Productivity Challenges in Europe During the COVID-19 Pandemic

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Abstract

Productivity determines the competitiveness of an economy. High productivity implies low inputs for producing a given amount of output. This allows firms to offer their products and services at lower prices than firms in other regions and countries. In contrast, low productivity implies wasteful usage of labor, capital or other inputs to produce a certain output and leads to higher production costs and, ultimately, higher prices. Many European countries are exhibiting a prolonged slowdown in productivity growth. When it comes to labor productivity, a key indicator, countries like France, Germany or Italy had annual growth rates between 3 and 9 percent until the mid-1970s. Since then, growth rates have declined substantially and are well below 2 percent since the year 2000. Explanations for this phenomenon range from a slowdown of technological progress and diffusion to a structural shift of economies towards lower productive services, restrained investment activity since the financial crisis and mere measurement difficulties. Some believe that the big productivity boost from digitization is yet to come. The COVID-19 pandemic has brought unprecedented challenges to productivity across Europe. The pandemic has disrupted businesses, supply chains, and the labor market, resulting in reduced economic activity and an increase in unemployment. Some of the productivity challenges faced by Europe during the pandemic include remote work, supply chain disruptions, reduced consumer demand, increased sick leaves and many other problems that directly influence productivity during the COVID-19 pandemic. COVID-19 pandemic has presented significant challenges to productivity across Europe. Businesses and governments must work together to find innovative solutions to overcome these challenges and help the European economy recover from the pandemic. The purpose of the study is to evaluate the productivity issues in European countries during the COVID-19 pandemic.

TASKS OF THE RESEARCH:

1 Analyze literature about the main productivity determining factors;

2 Determine main reasons for the productivity slowdown in the European countries during the pandemic and impact on the long-term productivity and competitiveness.

RESEARCH METHODS: Literature analysis, data analysis.

KEYWORDS: Productivity, competitiveness, labor, growth, COVID-19.

Productivity concept and types

Productivity is not just about doing things more efficiently by "doing things right", it is also about achieving maximum effectiveness by "doing the right things". Thus, higher productivity can be achieved through efficient and effective use of resources such as labour, capital, and materials in the production of various goods and services. Productivity can be measured across various levels (e.g. national, industry, organization and operational) and different sectors (e.g. manufacturing and services). On the national economy level, productivity can be estimated and expressed in GDP per person employed, which shows how much of the total income in a specified period is generated from one worker (see Fig. 1). Industry level productivity is measured as a value added per employee (by dividing the industry added value with the number of people employed), while the level of individual companies often uses a variety of physical parameters, such as the number of parts produced per 1 employee.

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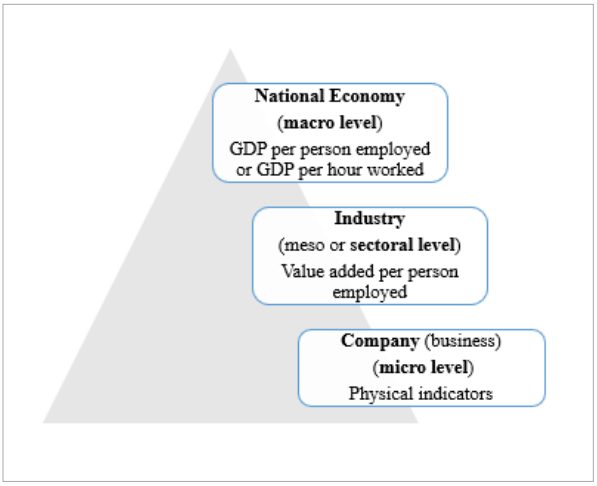
Figure 1
Different levels of productivity (Freimane et al., 2019)

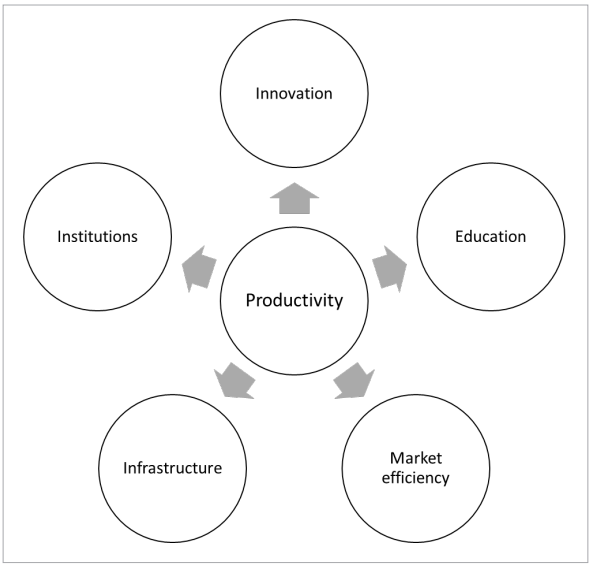


In general, for small and open economies productivity on macro level is determined by average value added of exports per one worker. Exports determine countries competitiveness – either it is based on high technologies or low cost competitiveness (Priede & Pereira, 2015). Export competitiveness in different industries is affected by different factors but main challenge of higher added value remains (Priede, 2011, 2013; Priede & Skapars, 2012). Export promotion is important topic for smaller economies in European Union since competitiveness cannot be ensured with internal demand and consumption. In the early 2000 until the financial crisis of 2008 many EU countries experienced inflow of money without according actions to strengthen production and export promotion to repay the external funding. Until 2007 many governments did not act to reduce macroeconomic imbalances, even though the unbalanced economic development and overheating was actively discussed by the society and economic experts (Jekabsone & Skribane, 2018, 2019).

Factors influencing productivity

Literature review shows that productivity is linked to many influencing factors, starting with R&D spending and innovations (Lopez-Rodriguez & Martinez-Lopez, 2017; Minniti & Venturini, 2017), structural changes in the economy (Duguleana & Duguleana, 2016; Harada, 2015; Hartwig, 2015; Maudos et al., 2008; Padilla-Pérez & Villarreal, 2017), ecological perspective (Mahlberg et al., 2011; Yörük & Zaim, 2005), industry productivity (Ivanova et al., 2017) and even quality management systems (Albulescu et al., 2016). Factors that influence productivity are related to technologies, knowledge, exclusive resources (specific natural resources), prices of the resources (labour, electricity etc.), management, brand name and many other. Classic literature determines four main factors that influence productivity: natural resources, physical capital, human capital and technological knowledge. With advancement in the research we can see more developed and detailed models explaining productivity. For example, World Bank research explains factors influencing productivity in more detail (see Fig. 2).

Figure 2
Productivity influencing factors (Kim & Loayza, 2019)



The five categories of TFP (total factor productivity) determinants presented a comprehensive array of factors driving productivity. They are also the channels through which other poten-

tial variables affect TFP. Some of them are time-invariant, such as historical origins and geographic conditions. Other potential variables account for slow-moving processes, such as social mobility and income inequality. Their effect on TFP growth, however, can be explained by education, market efficiency, and governance.

Scientific research suggests that income inequality has an impact on the economic growth. Income inequality has a negative impact on economic growth by impeding skill development among individuals with poorer parental education background (Cingano, 2014). Other research suggests that low-income households and small firms face difficulties in accessing financial services, which decreases economic growth (Dabla-Norris et al., 2015). Another research argues that the lack of policies that provide more inclusive access to education, financial services, and labor markets leads to income inequality, and eventually lower economic growth (Hoeller et al., 2014).

The increase in productivity is determined by several factors, such as:

- Structures that are related to scientific and technical progress in the role of intensification of production;
- Socio-economic, which is mainly related to investment in human capital (education of human capital, training, knowledge, motivating people to be productive);
- Organizational, which are related to the production process organization and management, production specialization and concentration of production territorially, as well as horizontal and vertical cross-link establishments (Jekabsone & Skribane, 2018).

The main problem of all these above-mentioned activities is how to allocate investments to increase productivity between employers, workers, and the state. Technology development key contributions, of course, are done by operators. State aid is related to the promotion and scientific research base. However, it was the state that had a key role to play in development, but it also increases the individual contribution. Less developed is the collaboration between business and vocational education and lifelong learning programs and has its own reasons. Return from investment in business education is not clear and has a higher risk (the workers can change jobs, employee qualifications obtained by visiting these or other training programs may not meet a host of needs, it requires time). Organizational factors are mostly corporate responsibility.

In a well-functioning economy productivity growth drives:

1. Global frontier firms innovate and these technologies diffuse to other firms, raising *within-firm* productivity;
2. Efficient reallocation underpins the growth of productive firms, also via new entry and the downsizing and exit of less productive firms;
3. As the most productive firms gain market shares aggregate productivity grows.

But the process of reallocating resources does not always happen automatically.

Innovations is to be considered as one of the most important factors that determine the ability to increase productivity. This can be seen in the basic model for the "Global competitiveness report" (World Economic Forum, 2019), where Innovations are drivers of developed economies, and we can see a lot of research done to examine the link between innovations and productivity. For example, impact of different types of innovation on firm's productivity has been examined on the case of companies in Italy, revealing that both process and product innovation have positive effects on firm's economic productivity (Aldieri et al., 2021). Another research results reveal that Bangladeshi firms' process innovation is an important factor for their labor productivity, whereas the significant effect of product innovation is not clearly established (Waheed, 2017). Research done with the evidence from companies in China shows that R&D and ICT investments positively

affect product innovation and process innovation (Zhu et al., 2021) and other research was examining service sector in Estonia, Germany, Ireland and the United Kingdom that concludes that innovation is associated with increased productivity (Masso & Vahter, 2012; Peters et al., 2018).

The contribution of research and innovation to productivity is discussed in a wide range of scientific literature emphasizing the direct link between spending on research and development, innovation capabilities and thus productivity (Capello & Lenzi, 2015; Elnasri & Fox, 2017; Kijek & Kijek, 2019).

Productivity development risks during the COVID-19 pandemic

The COVID-19 pandemic time was a great shock to the economies around the globe. According to a report by World Economic Forum, a boost to productivity growth is a commonly cited macroeconomic silver lining of the COVID-19 crisis. After lockdowns and social distancing forced consumers and firms to adapt to digital channels, even for services, a credible narrative of a productivity tailwind has emerged (World Economic Forum, 2021) at the same time the pandemic has changed the world economy in many ways. The IMF (International Monetary Fund) estimates that the global economy shrunk by 4.4% in 2020. The organization described the decline as the worst since the Great Depression of the 1930s.

Pandemic time came with a huge challenge and many risks that countries faced to their long-run growth potential. According to Thieß Petersen, several developments could mean the corona-induced economic crisis can increase overall economic productivity in developed economies, but it comes with risks (Petersen, 2020).

A crisis can speed up the structural change of an economy. If companies that are not competitive go bankrupt during a recession, production factors tied up there are released and can instead be put to use in more productive, sustainable sectors. This "creative destruction" for failed companies and displaced workers is a disaster and requires socio-political support. But for the economy as a whole, this process leads to long-term strengthening of international competitiveness. Other potential benefits can be seen in the Figure 3.

On the other hand, pandemic came with challenges that not all countries managed to overcome. Biggest obstacle to productivity can be seen in the Figure 4.

Figure 3

Potential positive impact on the productivity during the COVID-19 pandemic (Petersen, 2020)

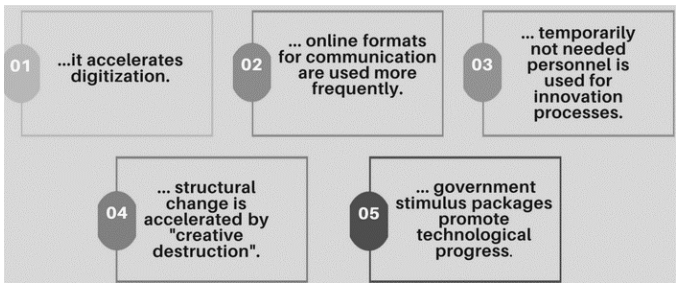


Figure 4

Potential negative impact on the productivity during the COVID-19 pandemic (Petersen, 2020)

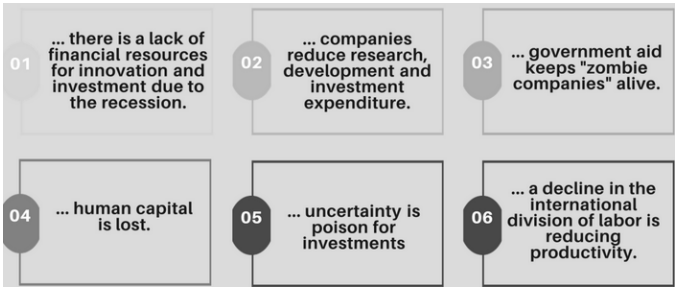


Figure 4 clearly shows the main challenges that economies and companies faced during the pandemic and after the pandemic we can evaluate at least some of the elements. One of the most sensitive elements regarding the productivity and long-term competitiveness is spending on research and development and thus directly influence the level of innovations. The potential negative effect on the innovation level in the economies can be seen in the Innovation scoreboard reports (see Figure 5).

In Figure 5 we can observe four groups of countries (emerging innovators, moderate innovators, strong innovators and innovation leaders) over the span of 2019, 2021 and 2022 that can be attributed to the years of the pandemic COVID-19. There are not many changes in the leadership over these years and top 3 innovation leaders in the European Union remains Sweden, Finland and Denmark. At the same time this is an effect of consequently being among the leaders in the

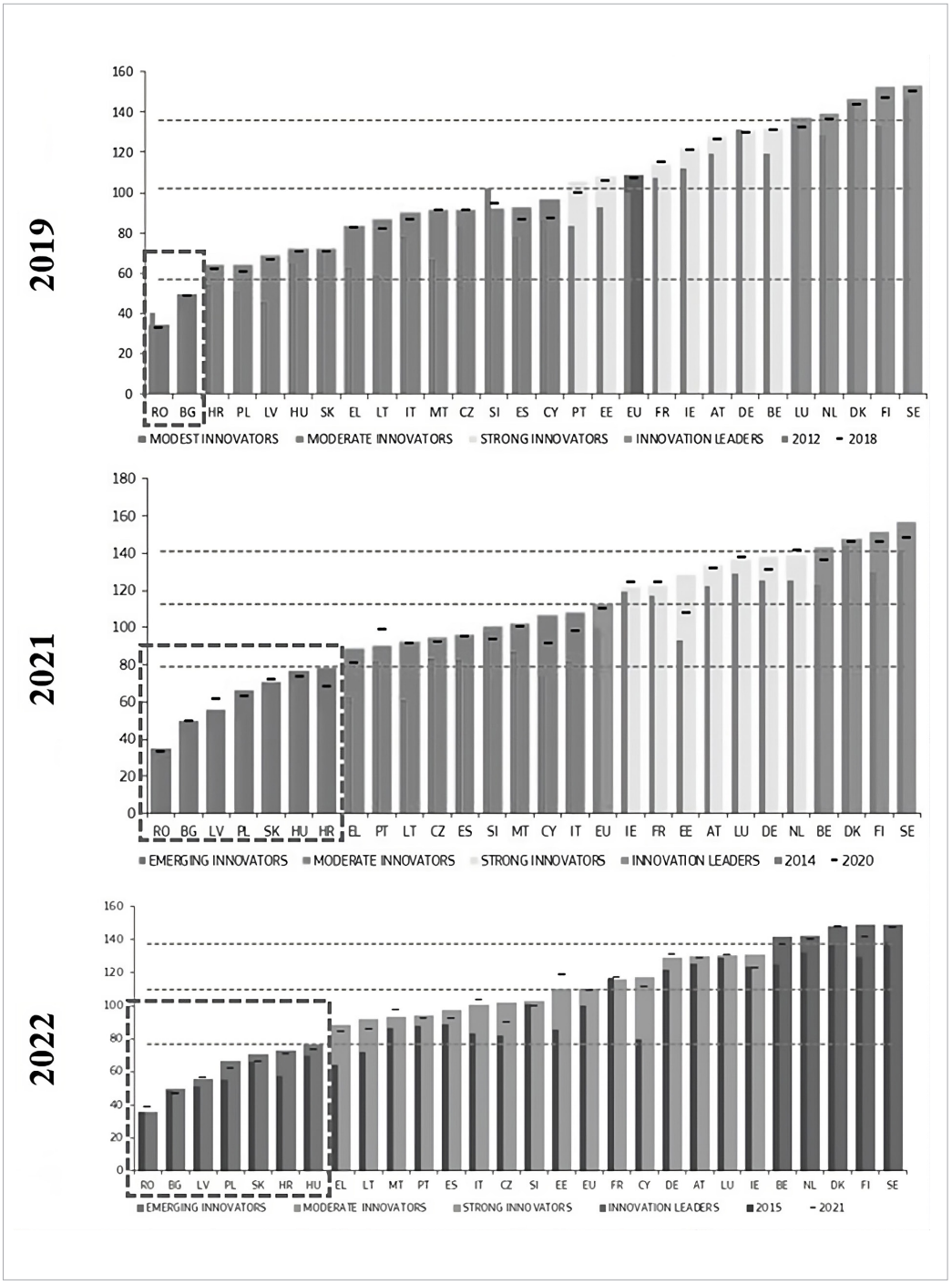
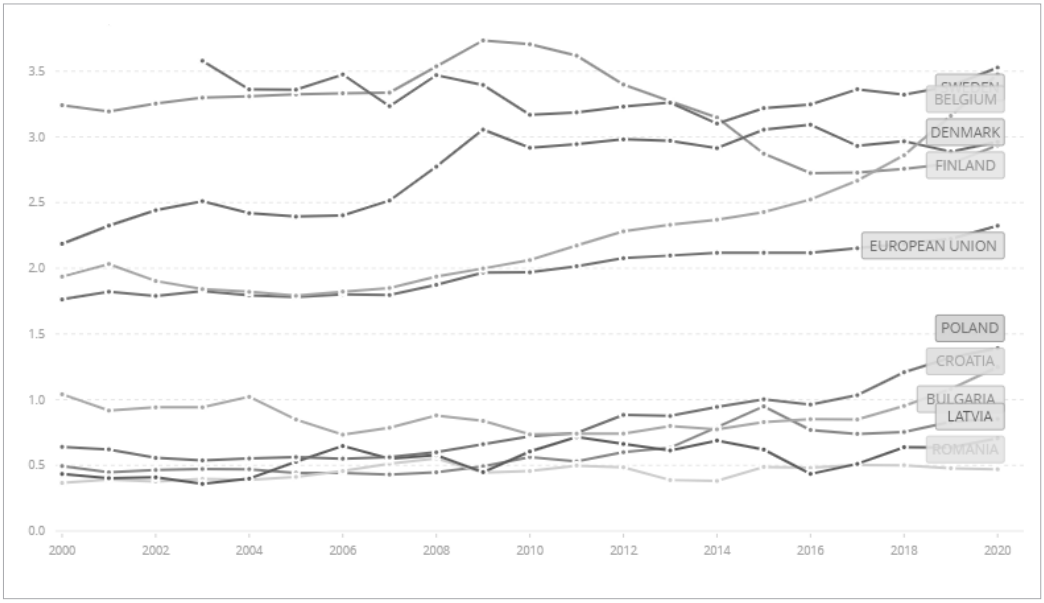


Figure 5
Innovation scoreboard and performance of countries in years 2019, 2021 and 2022 (European Commission, 2019, 2021, 2022)

EU in terms of the spending on the research and development (see Figure 6). The same Figure 5 shows a worrying sight that during the pandemic the number of countries that has fallen to the lowest scoring countries (emerging innovators) has increased. If in 2019 there were just 2 countries in this category – Romania and Bulgaria, then in 2021 these countries are joined by Latvia, Poland, Slovakia, Hungary, and Croatia. The same countries remain in the emerging innovators group in the year 2022 as well. This means that pandemic had an immediate impact on the countries that has been allocating lowest funding for research and development and this negative effect has remained for now. Further monitoring of the innovation performance must be implemented.

Figure 6

Research and development expenditure in some European Union countries, % of GDP (World Bank)

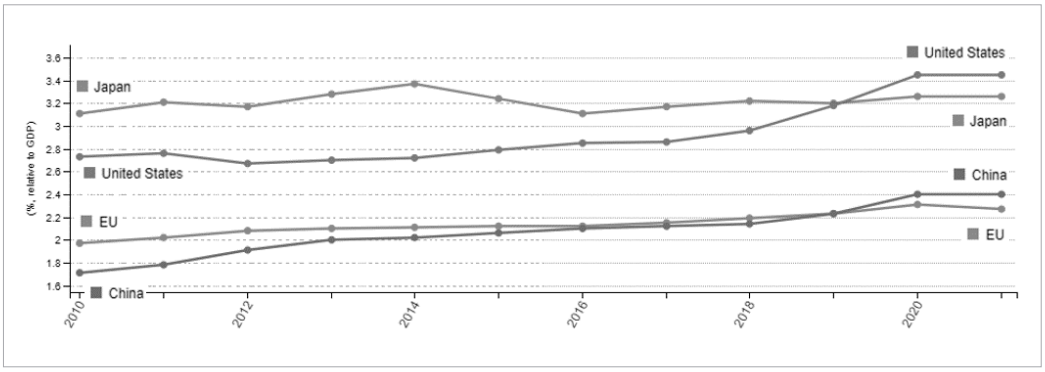


Countries across the European Union have allocated different fundings to the research and development, and we have to keep in mind that the structure of funding is very different as well – coming from government sector or private sector. Besides internal competition and performance of innovations, there is a worrying trend on the global competitiveness stage for Europe. If we compare spending on the research and development as a percent from the GDP, we can see that Europe is falling behind the main competition from USA, Japan and China (see Figure 7).

R&D is central to many European and country-level policies designed to boost the "competitiveness of EU economies and the welfare of its citizens", so it is important to use recovery fundings not only for short-term needs but also to keep in mind a long-term competitiveness goals.

Figure 7

Gross domestic expenditure on the research and development (Eurostat)



Conclusions

Productivity is one of the central concerns for the developed economies since the growth rate is slowing down in the last decades. Productivity influencing factors are discussed from different scholars, but one of the main factor groups are: institutions, infrastructure, education, market efficiency and innovations. Most competitive economies are innovation-driven and thus should be considered as one of the main areas for the contribution to the overall productivity. It is well observed that spending on the research and development has a positive impact on the product and process innovation that in returns has a necessary improvement of the productivity.

Pandemic has given not only an opportunity to accelerate digitalization, e-commerce, promote structural changes and technological progress, it has challenged government and firms' long-term commitment to investment into research and development and innovations. The short-term effects show that less funded countries experiences a downgrade in the innovations during the pandemic with negative short-term effect. Long-term effects must be observed in coming years, since currently EU countries are allocating funds (also Recovery and Resilience Facility) that could give necessary comeback on the European innovation scene. Further research will have a follow-up on the topic of the investment in research and development, the changes in the structure on the funding and changes in the uncertainty linked to the macroeconomic situation. Further research will highlight government funding strategies during the pandemic and its impact on the competitiveness in the EU countries.

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Fields of interests
Markets, industries, competition, competitiveness, innovation, economic growth

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