 8.7% below where it was before the pandemic. NIESR (2021) forecasts a return of GDP to its pre-pandemic peak only by the last quarter of 2022.
15. Productivity growth in 2020 has been highly volatile, as the large quarter-over-quarter swings in the numerator (output) and denominator (inputs) exacerbated the changes in productivity. ONS estimates (14/4/21) show that output per worker in 2020 declined by almost as much as GDP, namely at 9.4%, reflecting large swings from -3.1% in Q1-20, -18.6% in Q2-20, +17.5% in Q3-20 to +1.6% in Q4-20. These large swings are to a large extent the result of the business support and furlough programmes which allowed firms to retain their workforce, hence keeping unemployment rates low. Once adjusted for the decline in hours paid but not worked, output per hour worked in fact increased at a modest 0.4% in 2020 compared to 2019, reflecting large smaller changes ranging from -0.9% in Q1-20, -1.6% in Q2-20, +6.4% in Q3-20 to -4.3% in Q4-20.

16. In a "normal" recession, industrial sectors are often the ones hit first and hardest. That is because these sectors are directly exposed to cyclical changes in the global economy through dependence on supply chains, etc. The pandemic, however, has battered domestic services including the hospitality industry, parts of the retail sector, and other sectors that are most impacted by social distancing measures. These are labour-intensive sectors that typically have relatively low levels of labour productivity. Hence, a perverse effect of closing most of them down has been a substantial positive effect on productivity in 2020 (ONS, 14/4/21).
17. Another factor that has provided ad upside to labour productivity during the pandemic is the ongoing investment in key assets, such as ICT equipment and other machinery & equipment and intellectual property products. This was despite large investment drops in transport equipment and structures. All of the decline in capital formation happened in Q2-20, and by Q4-20 capital formation in ICT equipment and other machinery and equipment was 7% above the Q4-19 average, even though it dropped off again in Q1-21. Capital formation in intellectual property products, which includes software as an important category, did not fall below pre-pandemic level during 2020, but it experienced a relatively large drop of 5.4 percent in Q1-21. This might suggest some levelling off in software purchasing after the surge in 2020 to facilitate the changes in working conditions during the pandemic (ONS, 12/5/21).
18. Capacity utilisation rates have of course fallen rapidly during the pandemic. Multifactor productivity (MFP) growth unadjusted for the decline in capacity utilisation fell by 4.1% for the entire market sector (excluding government services) in 2020, whereas an adjustment for capacity utilisation shows the drop in MFP to be only -0.15%. The latter is well within the range of the average MFP growth performance over the past 15 years which was about 0% (ONS estimates (14/4/21).

Digital transformation during the pandemic

19. One silver lining of the crisis has been the increased adoption of new technologies, especially digital technologies. There is widespread anecdotal evidence of companies stepping up digital spending during 2020. However, a large part of that spend is not measured as capital formation but as current expenses on, for example, data services, infrastructure, tools to support to work from home, etc.. Because of time lags, we do not have a good statistical perspective yet on how much non-capitalised business spending on digital products and services has increased.
20. Despite anecdotal evidence, we cannot automatically posit that increased digital spending and application of digital technologies has raised productivity. However, it is likely that a good deal of the rise in digital spend had positive productivity impacts. For example, online spending helped some companies to ramp up their digital provision of goods and services. Digital technology also helped sustain some non-COVID health services through video consultations (see, for example, Coyle et al, 2021). Companies have also doubled down on digital transformation in an attempt to strengthen supply chain resilience. Most visibly, the rapid shift to "working from home" has boosted the use of communication technologies. More than one third of the UK workforce worked from home from mid-October to mid-November 2020 (ONS, 27/11/20).
21. More detailed analysis of the quarterly productivity data by industry for 2020 provide some further evidence pointing at productivity gains from faster digital transformation during the pandemic. Using an industry taxonomy on digital intensity based on van Ark et al. (2020) we found that output per hour in industries that are using digital technologies most intensively

increased by 1.7% in 2020 whereas the average productivity growth rate of less digital-intensive industries was only 0.3% (van Ark et al, 2021). The retail industry, which is a big digital spender, saw an increase in labour productivity of almost 10% in 2020. But even among the most intensive digital users, there were industries not performing as well. For example, financial services lost almost 6% in output per hour in 2020 and transport equipment lost almost 13%. Taking account of reallocation effects between industries, both the most and the least digital-intensive using sectors contributed negatively to aggregate productivity growth in 2020, but less so in the former than in the latter.

22. Of course, many producers of digital hardware, software and services also performed quite well on productivity. For example, media and broadcasting saw an increase in productivity of 38% in 2020 (ONS, 14/4/21). But other industries in the digital-producing sector like information services saw large productivity declines in 2020. Altogether there is no visible impact from digital production on UK productivity growth.
23. The acceleration in digital transformation has also laid bare some of the societal divisions in terms of access to, and benefits from, the digital economy (van Ark, 2021b). For example, schooling or working from home is hard for households where bandwidth is low or when there are not enough digital devices in the home. Inadequate working spaces or difficulties in providing parents' support for home schooling are often linked to existing social and economic inequalities. Online consumption works for those with credit or debit cards, but not for those who largely live on cash or have no means to safely access and store their information. And while simple digital technologies, such as videoconferencing have been widely adopted by most SMEs, it is harder for them than for large firms to implement online marketing and sales or complex digital strategies.
24. The impact of the digital access and skills divide was already visible before the pandemic, widening the gap between the most and least productive firms, and feeding through into increasing wage inequality. The risk is that as we find our way out of the crisis, the short-term productivity gains from adopting digital technologies will not reverse the pre-crisis trend. Even worse, the recent acceleration in digital transformation may exacerbate the societal divisions in terms of access to, and benefits from, the digital economy.

Short-term priorities for a productivity recovery

25. Estimates of output per hour growth for Q1-21 (to be released on 18/5/21) are likely to show a modestly positive growth rate of labour productivity. Projections by NIESR (2021) suggest that while output per hour during 2021 is likely to hold up slightly above the pre-pandemic level, output per worker may take until early 2022 to recover to the previous peak. This has important implications for wages and incomes and potentially even for the unemployment rate, especially if the business and worker support programmes are ended too abruptly.
26. Productivity typically picks up after a recession, because output tends to recover faster than hours worked. Pent-up demand drives most of the output recovery in the early phase of the recovery.[3] This is likely to happen over the coming quarters, especially as the wealthier consumers have saved considerably during the pandemic. On the other hand, demand for services (which has been especially hurt during the pandemic) does not make up for all the

[3] One negative impact on the productivity recovery is that as lockdown restrictions are phased out and consumer-facing services industries resume their activities, low-productivity industries will increase their share in employment and hours worked and the reallocation effect, which has supported productivity in 2020, will be partially reversed in 2021.

spend lost previously as is common with goods (which haven't been hurt as much during this crisis). Moreover, not all consumers have come unscathed out of the crisis, and inequities in demand recovery may reflect scarring effects from the pandemic on lower-income groups.

27. With respect to inputs, firms typically wait for the recovery to take hold after a recession before hiring and investing. However, the nature of the demand recovery as well as the extensive use of business support and furlough programmes could mean that companies want to rehire faster than after previous recessions. This increased labour demand could run into problems as substantial dislocations of labour supply may have taken place during the pandemic. For example, some early evidence is emerging that many workers in hospitality services have left their jobs during the pandemic. The recovery may also create large geographical disparities, with city centres struggling more to recover than suburban areas. Despite a scarcity of jobs in some industries and areas, the aggregate unemployment rate might still increase (NIESR 2021). Such labour market frictions need to be addressed as part of the recovery program, e.g. by tax credits for workers in particular industries.
28. As the economy recovers the opportunities to raise productivity provided by new technology and innovation are clearly present. For example, with regard to working from home, there is preliminary evidence that it has helped productivity to improve (Taneja et al., 2021). This may therefore create a higher base line for productivity in 2021, although it is still unclear what the long-term productivity gain of working from home will be. It is widely assumed now that hybrid models between working from home and working on location will become the new norm. Government and the business community should work together to understand the implications of a permanent change in working patterns for geographies, real estate, transportation, skill needs, etc.
29. The comparatively reasonable performance of investment in ICT and machinery & equipment and digital property products during 2020 may cause a temporary weakening of investment in those assets in 2021. Companies' investment intentions have recently picked up modestly but remain weak, with plans mostly conditional on demand recovering over the coming months. But productivity (output per hour) growth in 2021, projected at 0.7%, might still benefit from the level change in digital technology in 2020.
30. In particular, small and medium-sized enterprises (SMEs) may be cautious in accelerating investment in new technologies rapidly. However, new research from The Productivity Institute finds widespread positive impacts of the government support schemes on investment planning by SMEs (Halima et al., 2021). For example, relative to firms that received no support, those that received only the Coronavirus Business Interruption Loan Scheme (CBIL) or only Bounce Back Loans (BBL) are 35.5 percentage points more likely to plan investments in capital equipment. This suggests that SMEs may potentially be able to narrow the performance gap in productivity relative to larger companies.
31. A final key factor for the productivity recovery in the short-term relates to business dynamics. ONS estimates (ONS, 4/5/21) show that business closures dropped over the course of 2020, but started to pick up again above previous years' average in Q4-20 and Q1-21. The largest number of business closures occurred in the finance and insurance, real estate, and information and communication industries. Towards the end of 2020 and Q1-21, the number of new businesses created picked up substantially above the average of previous years, especially in retail, wholesale, and transportation and storage.
32. Business dynamics will shape the extent to which resources (labour, capital, land) released from ailing firms will be absorbed by firms that are more productive. According to NIESR (2021) "firm birth has been strong but perhaps not in the sectors that have in the past shown high levels of productivity". These observations underline the need for a careful

consideration of the winding down of business support programmes. In particular, some sectors and firms with growth potential may receive support to fund specific targets, such as vocational training and digital innovation programmes.

Medium- and long-term priorities to strengthen the productivity trend

33. The outlook for productivity growth beyond 2022 is much more uncertain. In terms of GDP (the numerator of the productivity equation) forecast models suggest that the predominant forces that determined the weak growth performance before the pandemic have not significantly altered. For example, according to NIESR (2021) COVID-19 has not materially weakened or strengthened the long-term annual growth potential of the UK at about 1.5%, which aligns with The Conference Board's estimate of 1.4% GDP growth from 2024-2030.
34. On the other hand, lately there has been a good deal of optimism expressed in the media (FT, 22/4/21; WSJ, 4/4/21), and by some policy makers (Haldane, FT, 11/5/21) and consultants (McKinsey Global Institute, 2021) regarding the possibility of a permanent acceleration in productivity growth compared to the past decade. A modest gain in the productivity trend can be supported by long-term forecasts. For example, NIESR (2021) predicts a slightly faster growth in labour productivity (GDP per hour worked) of 0.9% from 2022-2025 compared to 0.4% from 2010-2019. The Conference Board (April 2021) projects labour productivity growth at 1% from 2024-2030, and total factor productivity (TFP) growth at 0.7% (up from -0.1% from 2011-2019). The McKinsey Global Institute (2021) provides no specific forecasts for individual countries but argues that, on average, advanced economies have the potential to score a 1%-point faster productivity growth rate between now and 2024, which seems at the high end of the realm of possibility.
35. The acceleration in digital transformation during the pandemic may have put many companies in a better place than before the pandemic to reap the benefits from new technologies in the future. However, the real impact of those changes will only play out from 2021 onwards, once the pent-up demand effects have dissipated. A long-term commitment is needed. Digital transformation is not a one-off investment in new technology, but requires continuous upgrading of workforce skills and organisational structures. It also requires collaboration beyond the firm in supply chains and across industries as well as in regional and local business ecosystems. Absorptive capacity to innovate is critical for success and campaigns such as Help to Grow, focused on SMEs, can support this provided it is sufficiently funded, implemented and governed at regional and local levels.
36. While much of the hard work to strengthen the productivity trend is on the supply side of the economy to allow companies to innovate and absorb the new technologies, demand factors will play a key role to facilitate the transition in the long-term. For example, the McKinsey Global Institute (2021) argues that the virtuous circle of productivity, employment creation, higher wages and greater consumer demand needs to restored. According to McKinsey, policy makers have a range of tools to support demand and aftertax income, "ranging from fiscal stimulus to wage setting norms and predistribution (that is, preventing inequalities, for instance by providing better access to quality education, health care, and other support that enables higher earnings) and redistribution".

Policy implications for the long-term

37. If policy is short-term focused, results in terms of productivity growth are largely irrelevant. While fiscal spending in the short-term can create temporary pro-cyclical demand effects and help companies to transition out of the pandemic to "normal" business conditions, it mostly doesn't shift the supply-side factors in terms of more human capital creation,

innovation and technological change. In other words, short-term policy targets do not trigger structural changes in the economy that drive productivity growth in the long-term. Three medium- to long-term issues make productivity a key policy for fiscal policy: digital transformation (which has been addressed above), the levelling up agenda and the transition to a net zero economy (which are both addressed below).

38. To **level up the economy** by raising productivity in those regions which have fallen behind the average for the UK, we need to address three key policy areas of chronic underinvestment in the UK: human capital, knowledge capital and infrastructure (van Ark and Venables, 2020). This raises important questions from a fiscal policy perspective. Investment for productivity is not just about the size of the actual spend. It is primarily about the real returns on the investment and about the efficiency by which we put those public resources to use. Returns on public investments are often provided by some type of cost-benefit analysis, which in turn depends on how many parameters one wants and can take into account.
39. There are important questions to be addressed on how much productivity growth a new investment can deliver (van Ark 2021c). For example:
    - How to compute the productivity spillovers from investment, which represent the gains in terms of total factor productivity, arising from technological change and innovation, which are highly uncertain and very difficult to forecast.
    - How can we capture the complementarities between different types of investment - skills, infrastructure and technology? How do they impact on each other and create externalities - positive or negative?
    - When should we treat something as a public spend and when as an investment? How do we think, for example, about spending on education and other intangibles? And what are the implications of that for borrowing instruments?
36. The regional element of levelling up does not allow for a one-size fits all approach. Investments need to be understood in the light of the regional context. A nation-wide Research and Development (R&D) target of 2.4% is not helpful in the light of different needs across regions. The Productivity Institute has therefore launched eight Regional Productivity Forums to identify the largest gaps in investment and the biggest needs in terms of policy measures.
37. The third big policy challenge of the coming decades is to achieve **net zero carbon emission targets** as laid out in various government plans with increased levels of ambition (Geels et al. 2021). The investments needed to reach net-zero carbon emissions include large goals for renewable electricity generation, hydrogen heating, decarbonisation on industrial production and construction, green transportation, net zero emission vehicles, and green financing.
38. The productivity effects of the massive investments in net zero growth are highly uncertain. For example:
    - The transition of energy supply from fossil to non-fossil is unlikely to create productivity gains very quickly.
    - Green and sustainable industrial production raises questions about whether such processes will on balance become more labour intensive (which is not good for productivity), capital intensive (which is good for labour productivity, but not necessarily for spillovers and total factor productivity in the long term) or innovation driven (which is good for productivity, but what will it do to wages and living standards?)

- Shifts in consumer behaviour and ensuing demand effects are also difficult to predict. How quickly will consumers want to go green, and how many are willing to pay for it? How do consumers at different income levels respond?

39. It is essential that the productivity gains in the coming decade become more inclusive. An **inclusive productivity agenda** should aim to create broad-based outcomes in economic development and sustained increases in living standards through an efficient and balanced use of finite resources (labour, capital and natural resources) coupled with innovation as the only infinite source of growth. The resources should be accessed more broadly and should benefit larger group groups of the UK population.
40. Three key policy elements can contribute to a more inclusive productivity agenda:
    - **Broader access to the sources of productivity growth**. Better access to broadband and digital devices provide the technical means for productivity to advance. But to make technologies people need to able to improve their digital skills, inside and outside the workplace. Inside the firm, better management competencies and innovation practices can leverage the skills of employees. An emphasis on diversity and inclusion to drive innovation will also empower individuals in the organisation to make full use of digital capabilities. Collaboration between businesses, government, schools and FE colleges at local and regional level will help further create a high-trust and dynamic environment, and spread the benefits from adopting and using digital technology to other firms and the community as a whole.
    - **New measures of inclusive productivity**. We need to consider the impact of digital technology on GDP, productivity and wellbeing, rethinking current measures of output and inputs. More informative measures of output should capture quality improvements in digital products and services, including better functionality, improved access, and the benefits of free content. Inclusive input measures will not only count how many hours people work, but also how better skills contribute, and what people provide in terms of personal data in exchange for free content.
    - **Coordinated and evidence-based policies**. For productivity to drive inclusive growth we need an integrated set of institutions and policies across many players. Co-ordination is needed across policy domains, including education, digital, fiscal, innovation, housing, infrastructure and structural policy areas as well as between national, regional and local entities. Inclusive productivity requires a long-term focus and should not be hindered by a lot of policy-churn. Policies therefore need to be properly monitored, evaluated and compared on their effects. The Productivity Institute is setting up a Productivity Commission, as an independent academic forum to provide evidence on policies related to productivity and act as a focal point for Whitehall initiatives and those of devolved nations in the area of productivity.
41. It is critical for the government to recognise the complexity of the policy framework to raise productivity growth in the UK in an inclusive manner and with a focus on short-, medium- and long-term effects. Such complexities include the need to coordinate a wide range of productivity-related policy domains (horizontal coordination) and allocate the governance of policies at the right level of (devolved) national, regional or local government.
42. Also, as any productivity agenda will require a long-term focus, the policy framework needs to provide safeguards to withstand the pressures of daily economic and political issues, and manage the tension between economic and political cycles. The productivity agenda requires guidance on how those risks will be managed, built-in flexibility, frequent resets of emerging evidence, updates of forecasts and the development of policy scenarios.

References

Coyle, D., K. Dreesbeimdieck, A. Manley (2021), Productivity in UK healthcare during and after the Covid-19 pandemic. The Productivity Institute working paper No.002.

Geels, F.G., G.I. Pereira, and J. Pinkse (2021), Public investments in COVID-19 green recovery packages: A comparative analysis of scale, scope, and implementation in France, Germany, and the United Kingdom. The Productivity Institute, forthcoming.

McKinsey Global Institute (2021), Will productivity and growth return after the COVID-19 crisis?, March 31st.

National Institute of Economic and Social Research (2021), UK Economic Outlook Spring 2021: Brisk but not Better Growth, by H. Kucuk, C. Lenoel, and R. Macqueen, National Institute Economic Review, May.

Halima, J., S. Roper and M. Hart (2021), An early econometric assessment of the likely productivity effects of UK COVID-19 support measures for SMEs, The Productivity Institute and Enterprise Research Centre, Warwick and Aston Business Schools, PPT (publication) forthcoming.

Taneja, S, P. Mizen, and N. Bloom (2021), Working from home is revolutionising the UK labour market, VOX EU/CEPR, March.

van Ark, B. (2021a), Productivity: the key to recovery, Financial World, The London Institute of Banking and Finance, February.

van Ark, B. (2021b), The digital economy could be more productive – but will it be more inclusive?, On Digital Inequalities, Policy@Manchester, University of Manchester.

van Ark, B. (2021c), Productivity and a New Fiscal Framework for the UK, National Institute of Economic and Social Research, London.

van Ark, B. and A. J. Venables (2020), A Concerted Effort at Tackling the UK Productivity Puzzle, International Productivity Monitor, 39, pp. 3-15.

van Ark, B., K. de Vries and A.A. Erumban (2020), How to not miss a productivity revival once again?, NIESR Discussion Paper, No. 518.

van Ark, B., K. de Vries and A.A. Erumban (2021), The impact of the COVID-19 pandemic on productivity dynamics by industry, The Productivity Institute, forthcoming

May 2021