

LATVIA'S 2020 PRODUCTIVITY REPORT

(Executive summary)

Latvia's National Productivity Board ('the Board') and the 'LV PEAK think tank' at the Scientific Institute for Productivity at the University of Latvia, which in accordance with Cabinet Decision of 29 October 2019 represent the Republic of Latvia in the Network of Productivity Boards of the EU Member States, has prepared the first productivity report in Latvian history. The report was drawn up in accordance with the Board's main mission, which is to produce an independent, objective and scientifically based analysis of competitiveness and productivity and draw up policy proposals for the Latvian government.

Latvia's 2020 Productivity Report (hereinafter 'the 2020 report') came about against the backdrop of the spread of COVID-19, where immediate, forward-looking action is needed to mitigate the devastating economic and social impact of the crisis and to promote sustainable growth. In a global political landscape of protectionism and global supply chains being negatively impacted by COVID-19, Latvia's small but open economy has limited room for manoeuvre.

Sustainable approaches are linked to the promotion of economic growth and international competitiveness, which in turn is not possible without the participation of Latvian companies in global supply chains, given that the greatest security is ensured by regional supply chains (EU, Nordic countries, etc.).

Before the 2020 report was submitted to the government and the European Commission on 25 November 2020, it was presented to a broad range of partners at a conference entitled 'Productivity Dialogue'.

The presentation on the rationale behind the business support criteria met with keen interest and sparked a lively exchange of opinions. The plan is to continue drawing up criteria, linking in companies' productivity with export capacity and innovation. With the work carried out on the provision of State aid to Latvian enterprises, the Board demonstrates its readiness, in accordance with the recommendations of the European Commission, to engage in the assessment of strategies for the optimal use of the funds allocated to Latvia under the EU Restoration and Resilience Fund, with the aim of improving the productivity and competitiveness capacity of business and the likelihood of economic success in the near future.

The making of the 2020 report was financed from the State research programme 'Economic, political and legal framework for preserving the potential of the Latvian national economy and promoting the growth of competitiveness in the wake of the crisis caused by the pandemic (reCOVvery-LV)'.

Full text of Latvia's Productivity Report 2020, 97 pages in four chapters. Chapter 1 analyses Latvia's productivity studies, productivity factors and trends. Chapter 2 looks at policy to enhance productivity and development scenarios. Chapter 3 develops productivity-enhancing support criteria. Chapter 4 analyses the country's fiscal sustainability. At the end of the report there are conclusions and recommendations to improve policy. Latvia's 2020 productivity report, 30 pages, with attachment containing in-depth study on the facilitation of infrastructure development and efficiency under crisis conditions.

The full version of the report (in Latvian) is available on the internet at: <https://www.bvef.lu.lv/petnieciba/petnieciba/zinatniskie-instituti/lu-domnica-lv-peak/>

The text below is a short contents-based summary of the 2020 report.

1. FACTORS AND DYNAMICS OF PRODUCTIVITY IN LATVIA

The first part of the 2020 report looks at studies of productivity in Latvia, productivity trends and structural changes to technology intensity, compares productivity indicators with other EU Member States and the Baltic States, and assesses the impact of the COVID-19 pandemic on productivity. This chapter also describes the key determinants of productivity: the ability to integrate into global value chains and the increase in export potential, innovation and investment in R&D, the development of new products, services and methods, the opportunities brought about by new technologies and the role of scientific and technical progress in the intensification of production, particularly in the field of digitisation, as well as investment in human capital.

An analysis of research by international organisations such as the OECD, IMF, the EC, etc., and research by Latvian scientists and researchers and public institutions, shows that research on productivity-related aspects in Latvia is piecemeal and lacks a systemic approach.

Most research was done at macro-level, so there is very little research based on company-level data, and cross-sectoral aspects (meso-level) have practically escaped analysis, largely as a result of data availability. This limits the scope for drawing up research-based scientific recommendations for the purposes of framing structural policy¹. There has been no research at all on the impact of the COVID-19 pandemic on productivity in Latvia, and the 2020 report is the first that assesses the impact of the pandemic. It is true that too little time has elapsed to draw far-reaching conclusions about the impact of this pandemic on productivity.

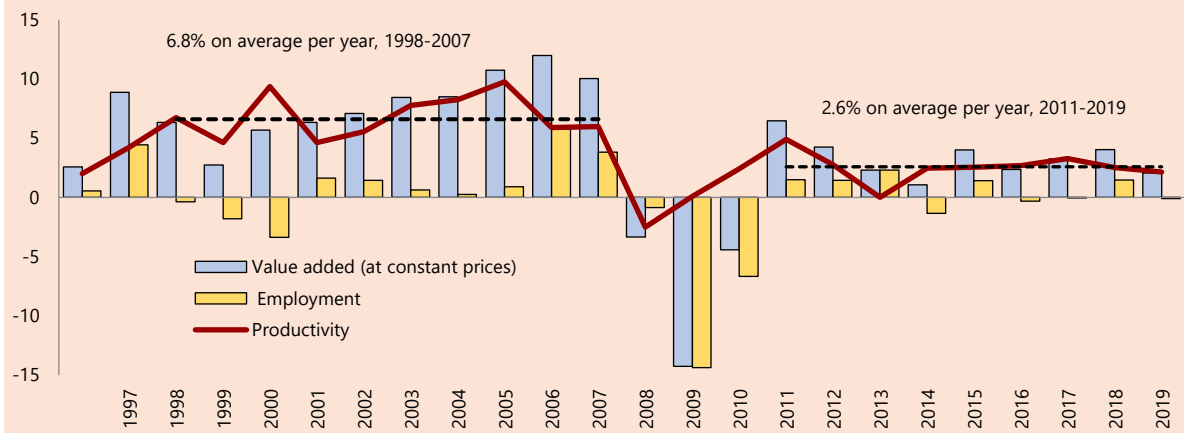
An analysis of statistical data shows that productivity dynamics in Latvia have been fairly rapid over the past few decades, outstripping average growth rates for the EU as a whole. However, compared to the highly developed countries of the EU, Latvia's productivity level still shows a significant lag, which is basically the result of low total factor productivity and significant differences in the quality of production resources (human and capital). In 2019, the productivity level in Latvia was just 49.8% (or 68.8% measured in PPS) of the EU average, which is one of the lowest figures in the EU². Productivity growth rates after the global financial crisis have shown a downward trend (cf. Figure 1). The financial crisis made access to credit harder, hampering capital development and modernisation and investment in modernisation.

¹ I. Šteinbuka (science editor) Raising productivity: Trends and future challenges. Riga: University of Latvia Press, 2019, p. 146.

https://www.apgads.lu.lv/fileadmin/user_upload/lu_portal/apgads/PDF/Monografijas/Produktivitates_celsana/Produktivitate.pdf

² Several studies use the indicator GDP in PPS per employee to compare productivity level between countries. The authors point out that in the real economy, companies on the international market compete with their goods and services at current prices, which are not adjusted for differences in cost levels between countries (PPS). For example, companies purchase raw materials at global prices. The competitiveness of Latvian enterprises is thus more correctly shown by productivity calculated as GDP at current prices per worker. Also, when calculating a unit of output's nominal labour costs (nominal and real ULC), which is one of the indicators of competitiveness, productivity is not recalculated on the basis of PPS. Thus, when analysing the process of productivity convergence, the authors use the indicator GDP at current prices per worker rather than GDP by PPS per worker.

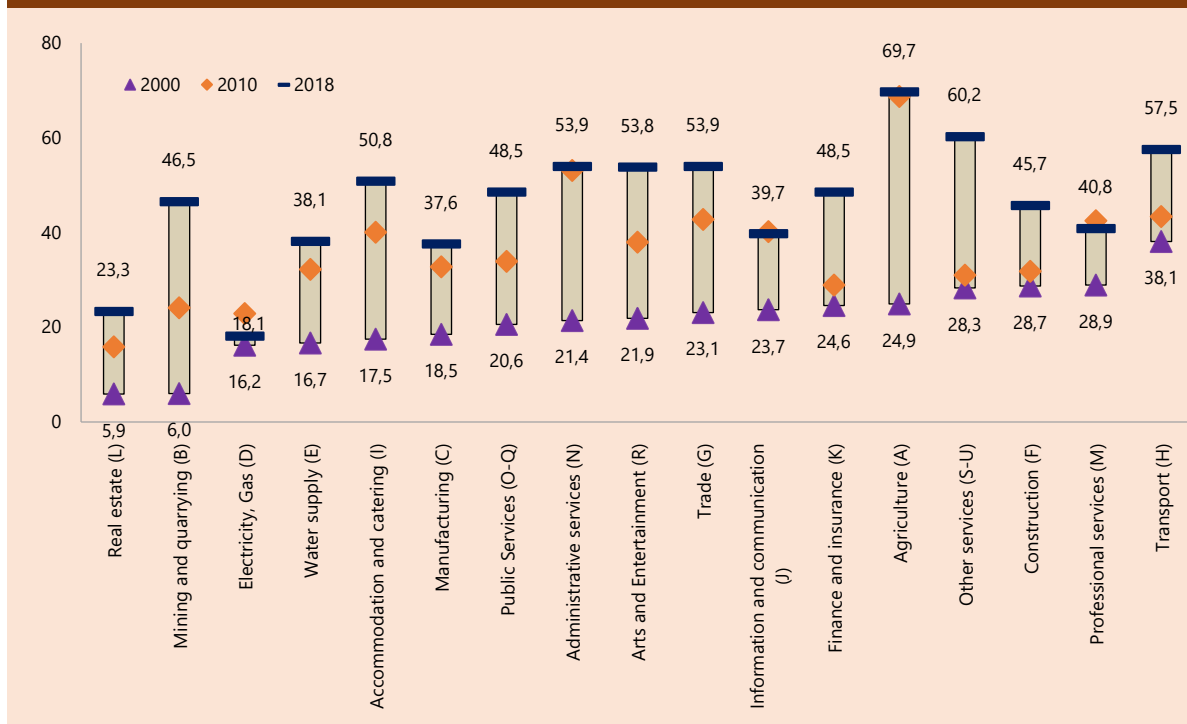
Fig. 1 Growth rates for Latvian added value, employment and productivity
Year-on-year, percent



Source: Eurostat, calculation by authors

In 2020, the COVID-19 pandemic had a powerful and lasting impact on the socio-economic situation. Thus, as in almost all countries around the world, the COVID-19 pandemic of 2020 triggered an economic crisis and recession, and significantly impacted the labour market. However, its impact on productivity is unclear. When calculated by the number of hours worked, the second quarter of 2020, which has been the quarter most severely affected by the Covid-19 crisis to date, showed that productivity in Latvia rose. On the other hand, it decreased in terms of the number of persons employed. An analysis shows that market sectors with a relatively high level of productivity are not appreciably more resilient to the Covid-19 shock than other sectors.

Fig. 2 Changes in Latvia's productivity gap vis-a-vis the EU, 2000 to 2019
EU-28 = 100



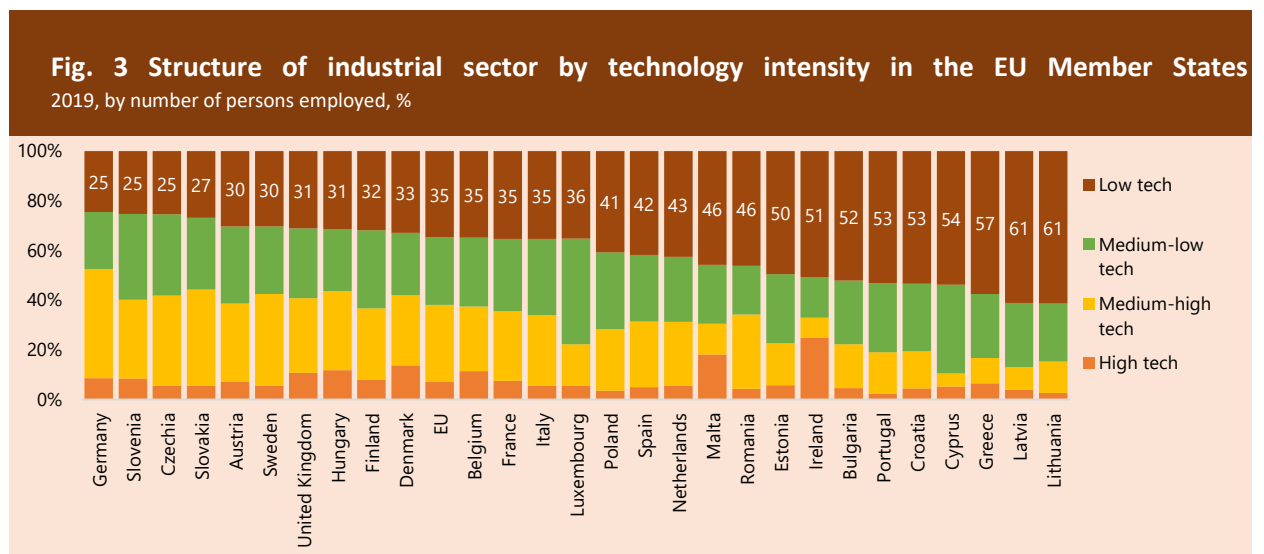
Source: Eurostat, calculation by authors

An analysis of data shows that since 2011 the convergence rates in a number of sectors have slowed (cf. fig 2). In sectors such as agriculture, administrative services, information and communication services, professional and scientific services, productivity convergence towards the EU average was faster up until 2010, tailing off notably thereafter. The slowing dynamic of convergence might point to a ‘*productivity trap*’, which will require the acceleration of structural reforms and fundamental improvements to innovation to get out of.

The low level of productivity in Latvia’s economy is largely determined by the markedly low productivity in manufacturing, itself the result of a number of structural factors.

In 2019 this was just 38% (or 52% measured in PPS) the EU average. As the experience of developed countries shows, it is manufacturing that has a potentially greater innovation capacity.

The Latvian manufacturing industry is clearly dominated in structural terms by low-tech sectors, which in recent years have generated over half the total value added of manufacturing, which is almost one-and-a-half times higher than the EU average. This is explained by the important share of traditional industries (food industry and timber processing), which together account for almost half of the total value added of manufacturing, which is almost one-and-a-half times the EU average. In 2019, high-tech sectors employed just 4% of the total labour force in manufacturing, which is almost twice as low as the EU average. By contrast, the low and medium-low technology intensity sectors accounted for almost 87%, i.e. one-and-a-half times the EU average (see Figure 3).



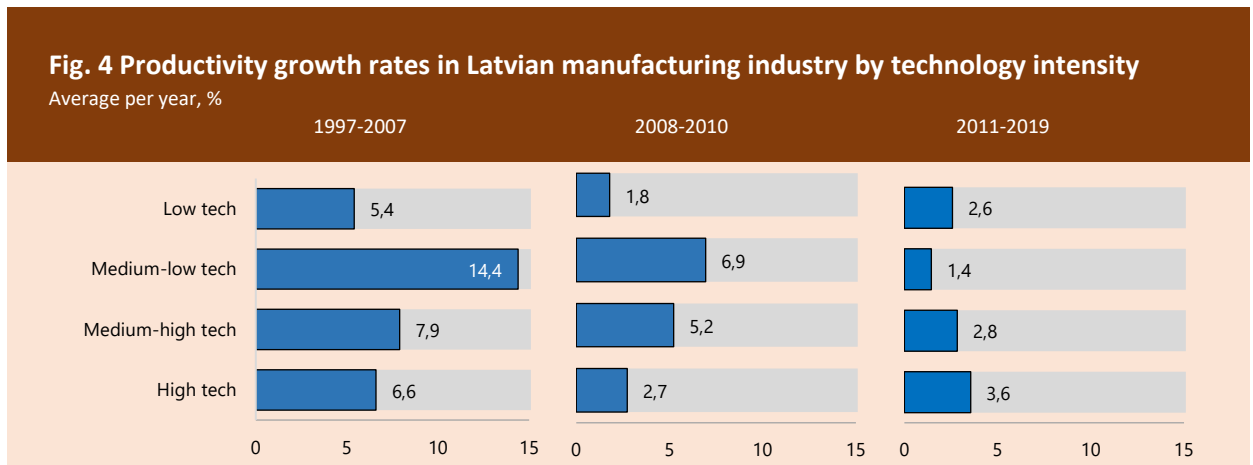
Source: Eurostat, calculation by authors

In recent years, productivity in high and medium-high technology sectors has been growing faster than in lower technological intensity sectors (cf. Fig.4).

However, their contribution to total productivity growth remains low, mainly because of their low share of the total value added of manufacturing.

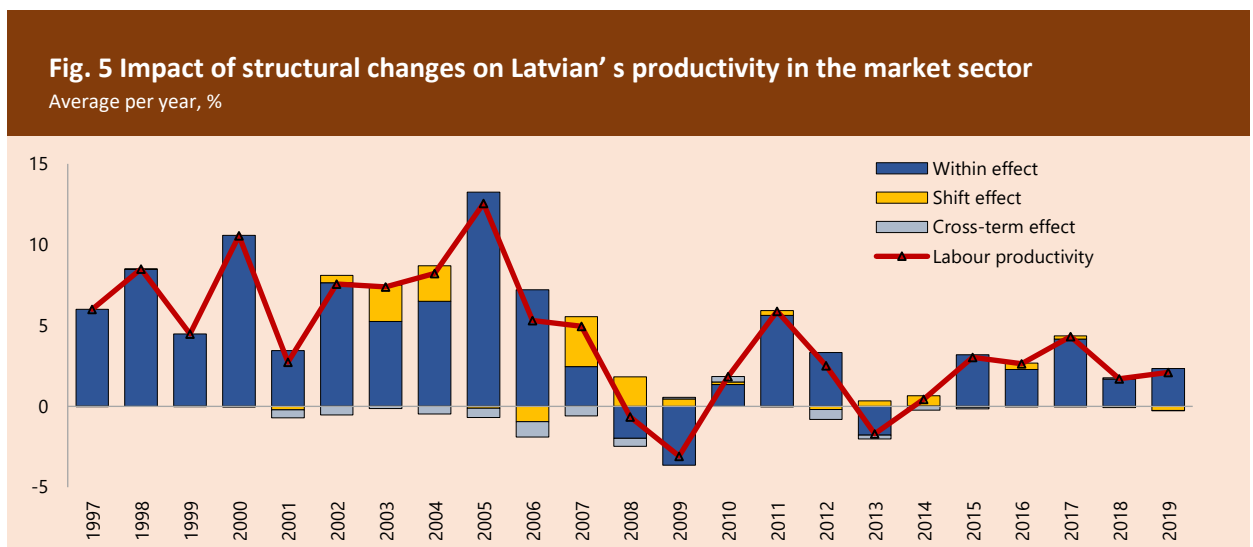
The main significance of the increase in the level of productivity is for technological factors, e.g. modernisation of production, the improvement of existing technologies and the introduction of new technologies. Transitioning from old to more innovative technologies stimulates the growth of

productivity at business and sectoral level. Similarly, effecting such changes - in terms of raising the overall level of productivity - depends largely on reallocating resources from lower to higher productivity sectors, and to sectors with a more rapid productivity dynamic.



Source: EUROSTAT, calculation by authors, 2019 study

The method used in the attached *shift share analysis* shows that between 1997 and 2019 the productivity dynamic within Latvia was influenced mainly by the *within-sector effect*, which shows that most improvements in productivity come from within each sector and are the result of factors such as better management, improvements in technology, innovations, employee upskilling, favourable market conditions and other sector-specific factors (cf. Fig. 5).

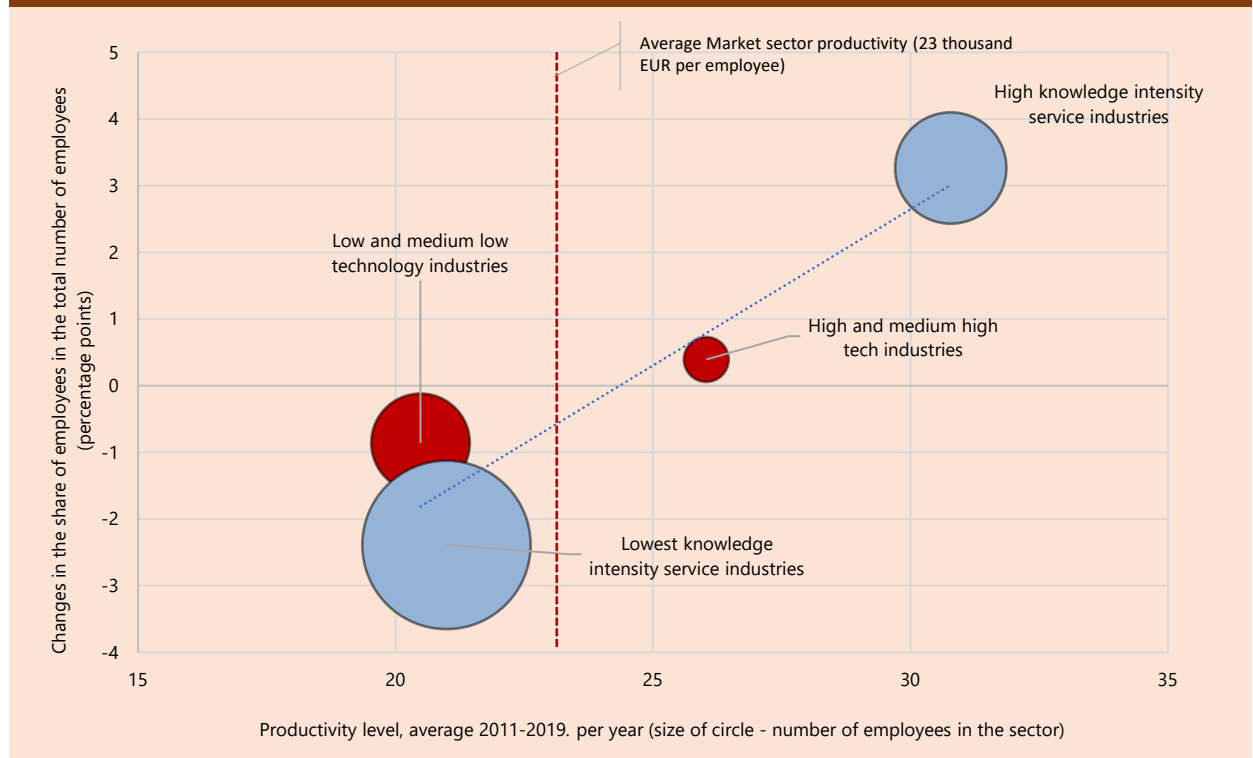


Source: Eurostat, calculation by authors

Employment is growing in sectors with productivity above the national average, such as the manufacture of computers and electronic equipment, whilst employment is falling in some low-productivity sectors such as light industry.

However, a large number of jobs are still being created in sectors with relatively lower productivity levels, such as the accommodation and food services sector (cf. Fig. 6).

Fig. 6 2011-2019 changes in the structure of employment in sector aggregated by technology levels with differing productivity levels



Source: Eurostat, calculation by authors

In general, the redistribution of labour resources in Latvia to the benefit of productive sectors is not sufficient to have a significant impact on the faster increase in the overall productivity level within the national economy. As Simon Kuznets concludes, 'it is not possible to achieve a high growth rate per head of population or per worker without corresponding changes of a substantial nature being made to the relative share of certain sectors.'³

Latvia's Achilles heel is innovation. In the *Global Innovation Index 2020*, Latvia came 36th out of 131 countries surveyed⁴. On the *European Innovation Scoreboard 2020*, the 2020 edition of a publication published by the European Commission each year, Latvia came 23rd out of 27 EU countries⁵. In the 2019 world competitiveness rating published by the World Economic Forum, Latvia came 52 out of 141 countries globally in terms of innovation capacity⁶. In the assessment of this pillar, Latvia lags furthest behind not just the EU's innovative economies, but also all EU countries with the exception of Romania.

Low investment in R&D, low overall innovation performance and an average educational performance are negatively affecting Latvia's efforts to achieve higher productivity. Latvia's innovation performance could benefit from the more active involvement of the larger public companies, which have the resources to mobilise major investment capacity. Latvia is lagging behind the EU's innovative economies in the following fields: capacity of research institutions, spending on R&D, international inventions, patent applications and the like.

³ Kuznets S. 1979. Growth and structural shifts. In: Galenson W, ed. Economic Growth and Structural Change in Taiwan. The Postwar Experience of the Republic of China. Cornell University Press. London

⁴ https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020/lv.pdf

⁵ <https://ec.europa.eu/docsroom/documents/42981>

⁶ The Global Competitiveness Report 2019. http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf
https://stats.oecd.org/DownloadFiles.aspx?HideTopMenu=yes&DatasetCode=STANI4_2016&lang=en

If there is to be a breakthrough in the field of innovations, society's attitude must change (innovation is not a hobby, it is an indispensable precondition for an increase in prosperity), so innovations must be given improved stimulus. Likewise, the legal framework of the innovation system must be improved, particularly as regards the duties and responsibilities of stakeholder institutions and NGOs and the system of State aid in the creation, marketing and practical implementation of intellectual property. The State must coordinate the marketing of outstanding innovation products in Latvia. The economic foundations must also be laid, and the legal framework established, for the procurement of innovations.

The full use of digitisation opportunities is fundamental to the maintenance of productivity and the improvement of living standards. In Latvia, a digital divide has come about between city and countryside. Much of Latvia's population lacks the digital skills needed to make effective use of the internet. The integration of digital technologies in businesses is well below the EU average. Basically, Latvia's population is not fully prepared for a digital boom in the economy. Latvia has one of the highest proportions of inhabitants in various age groups with low overall levels of digital skills. This not only leads to a shortage of digital skills on the labour market, but also generally hinders the broader rollout of digital technologies within companies. Core policies must be to increase digital skills for society as a whole, with a specific focus on each target group, to avoid the risk of future imbalances. An overarching strategy for the digitisation of business must be drawn up. An important tool in the digital age is also ongoing dialogue with businesses about the development of new technologies and the impact of trends in the digital economy on the way these work.

Regulation has an important role to play in the digital economy. Policymakers need to be aware that there are areas where there are limited opportunities to apply new business models, so the challenge is how to create regulatory frameworks when new business models come onto the market. The current regulatory models are based on institutional frameworks, whereas operators base themselves not on institutional frameworks but on concrete functions. Key structural policies are streamlining in the field of intellectual property rights (data providers must remain data holders, platforms are markets in themselves, the regulatory framework for platforms, access to infrastructure), new types of employment, international cooperation, particularly as regards taxation of the digital economy, data analysis and the measuring of processes.

The supply and quality of labour play a key role in raising productivity. The main directions for improving the availability and quality of the workforce of relevance to Latvia are: solving the issues of demographics and migration, improving access to quality education at all levels, and stimulating reskilling and upskilling.

In a bid to promote the development of human capital, a number of reforms have been implemented or initiated in Latvia, though their positive impact on overall productivity levels can only be expected in the medium to long term. The main challenges on the Latvian labour market in the medium term relate to the ageing of the workforce and the shortage of labour. The trends towards an ageing workforce will have the greatest impact on the availability of the medium-skilled labour force, particularly in sectors such as transport services and storage, construction, manufacturing, agriculture and trade. Similarly, labour shortages may come about in sectors where demand for higher-skilled labour is expected to increase significantly – professional, scientific and technical services and information and communication services, especially in STEM fields.

To reduce potential labour market imbalances in the future, problems must be tackled together. For example, it is difficult to increase the number of students in natural sciences and engineering if pupils in primary and general secondary education have little knowledge of or interest in the exact sciences.

It should also be borne in mind that possible options for higher education, secondary, secondary vocational and primary education will have a tangible impact in the long term.

Changes in formal education have relatively little impact on medium-term problems.⁷

The labour market will be increasingly affected by trends in the digitisation of the economy and automation of jobs. In the coming years an increasing number of jobs can expect to face the trend towards automation, with the biggest job reductions expected in professions with a high proportion of manual and repetitive tasks, as well as in specialised jobs linked to direct service such as sales assistants and cashiers in the retail trade, call operators and similar professions. In the long term, trends in automation are likely to have the greatest impact on the number of medium-skilled jobs. It should be borne in mind that technology polarises the labour market by creating highly skilled, well-paid jobs on the one hand, leaving low-skilled, low-paid jobs on the other, pushing out medium-skilled jobs from the labour market altogether.

As labour shortages are set to become more acute in the future on the labour market, there is a need to strengthen the adult education system in order to ensure the transition of the labour force from non-productive to growing sectors. The effectiveness of the adult education system will also play an important role in mitigating the negative effects of COVID-19 and increasing the overall productivity of the economy. Reducing unemployment caused by the COVID-19 crisis is a top priority in the short term in terms of expediting recovery from the recession, helping people return to work and containing the risks of long-term unemployment.

The labour force must be helped to transition from sectors which are experiencing large-scale decline and are unlikely to return to pre-crisis levels for a long period of time to sectors that continue to grow even against the backdrop of a spreading pandemic.

The economy is seeing ongoing structural change. In order to anticipate, prepare for and adapt to these changes in a timely manner, the government needs to set up an inter-institutional platform for cooperation, based on analysis, forecasting, future technology trends and dialogue with business, implement proactive changes in the structure of workforce preparation, both in the medium and long-term (prospects for formal education) and in the short term (adult retraining programmes). In addition, the government should raise public awareness of the role of adult education in the individual's career development by encouraging lifelong learning.

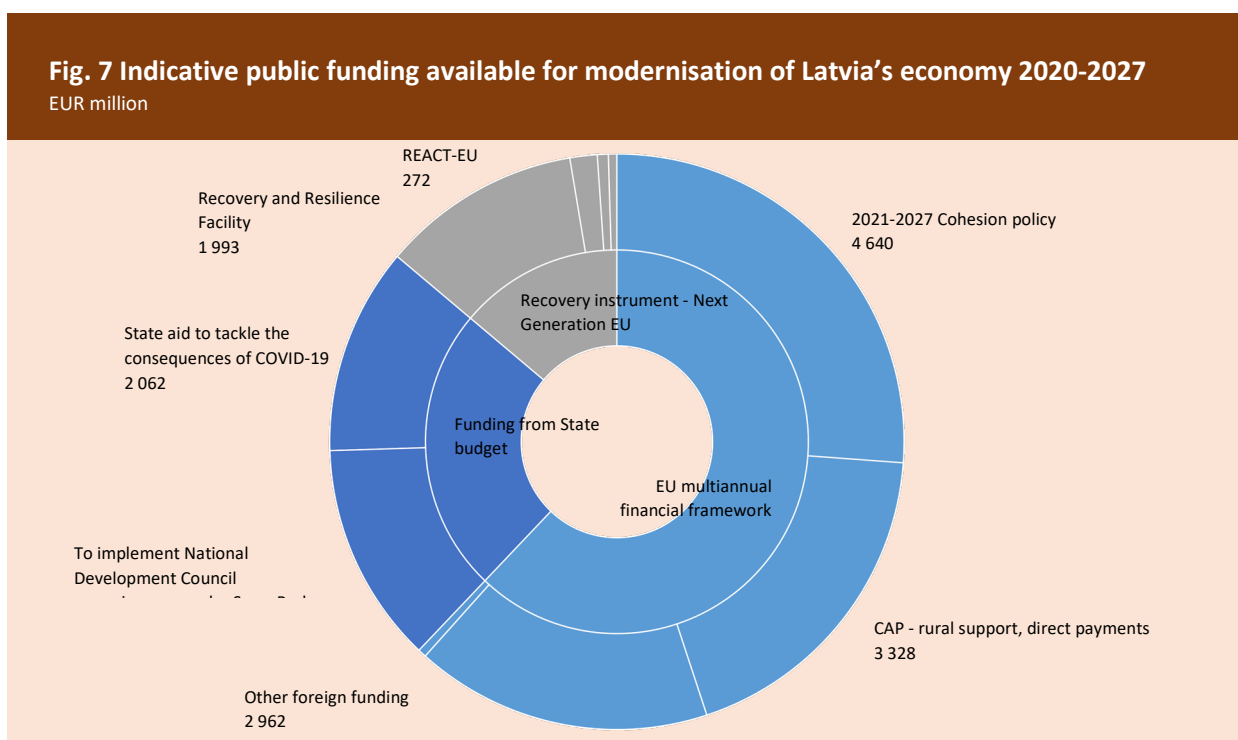
2. PRODUCTIVITY-ENHANCING POLICIES AND DEVELOPMENT SCENARIOS

Chapter 2 of the 2020 report analyses global technological change, climate change (the Green Deal and the path towards climate neutrality), the impact of the COVID-19 pandemic on economic development and development scenarios.

A number of studies have shown that the global economy as a whole is expected to change significantly. As new benefits emerge, so too will new developmental directions and innovative products and services. Added to this, the COVID-19 crisis is acting as a catalyst for more rapid change. Global technology trends and new EU policy initiatives will also influence the development of the economy in the future. The expected structural changes are closely linked to an increase in productivity, as it is important to facilitate the reallocation of resources to productive sectors, thereby also increasing the overall level of productivity in the economy as a whole.

⁷Ministry of the Economy 2018 Report on medium- and long-term labour market forecasts. Riga 2018, p. 79.

Given the impact of COVID-19, rapid technological development and new initiatives in the field of climate, public funds must be invested judiciously if economic capacity is to be maintained in the short term and, in the medium- and long-term, the economy transformed. Data currently available (December 2020) suggest that around EUR 18 billion will be available to Latvia over the next 7-8 years. These funds include both the resources available to tackle the COVID-19 crisis, the resources under the current programming period of the EU funds, the national budgetary investments earmarked in medium-term planning documents, as well as the funding scheduled under the multi-annual EU budget (cf. Fig. 7).



Source: Calculation by authors based on data from EC, Ministry of Finance and Cross-sectoral Coordination Centre

To speed up the growth of productivity and secure stable economic growth, it is vital not only to invest available public funds in a sustainable manner, but also to promote an increase in private investment by stimulating credit growth, capital market development and the use of financial instruments. Between 2005 and 2007, on average, private investment was 29.3% of GDP, whereas in recent years the level of private investment has fluctuated between 16 and 17% of GDP. Compared with the 2005-2007 period, the private investment gap is put at EUR 2.4 billion, which has also had a major impact on the slower growth of productivity in recent years.

In order to assess Latvia's economic development prospects post-COVID,⁸ the development of the national economy as a whole and of basic sectors of the economy have been modelled up until 2030. The restrictions created by the COVID-19 pandemic have a negative impact on the economy, but the medium-term economic development challenges already set out in policy planning documents, such as the need to increase exports and productivity of Latvian goods and services, remain unchanged.

⁸ To generate developmental forecasts for the national's economy, use was made of the Hermin medium-term model drawn up by the authors and adapted to Latvia's economy. This is based on the traditional Keynesian operating mechanism – output depends on both internal and external demand. However, the model also has features of neoclassical theory. For example, production volumes in the manufacturing sector depend not only on demand but also on price and cost competitiveness. Further, demand for factors of production is determined by the function of CES (*constant elasticity of substitution*), where the capital-labour ratio depends on the relative costs of the factors of production.

Latvia’s development modelling examines two development scenarios – the trend and the acceleration scenario –, and assesses the impact of each development scenario on the dynamics of productivity. The basic assumptions made for each scenario are shown in Table 1.

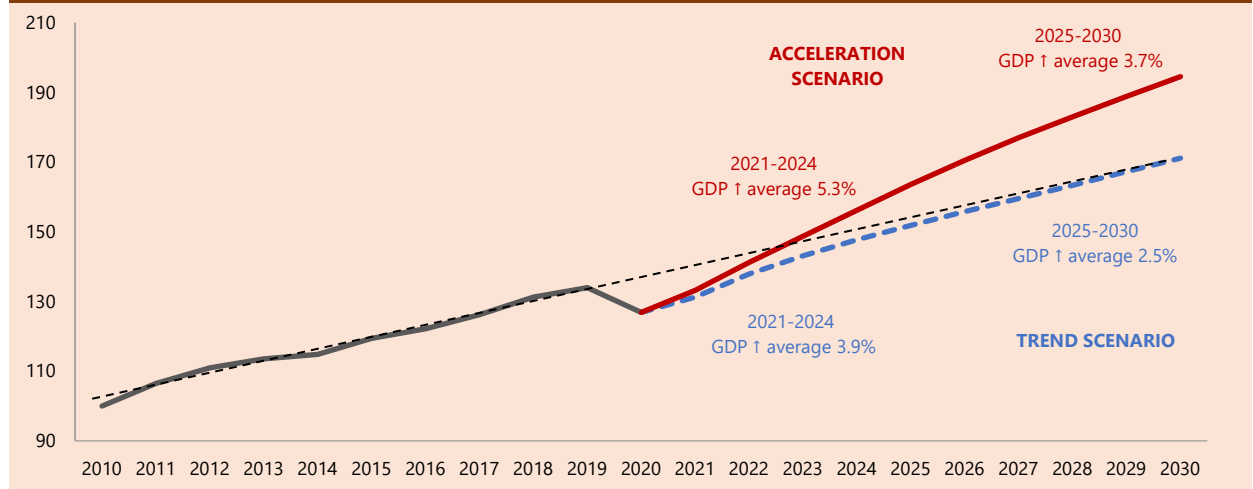
Table 1. Basic assumptions for Latvia’s development scenarios		
Element	TREND SCENARIO <i>productivity increases in line with trends to date</i>	ACCELERATION SCENARIO <i>investment and State aid contribute towards transition to higher level of productivity</i>
EXTERNAL ENVIRONMENT	Spread of Covid-19 continues in waves until effective vaccine developed Situation normalises at end of 2021	Spread of Covid-19 continues in waves until effective vaccine developed Situation normalises at end of 2021
IMPACT OF COVID-19	Hardest hit sectors recover slowly. May take several years to return to pre-crisis volumes Economic transformation process is sluggish	Business seek solutions by shifting operations from hardest hit areas to new niche operational areas. In trade, e-commerce practices evolve. Flexible forms of work maintained
INVESTMENTS, TECHNOLOGY	Maintenance of existing business models	Investment of available financial resources to bridge the productivity gap vis-a-vis technologically advanced countries. Investments not just in improving technological innovation, but also in improving management of production processes Volume of private investment rises to 25% of GDP by 2027
INNOVATION, RESEARCH	Investment in R&D continues to grow slowly. Latvia continues to be in a weaker position vis-a-vis EU countries.	Funding for R&D increases significantly, reaching 1.5% of GDP by 2027. Increase in share of companies’ own expenditure on research.
DIGITISATION	The launch of initiatives by individual companies (5G, genes, smart city) will continue, but the gap continues to widen between digital leaders and businesses that are slow to make use of digital solutions.	In keeping with each company’s level of digital maturity, a continuous process of deployment of digital technologies is taking place. New products and market niches into are coming being. Also, EUR 250 million are scheduled to be invested in digitising business by 2027.
GREEN DEAL	Latvia imports green technologies to comply with environmental requirements	Timely reorientation and preparation for change. Finding new business niches to develop and export green technologies.
HUMAN CAPITAL	In the medium term, the discrepancy between supply and demand on the labour market continues to grow. Public involvement in adult learning remains around the 7-8% level. Market is dominated by relatively short training courses to increase general competences.	Extra EUR 150 million public and private investment per year to upgrade skills. State-subsidised training programmes lasting 6-9 months to reskill workforce towards sectors with higher growth potential. Adult education on offer to provide all sections of general public with instruction in state-of-the-art digital technologies, thereby reducing the risk of rise in inequality. Active involvement of employers in upskilling existing workers, as well as developing new skills clusters to enable people to qualify for new jobs against a backdrop of economic transformation and robotisation.

In the Trend scenario, current trends are maintained, growth in GDP in coming years (2022-2024) could reach 3.9% annually, but growth rates will slow thereafter to 2.5%. In this scenario, the pre-Covid-19 level (2019) is attained in 2022. The economy, by contrast, takes until 2027 to return to the pre-crisis growth level.

Under the Acceleration scenario, which provides for technology-driven competitive edges, efficiency of production, innovation and the ability to adapt to exploit the potential of global change, economic growth might peak at 5.3% per annum on average between 2021 and 2024, falling to 3.7% annually for the remainder of the decade (cf. Fig. 8).

Fig. 8 Latvian economy growth scenarios

GDP at comparable prices, 2010 = 100



Source: CSB [Central Statistical Bureau], calculations by authors

Overall, the calculations show that the deployment of newer technologies, the development of innovative products and services and the broader use of digital solutions and improved process efficiency have a significant impact on the faster growth of sectors and of the economy as a whole.

Under both development scenarios, productivity is the main driver of growth. However, a significant factor in ensuring faster growth is also solving labour supply problems. Investment in human capital has a key role to play. It is critically important to provide high-growth and productive sectors with labour, which necessarily means overhauling current adult education programmes and encouraging the labour force to move from less to more productive sectors.

3. PRODUCTIVITY-ENHANCING STATE AID CRITERIA

In Chapter 3 of the 2020 report, data are used from the ORBIS database to draw up criteria for enterprises to receive State aid (with a view to promoting productivity).

ORBIS is the world's largest database at company level, and is maintained by *Bureau Van Dijk*, a subsidiary of *Moody's Analytics*. As of autumn 2020 ORBIS contained data on some 375 million companies around the world. Data from the ORBIS database are widely used in academic research.

The ORBIS database contains information on 418 000 Latvian companies between 2011 and 2018 or 2019 (data for 2019 are still missing for some companies). For the purposes of this study, the analysis is limited to those companies that were engaged in economic activity for at least a year between 2011 and 2018. There were around 167 000 of these. Enterprises that were not economically active during this period were also excluded from further analysis.

Economically active enterprises on which information is available in the ORBIS database accounted for over 714 000 jobs in 2018, which is 79% of the total jobs in the country. Most of these companies also have data available for the calculation of productivity, so it was possible to calculate labour productivity for enterprises, accounting for over 630 000 jobs.

In most sectors of the economy, the data available in the ORBIS database virtually match CSB data on jobs. The ORBIS database also gives a representative regional breakdown, include two-thirds of jobs in Latgale and up to 90% of jobs in Pierīga.

In this study, productivity is defined as added value per employee⁹. Value added was also calculated on the basis of company profit and staff costs¹⁰. In order to obtain real indicators (in 2015 prices) from the nominal indicators in the ORBIS database (in prices for the reporting year), GDP deflator was used. This type of productivity calculation is widely use in academic literature (e.g. Chevalier et al. (2012)¹¹, Hadengue and Warrin (2013)¹², Barnett et al. (2014)¹³).

Most productive enterprises were selected using factors influencing productivity, such as company age, size, sector and location. These factors are often used in academic studies. For example, De Kok et al. (2006)¹⁴ evaluate the quadratic link between the age of a company and its productivity. Coad et al. (2016)¹⁵ explore whether younger companies are more geared to innovative solutions that promote productivity. Cucculelli and Mannarino (2019)¹⁶ investigate the impact of company age and ownership on productivity. Biesebroeck (2005)¹⁷ concludes that companies with more employees are more productive. Diaz and Sanchez (2008)¹⁸ investigate the link between business size and technical advancement and productivity. Aiello et al. (2014)¹⁹ look into whether there is a correlation between a company's location, investment in R&D and level of productivity. Yang (2020)²⁰ compares productivity and viability in businesses located in large and small cities. Rizov and Walsh (2010)²¹ analyse level of productivity in terms of a company's distance from a major city.

The study concluded that there is a positive correlation between productivity and business size – the more employees a company has, the more productive it is. For example, in large companies (more than 250 employees), productivity is 50% higher than in small companies (11-50 employees).

However, there are significant variations in productivity between companies within the same group. Thus productivity in some micro-enterprises (10 employees or fewer) is greater than in many large companies. Also, the distribution of corporate productivity shows a marked positive asymmetry. This is the case where a small number of enterprises are highly productive, basically pushing up the average productivity indicator for this group of companies; for the bulk of enterprises, by contrast, productivity is below average (i.e. median productivity is less than average productivity). This is particularly

⁹ The ORBIS database does not contain information on hours worked or workload.

¹⁰ For the majority of enterprises, staff costs were not available. In such cases, staff costs were assumed to account for 70% of the company's administrative costs. The source of administrative costs is the Lursoft database.

¹¹ Chevalier, P.-A., Lecat, R., Oulton, N. (2012). Convergence of Firm-Level Productivity, Globalisation, Information Technology and Competition: Evidence from France, *Economics Letters*, 116(2), pp. 1-44. <https://www.sciencedirect.com/science/article/abs/pii/S0165176512000626>

¹² Hadengue, M., Warrin, T. (2013). Patterns of Specialization and (Un)Conditional Convergence: The Cases of Brazil, China and India, *CIRANO – Scientific Publications*, 2013s-17, pp. 1-31. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2326584

¹³ Barnett, A., Chiu, A., Franklin, J., Sebastia-Barrel, M. (2014). The Productivity Puzzle: A Firm-Level Investigation into Employment Behaviour and Resource Allocation Over the Crisis, Bank of England Working Paper No. 495, pp. 1-36. <https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2014/the-productivity-puzzle-a-firm-level-investigation-into-employment.pdf>

¹⁴ De Kok, J., Brouwer, P. (2006). On the relationship between firm age and productivity growth, *Scientific Analysis of Entrepreneurship and SMEs*, EIM Research Report No. H200617, 5-29. https://www.researchgate.net/publication/5012594_On_the_relationship_between_firm_age_and_productivity_growth

¹⁵ Coad, A., Segarra, A., Teruel, M. (2016). Innovation and firm growth: Does firm age play a role? *Research Policy*, 45(2), 387-400. <https://www.sciencedirect.com/science/article/abs/pii/S0048733315001687>

¹⁶ Cucculelli, M., Mannarino, L., Pupo, V., Ricotta, F. (2014). Owner-Management, Firm Age, and Productivity in Italian Family Firms, *Journal of Small Business Management*, 52 (2), 352-343. <https://www.tandfonline.com/doi/abs/10.1111/jsbm.12103>

¹⁷ Van Biesebroeck, J. (2005). Firm Size Matters: Growth and Productivity Growth in African Manufacturing, *Economic Development and Cultural Change*, 53 (3), 545-583. <https://www.jstor.org/stable/10.1086/426407?seq=1>

¹⁸ Diaz, M. A., Sanchez, R. (2008). Firm size and productivity in Spain: a stochastic frontier analysis, *Small Business Economics*, 30 (3), 315-323. <https://www.jstor.org/stable/40650914?seq=1>

¹⁹ Aiello, F., Pupo, V., Ricotta, F. (2014). Explaining Total Factor Productivity at Firm Level in Italy: Does Location Matter? *Spatial Economic Analysis*, 9 (1), 51-70. <https://www.tandfonline.com/doi/pdf/10.1080/17421772.2013.863428?needAccess=true>

²⁰ Yang, Y., Mukhopadhyay, P., Yu, Z. (2020). Relationship between city size and firm productivity – A new interpretation using the Chinese experience, *Economic Modelling*, Vol.93, 546-558. <https://www.sciencedirect.com/science/article/abs/pii/S0264999320311937>

²¹ Rizov, M., Walsh, P. P. (2011). Is There a Rural-Urban Divide? Location and Productivity of UK Manufacturing, *Regional Studies*, 45 (5), 641-656. <https://www.tandfonline.com/doi/pdf/10.1080/00343401003713449?needAccess=true>

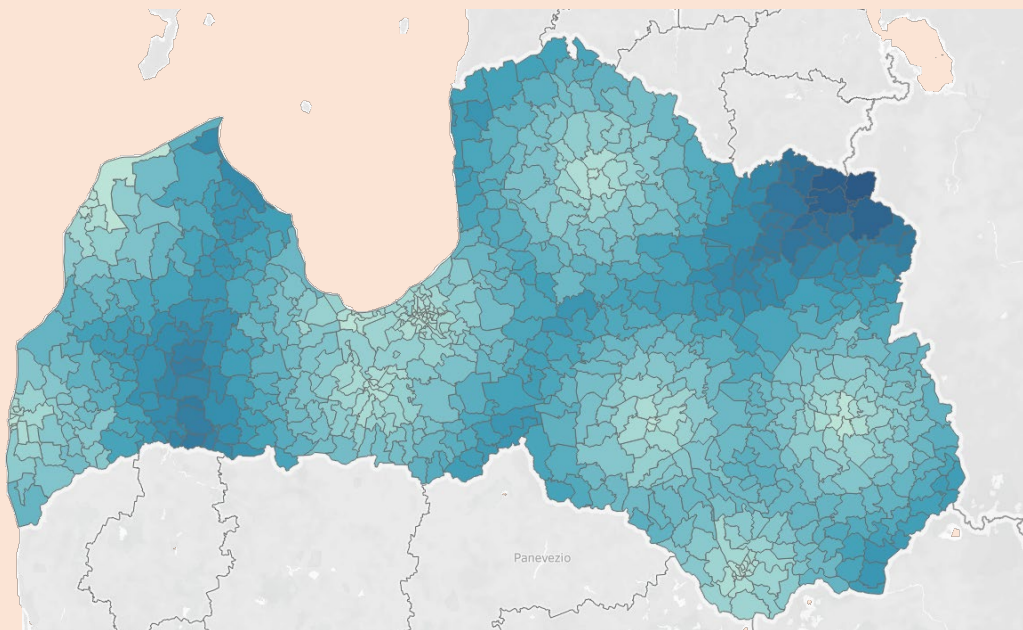
pronounced in a group of large companies where three quarters of employees work in companies with below-average productivity.

Fig. 9 Relation between productivity and distance to the nearest large city in Latvia
2015-2019, average

a) variation of company productivity depending on distance to the nearest large city in Latvia



b) distance of postcode areas to the nearest large city in Latvia (lighter colour denotes location closer to large cities)



Notes. Fig (a) shows productivity level for 50%, 75% and 90% of enterprises in each group. Enterprises were weighted by number of employees.
Source: Calculations by authors based on data from ORBIS base.

The study looked at the link between productivity and company age. Data from the ORBIS base show that a business's productivity tends to increase with age. The level of productivity in the first few years of a business's operation is generally comparatively low, and generally greatest after it has been operating for 10-15 years. Again, however, each group of businesses shows considerable variations in

both productivity and a positive asymmetry in the breakdown of constituent enterprises (particularly in businesses that have been operating for more than 10 years). It can therefore be concluded that although larger and older companies are more productive, the age and size of the enterprise are not decisive factors of productivity.

Study results show that the closer a business is to Riga or another large Latvian city, the more productive it is. For example, the average level of productivity for a company that is within a 10 km radius of the centre of Riga is almost twice that of a company located more than 100 km from Riga. . And a company that is less than 10 km from a large Latvian city is on average 1.6 times more productive than a company located further than 50 km from a major Latvian city(cf. Fig. 9). However, here again, there is a significant range of productivity within each group of companies, as well as a marked positive asymmetry in the distribution of corporate productivity. Particularly, for a majority of companies, productivity is below average, both in Riga and in other regions.

Data from the ORBIS base also confirm that productivity differs significantly between companies, even within the same economic sector and sub-sector.

For example, although the manufacturing industry is on average characterised by a rather modest level of productivity, for several companies productivity exceeds the average indicator for enterprises in the information and communications sector.

By the same token, notwithstanding the relatively low level of productivity in the food industry, a number of food businesses are more productive than timber processing or pharmaceutical companies.

The study went on to analyse the simultaneous impact of the above-mentioned factors on company productivity. Multi-factor regression results confirm the negative correlation between the productivity of companies and their distance from economic centres. For example, as distance increases by 1% from Riga, productivity falls by up to 0.15% (all other factors influencing productivity being equal). Likewise, an enterprise's size and age have a non-linear relationship with productivity: the bigger the company, the less any additional increase in the number of employees will be associated with increased productivity. The assessment of the models also took into account the fact that companies in different sectors tend to have different productivity. The above-mentioned factors taken together explain as much as 19% of the differences in productivity of companies in the medium term, leaving most of the productivity gap between companies unexplained.

Data from the ORBIS base were used to define three scientifically vindicated State aid criteria to promote productivity (one basic criterion and two additional criteria). The first is whether, in the medium term, the company has been able to deliver higher productivity than competitors comparable in terms of size, age, sector and location. This basic criterion ensures that State aid goes to enterprises that are most likely in future to post high productivity. The second (additional) criterion is whether the company belongs to a group of companies with a high likelihood of remaining economically active. Research shows that a greater likelihood of remaining economically active is enjoyed by companies in the manufacturing industry and older companies with more than 10 employees. The third (additional) criterion is whether a considerable portion of economic activity is carried out in areas with high unemployment. The relative importance of these three criteria may change depending on which phase the economic cycle is in. For example, during a period of economic crisis, as the importance of maintaining jobs increases, so too may the importance of criterion number three. Conversely, during a period of economic expansion, the first criterion may assume greater importance.

Further analysis is required of the use of other criteria (export capacity, inclusion in an ecosystem, generation of high value added, etc.).

Box 1. Limitations of the study and proposed further studies

This study has a number of limitations, caused by the unavailability of data and the tight deadline for devising the project; these should be borne in mind in follow-up studies.

Firstly, the ORBIS database does not contain information on exports and imports by Latvian companies. There is no other publicly available database – not even Lursoft, firmas.lv etc – with a breakdown of enterprise by data on foreign trade. The export capacity of companies is an important indicator for inclusion in the list of State aid criteria. Thus, in order to analyse company export capacity, access is needed to the CSB's non-public databases.

Secondly, there are several definitions of productivity, and this study used just one: value added per employee. To check the stability of the study findings against a selected productivity indicator, subsequent studies should also use total factor productivity as an indicator of productivity. It should be noted that there are several approaches in scientific literature to calculate total factor productivity at enterprise level, making the calculation very time-consuming.

Thirdly, follow-up studies may analyse the impact of other factors (such as the presence of foreign owners or the creation of company ecosystems) on company productivity. However, it must be acknowledged that the endogenous nature of these factors (the cause-effect link with productivity is most likely mutual) may limit their usefulness in drawing up criteria for State aid policy.

Fourthly, the scale of research to generate microdata on the productivity of companies may also be international. ORBIS data can be used to analyse why the Latvian economy is lagging behind Estonia's and Lithuania's in terms of productivity (and per capita GDP). For example, this might have to do with the fact that Latvia has comparatively few enterprises with high productivity, or the fact that Latvia has a comparatively large number of enterprises with low productivity – recommendations for State industrial policy in these cases would be different.

4. FISCAL SUSTAINABILITY

Chapter 4 of the 2020 report looks at the State fiscal policy response to the Covid-19 pandemic and fiscal sustainability.

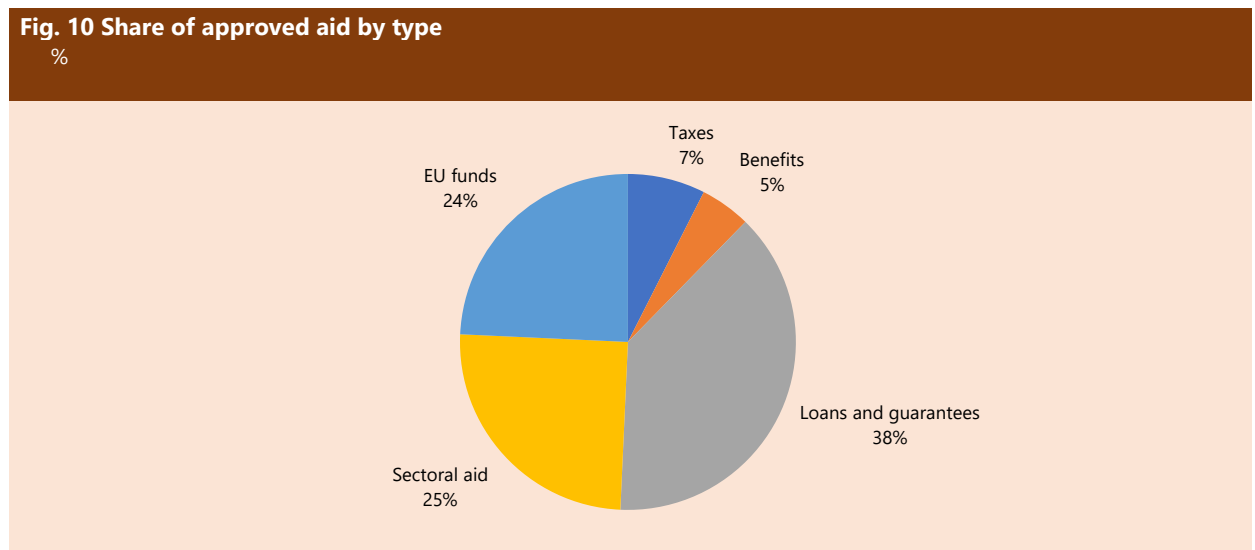
It concludes that active intervention by the State with fiscal policy instruments was needed to overcome the crisis caused by the Covid-19 pandemic. This is one of the aspects in which the economic crisis caused by the Covid-19 pandemic differs from the global financial crisis of 2008. Whereas the global financial crisis was caused by the overheating of the economy as a result of excessive aggregate demand in both Latvia and around the world- that was overcome by consolidating expenditure; the key to overcoming the COVID-19 crisis is the government fiscally stimulating the economy and socially protecting the population. The EU's general exemption clause of the EU stability and growth pact was activated, allowing the general government budget deficit to be increased in 2020 by the amount needed to reduce the economic damage caused by the Covid-19 pandemic. EU rules on State aid also allowed financial aid to be provided to enterprises.²² Overall, international organisations have proposed three key criteria for State fiscal policy in these economic circumstances: (i) It must be timely (in this case, be as rapid as possible), (ii) it must be clearly targeted at all sectors of the economy and social fields and (iii) it must be for a limited period of time.

The actions by the government during the crisis situation in the first six months of 2020 met all the above-mentioned criteria and recommendations by international organisations. The first State aid reached its beneficiaries as early as March. The aid was aimed at all economic sectors and all residents. Initially, most of the support instruments were scheduled to operational till the end of 2020, but the second wave of Covid-19 meant that a number of aid deadlines have been extended to 2021.

As in most countries, the fiscal policy of the Latvian government during the Covid-19 economic downturn was two-pronged: to support demand and to protect supply.

²² https://ec.europa.eu/competition/state_aid/what_is_new/sa_covid19_temporary-framework.pdf

The latter was achieved by introducing a range of support measures to protect residents and businesses from insolvency and bankruptcy. Ministry of Finance figures show that by 20 September 2020, the government had provided aid measures in amount of EUR 3.14 billion, or 11.1% of GDP²³. Aid measures are divided into discretionary measures (direct impact) and liquidity measures (indirect impact). The former have a direct impact on the general government balance, most often in the form of budgetary expenditure or tax cuts. Liquidity measures (guarantees, loans), by contrast, have little impact on the general government balance in the short term, although in the medium term they may affect the budgetary balance if a loan is not repaid or a guarantee is activated. The Ministry of Finance groups measures into five areas: – (i) taxation, (ii) benefits (iii) loans and guarantees, (iv) sectoral aid and (v) EU financial aid²⁴. Most of the aid was granted in the form of loans and guarantees (38%), but comparatively little in the form of benefits (just 5%) (cf. Fig. 10).



Source: State Chancellery data and Ministry of Finance study

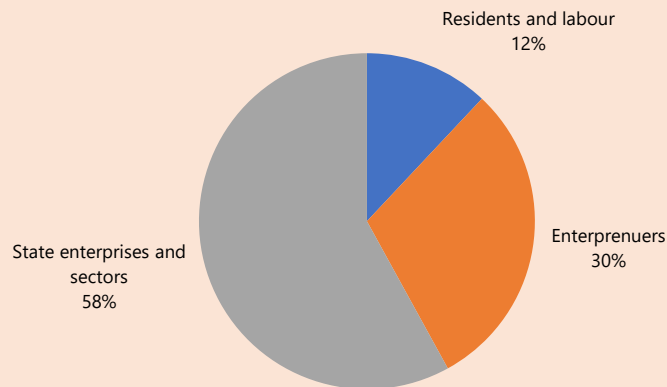
The study looked ²⁵ at the impact of State aid on the general government balance by aid beneficiary, with redeployment of EU financing and EU fund overcommitments factored in. Fig. 11 shows that, in relative terms, the bulk of aid (58%) was received by State enterprises and State-related sectors, including public health protection. A particularly large amount went to the air transport sector, which for several months was effectively paralysed by the Covid-19 crisis. Major aid is planned for the public transport and healthcare sector. Most of the aid to residents and the labour force also relates to aid to enterprises, as this is designed for training programmes for the labour force provided by businesses, and enterprises benefit from the reskilling or upskilling of workers.

²³ Explanatory notes to the 2021 State budget. Part 2 Fiscal overview. Available at: https://www.fm.gov.lv/files/valstsbudzets/FMPask_2_121020_proj2021.pdf, viewed 10/10/20

²⁴ Explanatory notes to the 2021 State Budget, Part 2 (Fiscal overview): https://www.fm.gov.lv/files/valstsbudzets/FMPask_2_121020_proj2021.pdf, viewed 10/10/20

²⁵ Fiscal discipline monitoring, available at: https://fdp.gov.lv/files/uploaded/MZ8_07102020.pdf, viewed 01.11.2020.

Fig. 11 Share of aid by beneficiary
%



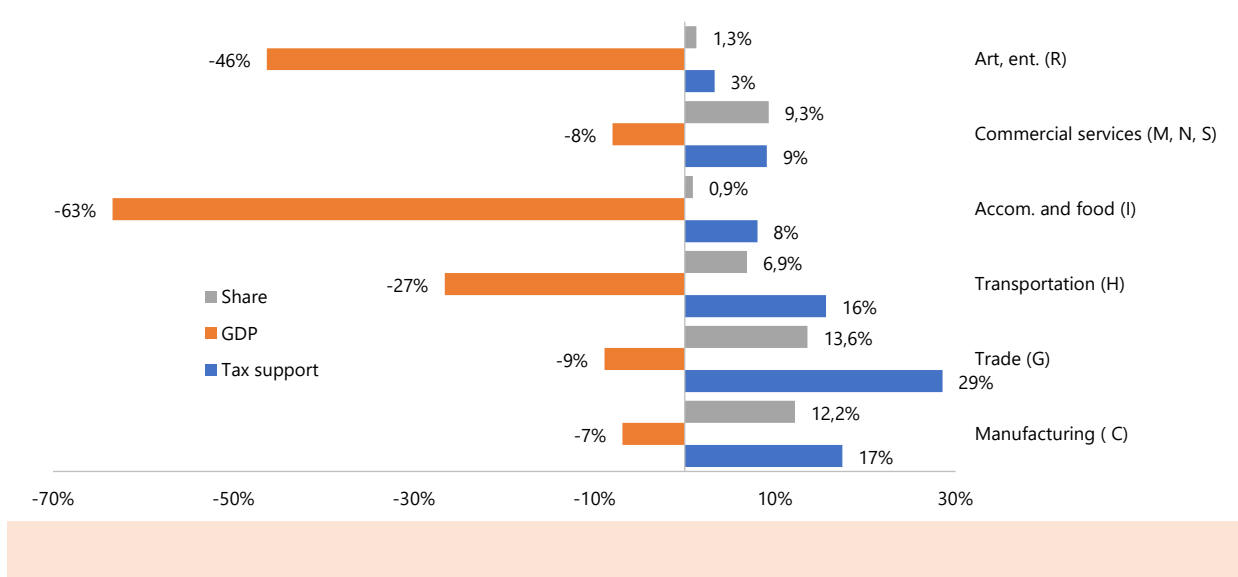
Source: Fiscal Discipline Council

The study looked more closely at three areas of State aid: (i) taxation, (ii) loans, guarantees and capital, and (iii) furloughing.

Four types of aid in the taxation field were planned as liquidity support measures for enterprises: (i) extension of deadlines for payment of property tax, (ii) faster reimbursement of VAT, (iii) waiving payments of personal income tax, and (iv) extension of deadlines for payment of taxes. The Ministry of Finance currently estimates that the faster refund of VAT and the waiving of PIT advances would together provide liquidity support totalling 0.33% of GDP by the end of 2020. However, the bulk of support in the field of taxation was planned in the form of the extension of tax deadlines, worth 0.84% of GDP. The Ministry of Finance estimates that around 30% of tax due for which a general extension was granted will never be paid.

Fig. 12 shows that tax payment extensions have generally reached the sectors most affected by the Covid-19 crisis. The trade sector has received most support in terms of tax payment deadlines (29%), having suffered significantly from the crisis, with a 9% decrease in the value added of the sector (in constant prices compared with the second quarter of 2019). Given the sector's high share of value added (13.6%), the relatively high share of tax support (29%) is appropriate. The sectors most affected by the crisis – the arts, entertainment and recreation (which have seen their GDP fall by 46%) and hospitality and catering (a fall of 63%) – generate comparatively little value added, but receive sizeable support. A comparison of the amount of tax aid received and the value added generated by a sector shows the largest beneficiaries to be the trade sector (29%) and the smallest beneficiaries to be commercial services firms.

Fig. 12 Share of tax payment extensions (in %) by sector, sectoral contribution (in %) to value added and decrease in GDP
 Second quarter of 2020 against second quarter of 2019, in comparable prices, in %



Source: State Revenue Service and CSB data, authors' calculations

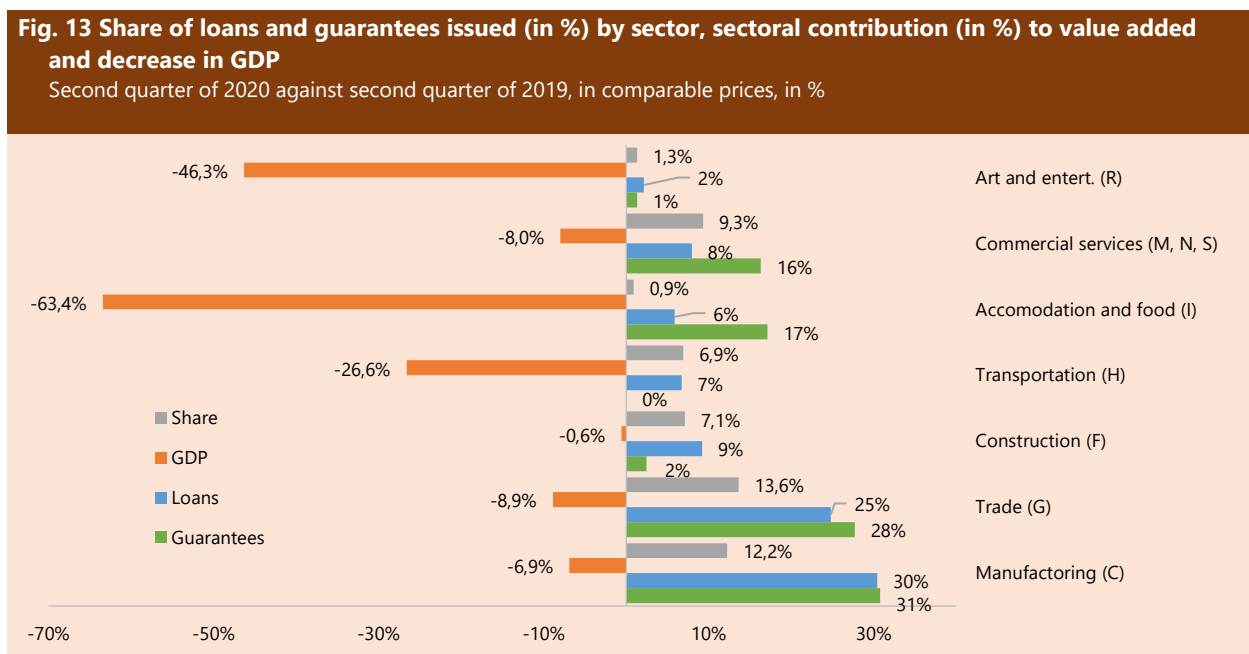
On the whole, it can be said that aid in the taxation field has reached the sectors where it was needed most. Obviously, this is a premature assessment, and a full analysis will be possible only once the crisis is over, when all the figures are in for this support measure. It will be important to ascertain what proportion of tax aid beneficiaries are still engaged in entrepreneurial activity, are generating added value for the economy and have settled all tax debts.

The main support for business was planned in the form of loans, guarantees and capital. In the Ministry of Finance's view, the impact of these support measures on the economy might be at least EUR 1 055 billion, or 3.74% of GDP. The advantage of these indirect aid instruments is that they do not directly and immediately worsen the general government balance. From a fiscal perspective, indirect support instruments are much more effective than their direct counterparts, on the assumption that the guarantees and loans issued and the capital invested are of high quality. The State financial institution ALTUM is implementing the following support instruments to mitigate the effect of COVID-19 on enterprises: (i) working capital loans, (ii) guarantees for bank credit holidays, (iii) portfolio guarantees, (iv) export credit guarantees, (v) guarantees for large enterprises, and (vi) a capital fund.

The take up of COVID-19 support to entrepreneurs in the form of loans, guarantees and capital is relatively slow: at the end of October 2020, the impact of all COVID-19 instruments was 0.6% of GDP, which is just 16.9% of that planned.

One explanation is that alongside COVID-19 instruments, the regular Altum instruments are also in operation. To date, COVID-19 instruments have contributed to around 28% of total ALTUM aid. Another explanation is that support to businesses in the form of loans, guarantees and capital is slower to mobilise than, for instance, support in the taxation field – two out of six aid instruments have yet to start operating, though it is possible they will be of benefit to businesses in helping cope with the consequences of the second wave of COVID-19, too. The aid instruments together reach almost all the most affected sectors of the economy (cf. Fig. 13). The main aid beneficiaries are enterprises in the sector

of commerce and manufacturing, which generate considerable value added and whose GDP fell considerably in the second quarter of 2020. Construction companies are amongst the largest aid beneficiaries, which may come as a surprise, as the sector has shown itself resilient to the COVID-19 crisis. On the other hand, the transport and storage sector, which has a value added similar to construction and has seen a much larger fall in GDP, receives approximately the same proportion of aid as construction companies, which seems comparatively little.



State Revenue Service and CSB data, authors' calculations

Despite the flexibility shown by the government in relaxing the eligibility rules on several occasions, the State Revenue Service (SRS) paid EUR 133 462 furlough grants between 12 March and 30 June 2020 during the COVID-19 furlough period, for a total amount of EUR 53.6 million, representing just 0.2% of GDP. It is true that the average amount of furlough grant to workers was around EUR 435, and for the self-employed around EUR 390²⁶. One of the main reasons for the relatively small furlough grants is the link between furlough assistance and the volume of taxes paid, plus the extent of the shadow economy.

For example, in Estonia in 2019 around EUR 7 133 was collected in taxes per inhabitant, whilst in Latvia the figure was just EUR 4 766²⁷. However, a radical reduction in the shadow economy is not possible unless the public can prove it will not tolerate tax evasion. As part of a public opinion poll forming part of the 'reCOVery-LV' project, the public was canvassed for its attitude towards tax evasion. Unfortunately, just 68.4% those polled thought that tax evasion should be punished, with 51.4% saying that in the event of financial difficulties, tax evasion should be allowed in the short term. With this public attitude, reducing the shadow economy is exceptionally difficult. In its presentation, the Bank of Latvia²⁸ likewise concluded that of all the Baltic States, Latvia had the most modest furlough support scheme accounting for just 0.2% of GDP, compared with 0.3% in Lithuania and 0.9% in Estonia (this information was updated at the end of July, but in case of Lithuania the aid was still being granted at the end of the year). Calculations by the Bank of Latvia showed that, on average, each employee received furlough support worth EUR 974 in Latvia, EUR 767 in Lithuania and EUR 1 886 in Estonia. The number of furlough recipients in Latvia was 55 200, in Lithuania 137 700 and in Estonia 200 600.

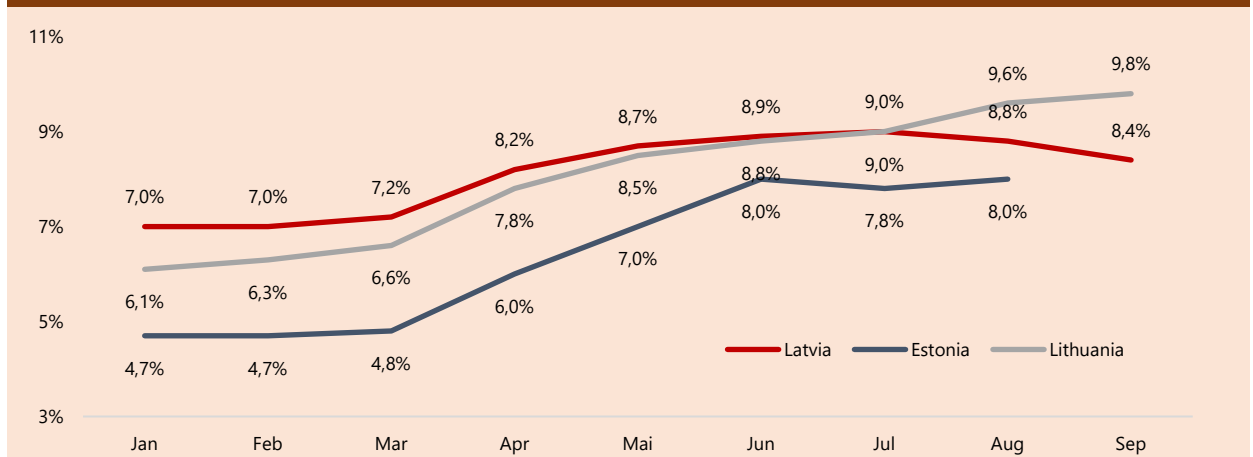
²⁶ <https://www.vid.gov.lv/lv/statistika-3>

²⁷ Calculations by the Fiscal Discipline Council

²⁸ Available at: https://www.bank.lv/darbibas-jomas/monetaras-politikas-istenosana/prognozes_skates_08/11/20

Considering that the main objective of the furlough scheme is to minimise the increase in unemployment, the unemployment trends in the Baltic States develop unexpectedly considering the volume of financial resources invested in the furlough scheme from the budget. Fig. 14 shows that the unemployment rate in Estonia, which at the start of the crisis was lower than in the other Baltic States, quickly rose during the first few months of the crisis. The unemployment rate in Lithuania and Latvia, by contrast, was higher at the start of the crisis, then the growth slowed. In Latvia the unemployment rate started to fall as of July, but in Lithuania it continued to rise, even though the furlough scheme was still in place in Lithuania by the end of 2020. Fig. 14 shows changes in unemployment rates in the Baltic States between March and August. However paradoxical it may seem, data show that there is no link between the intensity of the furlough scheme and changes in the unemployment rate. Of course, furlough aid also has a positive impact on growth in GDP and on the population’s social security. However, if furlough support is deemed to be the main way of halting the rise in unemployment, it must be said that the intensity of the aid does not play a decisive role.

Fig. 14 Unemployment rate in the Baltic States 2020
Seasonally corrected

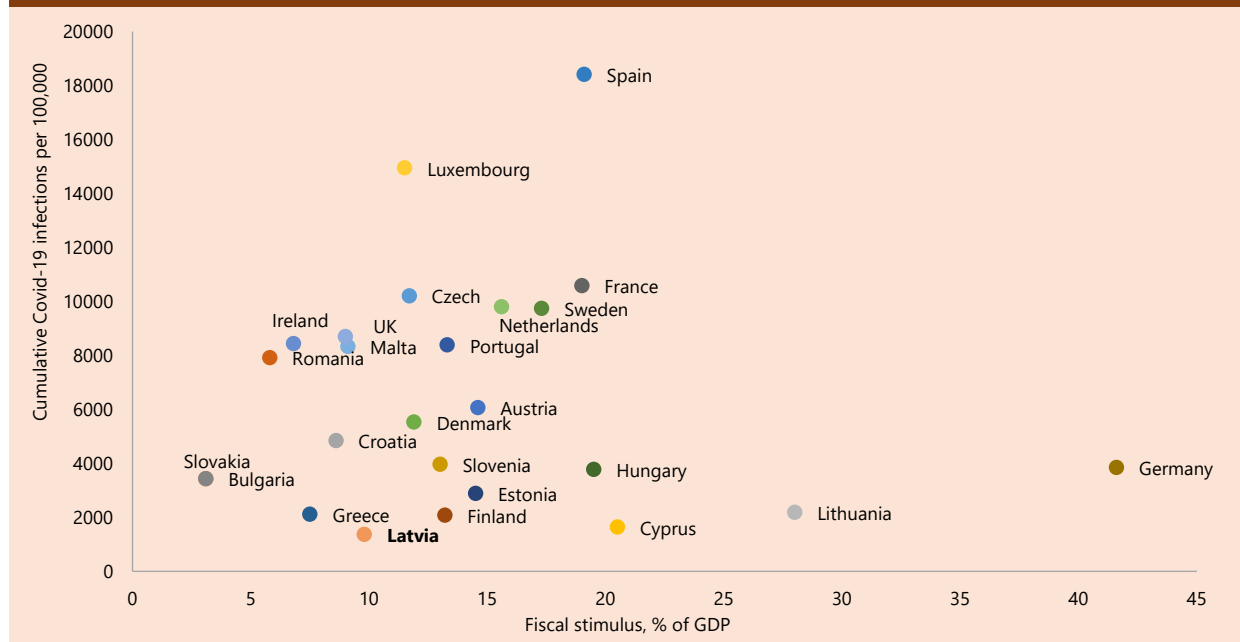


Source: Eurostat database UNE_RT_M

Although, overall, Latvia’s support programme appears modest compared with that of other countries, the study concludes that if we plot State aid intensity against the spread of COVID-19 in the country, the Latvian support programme appears to be very proportionate to the spread of the pandemic. Graph 15 shows that although Latvia had the lowest cumulative infection rate in European countries in October 2020, State aid intensity is higher than in countries with significantly higher levels of Covid-19 infection. A comparison of aid intensity versus level of infection shows that German aid is disproportionately high for the spread of the virus, whilst Luxembourg opts for a relatively modest national aid scheme.

Fig. 15 Aid intensity in EU Member States and cumulative COVID-19 infection rates

Aid as % of GDP, infection rate per 100 000 inhabitants as of 11 October 2020.



Source: Secretariat of EU network of independent fiscal institutions, World Health Organisation²⁹

ANNEX: INFRASTRUCTURE INVESTMENT IN PROMOTING PRODUCTIVITY

The 'Infrastructure investment in promoting productivity' annex to the 2020 report assesses the role of infrastructure development projects in bolstering the national economy in crisis and post-crisis situations, assesses Latvia's strengths and weaknesses, as well as risks and opportunities relating to infrastructure projects, and scrutinises the impact of the COVID-19 crisis on the progress of infrastructure development projects of Latvia. Based on the SWOT analysis carried out, criteria have been developed for the evaluation of infrastructure projects, which are essential for the promotion of competitiveness and for overcoming the consequences of the COVID-19 crisis.

The funding of infrastructure projects is one of the most important tools available to the government for mitigating the effects of the COVID-19 crisis. The EU has now unveiled broad funding opportunities, and the government must make a decision on pushing forward the corresponding projects. Traditionally, it is infrastructure projects that significantly outstrip other projects being implemented in Latvia in terms of volume. The situation is likely to be similar with projects designed to tackle the COVID-19 crisis. In this connection, an initial SWOT (strengths, weaknesses, opportunities and threats) analysis is of particular importance, as well as identification of the experience of other countries. It is essential to identify projects that will ensure economic growth, productivity and the country's international competitiveness, and promote the development of the green economy and digitisation.

The study concluded that the implementation of infrastructure projects plays an important role in ensuring State competitiveness. Access to public infrastructure reduces poverty and contributes to reducing income imbalances and creating a level playing field in terms of growth opportunities. It also serves a social purpose. Scientists estimate that a public investment injection of 1% of GDP in developed countries sparks an average increase of 0.2% growth in output in the current year and 1.2% output after

²⁹ <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20201012-weekly-epi-update-9.pdf>

four years. By contrast, a public investment injection of 1% of GDP in developing countries sparks an average increase of 0.2% growth in output in the current year and 0.5% output after four years. Sound project management (i.e. project planning, selection, implementation)³⁰ can secure a return on investment of up to 0.8% in the current year and 3.2% after four years³¹. At the same time, experience from around the world shows that poor project management, including planning, selection and deployment, ensures an insignificant rate of return on investments, and may even harm the economy. For example, many countries increased public spending in response to the global financial crisis, which led to economic challenges down the line, with public debt reaching unprecedented levels ten years later, calling for fiscal consolidation.

One of the main reasons for the interest in infrastructure investment in developed countries is the growth of the national economy and population growth when the existing basic infrastructure is no longer adequate³². On the other hand, infrastructure projects in developing countries address basic infrastructure needs.

At the same time, according to the International Monetary Fund (IMF), increasing investment in infrastructure might be an important step towards supporting economic activity in the post-crisis recovery phase.

This may increase the region's long-term productive capacity and accelerate the transition to a green and digital economy³³.

In Latvia, the basic infrastructure is largely in place, and current basic infrastructure needs are being identified, with the relevant areas being highlighted in the 10-year infrastructure development plans and policy planning documents.

The economic competitiveness of the country is influenced not just by the existence of infrastructure as such, but also by its efficient use. The economic efficiency potential generated by technology increases the return on projects throughout their life cycle. Infrastructure technologies provide governments with valuable tools for responding to the health and economic crisis challenges of the COVID-19 crisis³⁴.

According to the IMF, the impact of public investments on the economy can be depicted in two ways:

- ◇ Efficiency, or how much physical infrastructure is secured by the relevant investment;
- ◇ Productivity, or how existing infrastructure affects the economy.

Sound project management is important, regardless of available funding (even where a project is funded entirely or partially by grants from external sources).

Based on scientific and professional studies carried out in Latvia and abroad, documents from government and associated organisations, including the World Bank, the International Monetary Fund, the OECD, the United Nations, international rating agencies, etc., databases, information from media sources, interviews with officials from the Ministry of Transport and Communications, the Ministry of Finance, Riga local government and the board of the Latvian Investment and Development Agency of Latvia, as well as surveys of Latvian and foreign infrastructure companies and residents and experience

³⁰ International Monetary Fund (2019) Public Investment Management Assessment (PIMA). Strengthening Infrastructure Governance Washington, DC: International Monetary Fund. p. 7, available at: <https://www.imf.org/external/np/fad/publicinvestment/pdf/PIMA.pdf>

³¹ Schwartz, G., Manal F., Torben H., and Geneviève V., eds. (2020). Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment. Washington DC: International Monetary Fund. P. 341, ISBN: 978-1-51353-205-9

³² Naoyuki Y., Masaki N. (2000) The Role of Infrastructure in Economic Development (Preliminary Version). Keio University. [viewed: 01.08.2020] Available at: <http://fs0.econ.mita.keio.ac.jp/staff/dikamiya/pdf00/seminar/1205.pdf>

³³ International Monetary Fund (2020) Regional Economic Outlook. Europe: whatever it takes: Europe's response to COVID-19. Washington, DC: International Monetary Fund, 2020, 45 p. ISBN: 9781513558257

³⁴ World Bank. 2020. Infratech Value Drivers. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/34320> License: CC BY 3.0 IGO.

gained at international conferences, a SWOT analysis of Latvia's infrastructure was compiled.

According to the results of the study, Latvia's infrastructure-related *strengths* include access to electricity, quality of air transport services, efficiency of rail services, quality of energy supply, mobile network coverage, security of energy supply, sustainability, environment, use of ICT services, ISO 14001 environmental certificates, as well as the relatively small size of the country, etc. *Weaknesses* include road quality, the high cost of energy, poverty, water and sanitation standards, online public administration services, online participation, the logistical infrastructure, ICT access, lack of coordination between State, municipal and private parties in projects important for economic development, the lack of detailed plans and policy planning documents featuring ICT-coordinated projects with clear performance indicators, the low intensity of infrastructure use and other.

Development opportunities may lie in store for Latvia in terms of infrastructure projects relating to improved connectivity, the optimised use of existing infrastructure, state-of-the-art planning analytics, the application of user-oriented services, the technology-assisted reduction of transport and surveillance costs (drones), flexible organisation of work, real-time data and analytics (reporting, visualisation in support of decision-making), efficient support service (process automation, artificial intelligence), increasing economic value by creating synergy between various sectors, enhancing social value (resilience to natural disasters, pandemics, improved crisis management, real-time traffic management), improving the value of environmental protection (electric vehicles, state-of-the-art water and wastewater technology), mobility as a service, 5G, identification of cross-sectoral benefits, adapting existing infrastructure to other purposes, use of signal-scanning radar, application of private principles in public projects, more proactive application of private/public partnership, etc.

According to the IMF's expert appraisal, the deployment of new technologies in infrastructure projects allows the following positive effect on the economy to be achieved:

- ◇ improve the efficiency of infrastructure use and reduce user costs;
- ◇ enhance the value of economic, social and environmental protection;
- ◇ modify infrastructure demand and create new markets.

Finally, the main *threats* to infrastructure development in Latvia are associated with cyber security, poor project management, lack of digital skills, lack of coordination between certain central/local government bodies and sectors, extreme weather conditions and public distrust of innovation and the Green Deal, etc.

Based on the SWOT analysis carried out, criteria have been developed for the evaluation of infrastructure projects (cf. insert No 2), which is essential for the promotion of competitiveness and for dealing with the consequences of the COVID-19 crisis. The criteria fall into three groups: Group A or *productivity criteria* assess compliance of the planned project's aim and answer the question about what Latvia intends to achieve with the project (e.g. improve quality of highways, increase the intensity of infrastructure use, etc.). The main task of Group B or *efficiency criteria* is to develop a more efficient and more appropriate project selection process to achieve the stated aims of Group A projects (e.g. evaluation of alternative projects, effective management, etc.). However, group C *financial criteria* reflect the priorities of available funding, identifying the possibilities of allocating funding to the relevant initiative (e.g. promoting EU economic, social and territorial cohesion, strengthening resilience, mitigating the negative impact of COVID-19, supporting green and digital transitions, etc.).

Insert 2. Criteria for the assessment of infrastructure projects

Group A: Infrastructure investment project productivity criteria

General directional thrust of infrastructure projects

- i. Meeting of basic socio-economic (and security) needs
- ii. Cost reduction
- iii. Promoting sustainability

Basic criteria of challenge:

1. Increase intensity of infrastructure use
2. Expand consumption of electricity
3. Enhance liquidity of relevant market sector (infrastructure projects may reduce the cost of projects and services in the sector)
4. Reduce cost of infrastructure use
5. Reduce transport emissions
6. Improve inter-sectoral connectivity
7. Improve the operational flexibility of the infrastructure services in terms of responding to the pandemic and other crisis situations, with main focus of economic and social flexibility
8. Reduce the cyber vulnerability of Latvia's critical infrastructure operators
9. Improve resilience to natural disasters

Control criteria

10. Use existing infrastructure for other purposes
11. Avoid creating parallel infrastructure
12. Performance assessed not just in basic sector but in other sectors too
13. In addition to basic objective, new possibilities for using infrastructure to support a low-carbon future

Impact on global index indicators

14. Improve Global Competitiveness Index (critical indicator: quality of roads)
15. Sustainable development objectives (critical indicators: water, wastewater management, infrastructure incl. transport)
16. Improve Energy Trilemma Index (critical indicators: energy price, including sustainability)
17. Improve Global Competitiveness Index (critical indicators: online public administration services, online e-participation, logistical services)

Group B: Infrastructure investment project efficiency criteria

1. Performance of investment projects

- 1.1. Problem situation which the investment project addresses is described and the measurable performance objective clearly defined
- 1.2. Measurable performance indicators defined for investment project, along with deadlines
- 1.3. The project promoter has included a long-term strategy containing measurable performance targets
- 1.4. Investment project has been included in national and sectoral plans
- 1.5. Investment project's performance indicators laid down in national and sectoral plans
- 1.6. Project relates to medium-term fiscal framework

2. Coordinated approach by decision-making bodies at central and local government level

- 2.1. Identify whether investment project affects local government interests. Consultations on investment project held with local authorities
- 2.2. Coordination of project stakeholders assured, with clear allocation of responsibilities

3. Correspondence of investment project with private investor principles, e.g.:

- 3.1. Private investor involved in investment project (incl. co-owner of project promoter is private investor) or there is a private-sector interest in the project
- 3.2. Investment project promoter has been given a public rating
- 3.3. Other factors point to major control of project promoter

4. If PPP model is used to carry out project:

- a. Potential fiscal risks are clearly defined and evaluated
- b. Detailed assessment made for project or optimal variant of PPP selected may ensure sufficient efficiency gains from private management, offsetting additional financial costs relating to private funding, risks and restrictions relating to long-term contract.

5. Assessment of alternative options

- 5.1. Summary of projects to address the problem is available (including projects funded from various sources of finance)
- 5.2. Assessment of alternative options to achieve the project target is provided.

6. Assessment of project costs and risks

- 6.1. Detailed financial, economic, technical and legal analysis carried out during project, risks identified and assessed
- 6.2. Information available on the practical experience of other countries in carrying out comparable projects (total expenditure or registered capital)

Group C: Criteria applicable to compliance of infrastructure investment project with funding donor priorities

Compliance with RRF or other financial instrument criteria:

- i. Promote economic, social and territorial cohesion
- ii. Strengthen resilience
- iii. Mitigate the social and economic impact of the crisis
- iv. Support green and digital transitions

It is recommended that the list of criteria drawn up during the study for assessing infrastructure projects be used by the Latvian government to select infrastructure projects that are essential for facilitating State competitiveness and to tackle the consequences of the COVID-19 crisis. These criteria can also be applied to other infrastructure projects being implemented in Latvia, decisions on which are not taken at government level. The list in question is, admittedly, based on information from the SWOT analysis and is not exhaustive. It may be supplemented taking into account the current developments; however, the

recommendation is to follow with the principle of the set of criteria, checking a project profile for productivity, effectiveness and funding.

Based on polls of 14 Latvian infrastructure corporations and 23 other State enterprises in the energy sector, and on an analysis of market trends, it can be said that the situation in Latvian infrastructure corporations is basically the same as in their State counterparts. On the whole, the situation in Latvia's infrastructure sector, thanks to the nature of regulated business, can be described as comparatively stable (except for sector relating to physical relocation). That said, some projects are being postponed. 54% of Latvian capital companies participating in the survey are applying for EU post-COVID recovery funding . 77% of capital companies believe they can support the economy (mainly by implementing projects that are important to the economy). Heads of infrastructure companies have also made recommendations for making Latvia more competitive: these related to addressing basic infrastructure challenges, in particular the development of transport infrastructure, improving cooperation between public bodies in terms of project implementation, strengthening the infrastructure's digital capacity and adapting to the needs of green transformation, including energy efficiency.

Overall the study concludes that the realisation of projects essential for the sustainable competitiveness of the economy provides a strong boost to economic activity in the short and medium term and contributes significantly to long-term economic development. In order to help Latvia's economy recover in the aftermath of the COVID-19 crisis by supporting economic activity and in order to secure its long-term competitiveness by increasing the production capacity of the region and accelerating the transition to a green and digital economy, it would make sense to implement as a matter of priority those infrastructure projects that address the problems of weak sides in the Latvian infrastructure sector as identified in the study, limit the main risks, and assess the feasibility of implementing projects that provide new potential for the use of infrastructure.

The development of infrastructure company projects must be encouraged when they meet the productivity, effectiveness and funding criteria defined in the study. At the same time, it is also important to provide support to State-owned infrastructure companies that have been significantly affected by the COVID-19 crisis, to ensure that they continue providing essential services to society in the long term.