



OECD Economics Department Working Papers No. 1706

Helping the Austrian
business sector to cope with
new opportunities
and challenges in Austria

**Dennis Dlugosch,
Michael Abendschein,
Eun Jung Kim**

<https://dx.doi.org/10.1787/b5cd3c24-en>

ECONOMICS DEPARTMENT

**HELPING THE AUSTRIAN BUSINESS SECTOR TO COPE WITH NEW OPPORTUNITIES
AND CHALLENGES IN AUSTRIA**

ECONOMICS DEPARTMENT WORKING PAPERS No. 1706

By Dennis Dlugosch, Michael Abendschein and Eun Jung Kim

OECD Working Papers should not be reported as representing the official views of the OECD or of its member countries. The opinions expressed and arguments employed are those of the author(s).

Authorised for publication by Isabell Koske, Deputy Director, Country Studies Branch, Economics Department.

All Economics Department Working Papers are available at www.oecd.org/eco/workingpapers.

JT03492514

OECD Working Papers should not be reported as representing the official views of the OECD or of its member countries. The opinions expressed and arguments employed are those of the author(s).

Working Papers describe preliminary results or research in progress by the author(s) and are published to stimulate discussion on a broad range of issues on which the OECD works.

Comments on Working Papers are welcomed, and may be sent to OECD Economics Department, 2 rue André Pascal, 75775 Paris Cedex 16, France, or by e-mail to eco.contact@oecd.org.

All Economics Department Working Papers are available at www.oecd.org/eco/workingpapers.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

© OECD (2022)

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for commercial use and translation rights should be submitted to PubRights@oecd.org

ABSTRACT

Helping the Austrian business sector to cope with new opportunities and challenges in Austria

The economic shock induced by the COVID-19 pandemic is accelerating structural changes and is posing new challenges. Austria faces wider growth opportunities and new adjustment challenges related notably to two major structural transformations: transition to carbonless growth and the generalisation of more advanced forms of digitalisation. These imply new entries and exits in the business sector, more capital and labour re-allocations and greater geographic mobility of labour. A better activation of the existing talent pool, in particular female, elderly and migrant workers is also needed to address the ageing of the society. In this context public policies should aim at further stimulating business dynamism by facilitating market entries; supporting firms' capacity to invest by helping strengthen their balance sheets; better adapting skills to jobs for all categories of workers; and providing the right incentives to R&D to boost long-term innovation

This Working Paper relates to the 2021 *OECD Economic Survey of Austria*
<https://www.oecd.org/economy/austria-economic-snapshot/>

JEL codes: O11, O12, O14, E22, E24, J01, J21, J24, J26

Keywords: Potential growth, investment, labour market, skill shortages

RESUMÉ

Aider le secteur autrichien des entreprises à s'adapter aux nouvelles possibilités et aux nouveaux défis qui se présentent en Autriche

Le choc économique provoqué par la pandémie de COVID-19 accélère les évolutions structurelles et soulève de nouveaux problèmes. En Autriche, deux transformations structurelles majeures, à savoir la transition vers une croissance neutre en carbone et la généralisation de formes plus avancées de transformation numérique, ouvrent des perspectives de croissance plus larges tout en soulevant des difficultés d'ajustement. Elles supposent de nouvelles entrées et sorties dans le secteur des entreprises, un redéploiement plus poussé des ressources en capital et en main-d'œuvre et une plus grande mobilité géographique des travailleurs. Une meilleure exploitation du vivier de talents dont dispose le pays, en particulier parmi les femmes, les seniors et les travailleurs immigrés, s'impose également compte tenu du vieillissement de la société. Dans ce contexte, les politiques publiques devraient viser à : accroître le dynamisme des entreprises en facilitant l'entrée de nouveaux acteurs sur le marché ; renforcer la capacité d'investissement des entreprises en les aidant à consolider leur bilan ; améliorer l'adaptation des compétences aux emplois pour toutes les catégories de travailleurs ; et offrir des incitations à la R-D propres à stimuler l'innovation à long terme.

Ce Document de travail se rapporte à l'Étude économique de l'OCDE de l'Autriche 2021
<http://www.oecd.org/fr/economie/autriche-en-un-coup-d-oeil/>

JEL classification: O11, O12, O14, E22, E24, J01, J21, J24, J26

Mots Clés: Croissance potentielle, investissement, marché du travail, pénurie de compétences

Table of contents

Helping the Austrian business sector to cope with new opportunities and challenges in Austria	6
COVID-19 induced structural change, adaptation to climate change and population ageing pose challenges to the Austrian growth model	6
COVID-19 will accelerate structural change	6
The Austrian growth model has proven successful	7
Within-sector improvements are a key driver for this success	8
Fostering Austria's digitalisation potential	9
Adapting to climate change will transform the business sector	11
The population is ageing	12
Adapting business framework conditions to promote productivity growth, an efficient allocation of resources and investments	14
Productivity growth before the pandemic has slowed down	14
More vibrant service markets would spur productivity growth	17
Austria has a well-functioning insolvency and restructuring system	21
Stimulating the adoption of key digital technologies	22
Relatively low business dynamism constrains the diffusion of digital technologies	22
The adoption of digital technologies lags behind innovation leaders	25
Better access to high-speed broadband and improving digital skills promise large gains	27
Strengthen digital security	30
Reinvigorating investments for a resilient recovery	31
Investment in intangible assets lags behind top performers	31
Corporate balance sheets have weakened	33
The capital structure of Austrian businesses risks constraining investment	35
Tax incentives to stimulate equity financing	39
Making the most out the available pool of talent	41
Structural change will require a more efficient allocation of labour	41
Ageing risks exacerbating labour market mismatches	42
Underutilised labour resources need to be better mobilised	44
Upgrading and adjusting skills	48
A lack of geographical mobility impedes a better allocation of workers to jobs	50
Fostering knowledge creation and R&D to boost innovation	54
Innovative activity is concentrated in well-established sectors but not diversified enough	54
References	58

Tables

Table 1. Results for empirical investment models for different firms' size	39
Table 2. Effective average and marginal corporate tax rates for different investment projects and financing options	40

Figures

Figure 1. Labour productivity is high	7
Figure 2. Productivity-enhancing reallocation is low	8
Figure 3. Job tenure of employees is high	9
Figure 4. There is room for progress in digitalisation	10
Figure 5. The share of ICT investment is elevated but below the top-performers	10
Figure 6. The pandemic has boosted teleworking	11
Figure 7. Productivity growth set to be the main driver of GDP growth	13
Figure 8. Productivity growth has slowed down	15
Figure 9. More productive industries grew less than other industries	16
Figure 10. Austrian competition rules are restrictive in several market segments	18
Figure 11. Business regulations are in line with OECD averages but professional service restrictions remain high	20
Figure 12. Business dynamism is lagging behind	23
Figure 13. Austrians display high entrepreneurial self-confidence but limited willingness to start a business	24
Figure 14. Early and later stage venture capital is underdeveloped	25
Figure 15. Digitalisation of businesses lags behind innovation leaders	26
Figure 16. Access to high-speed broadband needs to be improved	28
Figure 17. Estimated productivity gains from higher adoption to key ICT technologies	29
Figure 18. Adults' skills and ICT training in firms lag behind top performers	30
Figure 19. Digital security risk management of smaller firms needs to be improved	31
Figure 20. Aggregate labour market performance and social transfers were upholding social cohesion before the pandemic	32
Figure 21. Investments have risen fastest in manufacturing sectors and intellectual property assets	33
Figure 22. Support measures have upheld profitability and contained a faster rise of corporate debt	34
Figure 23. Bank loans are the most important form of external credit for small- and medium-sized firms	36
Figure 24. Corporate leverage in Austria is elevated and the stock market is less developed	38
Figure 25. Set of jobs available continues to change	42
Figure 26. Labour supply mismatches have been increasing	43
Figure 27. Gender differences in retirement incomes and salaries are high	44
Figure 28. Labour tax wedges are high	45
Figure 29. Employment gaps are sizeable for disadvantaged groups	47
Figure 30. Austria dedicates considerable public resources to life-long learning, but participation by the high-skilled remains average and participation by the low-skilled is low	49
Figure 31. Inter-regional migration and regional economic conditions: Austria in a comparative perspective, 2015-2018	52
Figure 32. Policy reform proposals to foster the responsiveness of inter-regional migration to local economic conditions in Austria	53
Figure 33. R&D intensity is high and R&D tax incentives generous	55
Figure 34. R&D activity specialised in medium to low R&D intensive industries	56

Boxes

Box 1. Restructuring in the Austrian car cluster	12
Box 2. The role of private foundations	17
Box 3. Banking sector resilience and expected insolvencies	37
Box 4. Investment of smaller firms is more sensitive to higher leverage	38
Box 5. Individual training accounts in France	50
Box 6. Re-evaluating housing policies	50
Box 7. Inter-regional migration and labour market dynamism in Austria	51

Helping the Austrian business sector to cope with new opportunities and challenges in Austria

By D. DLUGOSCH, M. ABENDSCHEIN and E. KIM¹

COVID-19 induced structural change, adaptation to climate change and population ageing pose challenges to the Austrian growth model

COVID-19 will accelerate structural change

The economic shock induced by the COVID-19 pandemic will accelerate structural change and pose new challenges. Lockdowns and other sanitary measures gave a big push to the use of digital technologies and act as a catalyst for further digitalisation. Additionally, preferences of consumers, workers and firms are likely to change. More remote work, greater use of automation and e-commerce are just some examples of possible results of such shifts in consumer preferences (Chernoff and Warman, 2020; OECD, 2021a).

The adaptation to these shifts will likely lead to durable adjustments to the Austrian growth model. On top of that, adapting to climate change and ageing will continue to shape the evolution of long-term growth. Stricter national and international commitments to environmental sustainability will be more demanding for business activities, but will also create new opportunities. The central conversion concerns greenhouse gas emissions. Regulations will be tightened and additional green investments will be needed. Higher carbon prices and higher costs of carbon-intensive inputs are expected to generate a cascade of quantity and price adjustments.

This chapter analyses the impact of these structural transformations on the Austrian growth model and discusses how public policy can manage these challenges to maintain robust, sustainable and inclusive economic growth. It is structured around the factors that shape potential output, capital and labour markets as well as innovation. After examining some relevant strengths and weaknesses of the Austrian economy, it focusses on five major policy challenges: adapting business framework conditions to improve productivity growth, an efficient allocation of resources and investments; making the most out of digitalisation; securing firms' capacity to invest even though COVID-19 may have weakened balance sheets; unleashing the full potential of the work-force by better integrating available talent and providing the right incentives to R&D to boost innovation.

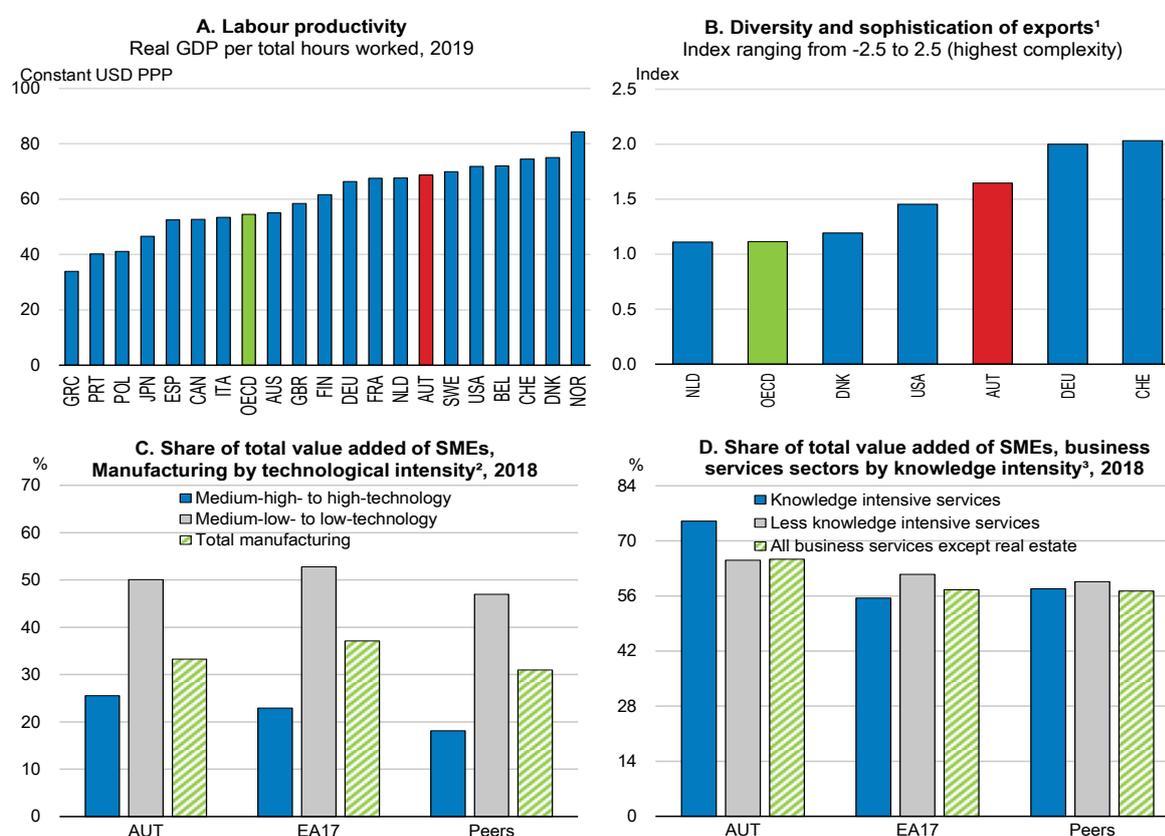
¹ Dennis Dlugosch is an Economist on the Austria-Turkey desk of the OECD Economics Department. Michael Abendschein is a Junior Economist in the Structural Surveillance Division of the OECD Economics Department. Eun Jung Kim works as a Statistician in the OECD Economics Department. The authors would like to thank Isabelle Jourmard for guidance through the preparation of this paper. Álvaro Pereira, Isabell Koske, Patrick Lenain, Rauf Gönenç, Peter Höller and numerous other colleagues from the OECD have provided comments and suggestions. The paper has also benefited from very helpful comments and suggestions by members of the OECD Economic and Development Review Committee, the Austrian Federal Ministry of Finance, the Austrian Federal Ministry of Digital and Economic Affairs, the OeNB, the Austrian Chamber for Labour (AK), the Austrian Chamber of Commerce (WKÖ), the Institute of Higher Studies, WIFO and other experts from Austria. The authors are grateful to Heloise Wickramanayake for editorial assistance.

The Austrian growth model has proven successful

Austria has a technologically sophisticated and export-oriented economy with a comparatively high level of labour productivity (Figure 1 Panel A and B). The share of manufacturing industries is one of the highest in the OECD. The contribution of market services to total output is roughly equal to the OECD average. However, ICT industries play a smaller role than in other OECD countries and contribute only around 4% to total value added.

A vibrant small- and medium-sized enterprise (SME) culture is an important feature of the Austrian economy. As analysed in-depth in the 2019 OECD Economic Survey of Austria (OECD, 2019), SMEs, in particular medium-sized firms, are more export-orientated than in other OECD countries and account for higher shares of value added in medium-high and high-technology manufacturing sectors and knowledge-intensive service sectors (Figure 1 Panel C and D). The labour productivity of the manufacturing sectors is one of the highest in the OECD (OECD, 2019). Many Austrian SMEs are often key players or innovation leaders in highly specialised and niche international markets (Schneider, 2014).

Figure 1. Labour productivity is high



Note: Peer countries is the unweighted average of Germany, Switzerland, Denmark, Sweden and the Netherlands. OECD is the unweighted average of available OECD countries depending on the database.

1. The economic complexity index measures the diversity of an economy's export and their sophistication. The index is net of the sophistication of imported inputs (see Hausmann and Hidalgo 2014). Unweighted average of available countries for the OECD aggregate.

2. It consists of the following NACE Rev.2. sections: (1) medium-high- to high-technology manufacturing sectors refer to the sections 20, 21, 26 and 27 to 30, (2) medium-low- to low-technology sectors refer to other manufacturing sections.

3. It consists of the following NACE Rev.2. sections: (1) knowledge-intensive services refer to the sectors 50 to 51, 69 to 71, 73 to 74, 78 and 80. (2) less knowledge-intensive services refer to the sectors 45 to 47, 49, 52, 55 to 56, 77, 79, 81, 82 and 95. Business services exclude both real estate and financial services.

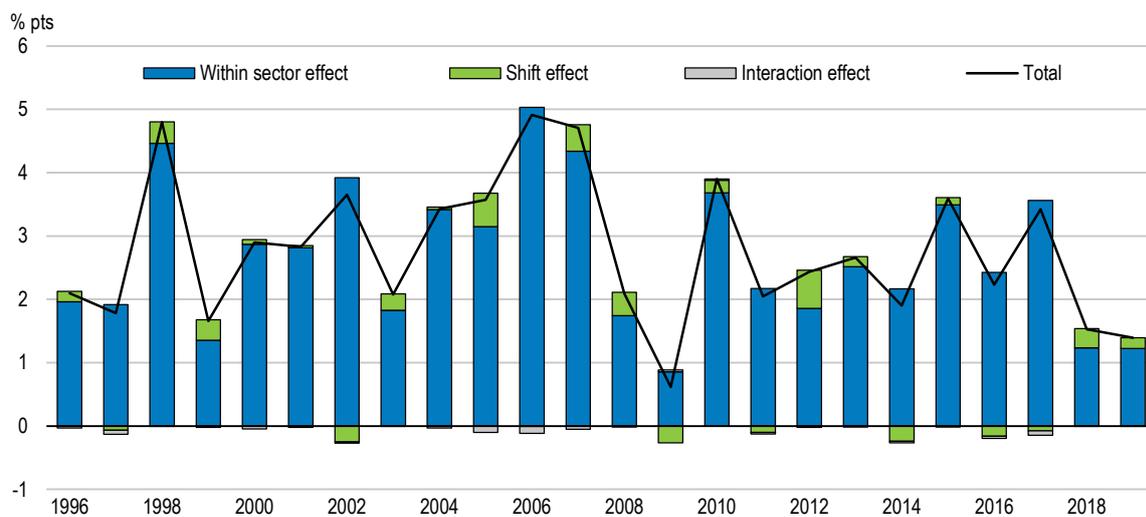
Source: OECD (2021), OECD Productivity Statistics (database), OECD Structural and Demographic Business Statistics (database) and the Observatory of Economic Complexity.

Within-sector improvements are a key driver for this success

Steady productivity gains within sectors constitute a key strength of the Austrian economy (Schneider, 2014). As opposed to other OECD countries, resource allocation from less to more productive sectors contributed only little to aggregate productivity growth (Figure 2; Molnar and Chalaux, 2015; Fenz et al., 2020). However, the pandemic will entail some structural transformation (OECD, 2021a) and thus challenge this growth model.

Figure 2. Productivity-enhancing reallocation is low

Contribution to aggregate gross value added over hours worked, percentage points



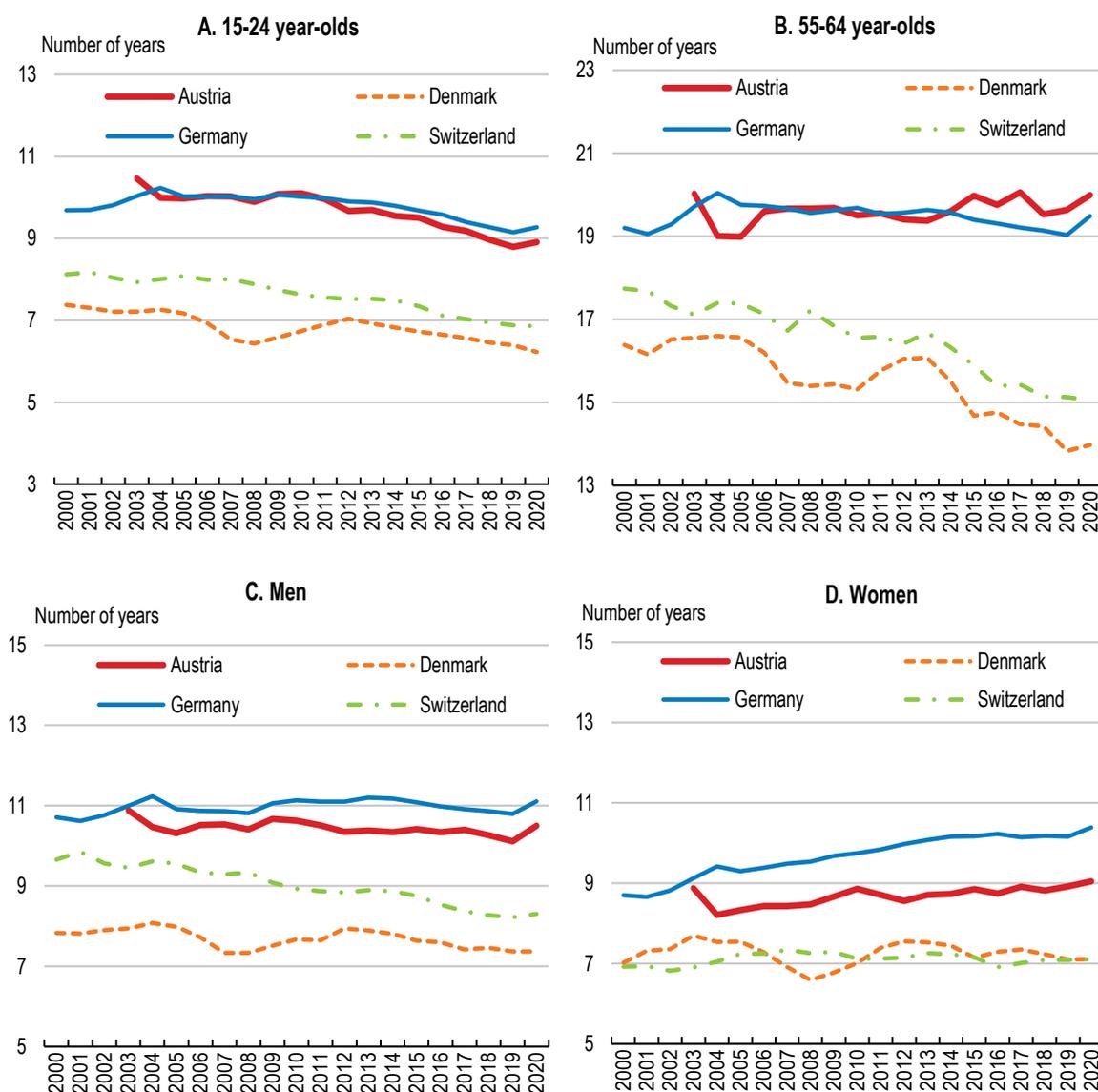
Note: Based on a shift-share analysis (e.g. Kierzenkowski et al., 2018). Growth in gross value added over hours worked is decomposed into three different components: “within sector effect” representing the intra-industry productivity growth, “shift effect” capturing the shift in labour between sectors with different productivity levels and “interaction effect” representing the effect of labour reallocation across sectors with different productivity growth rates. The sum of effects may not completely correspond to the actual aggregate growth of gross value added over hours worked.

Source: OECD calculations based on OECD (2021), OECD Annual National Accounts database.

Steady productivity tends to be based on relatively long employment spells (Figure 3). Austria’s business culture and practices draw on the long-term stability of business organisations, employment relations and living places. Owner-manager families’ accumulated knowledge in specific technological areas, together with employees’ firm-specific human capital built-up through long-term tenures foster highly competent “hidden champions” (OECD, 2019).

Figure 3. Job tenure of employees is high

Average job tenure of employees, by age cohort and gender



Note: Job tenure is measured by the length of time workers have been in their current or main job or with their current employer.
Source: OECD Labour Force Statistics (database).

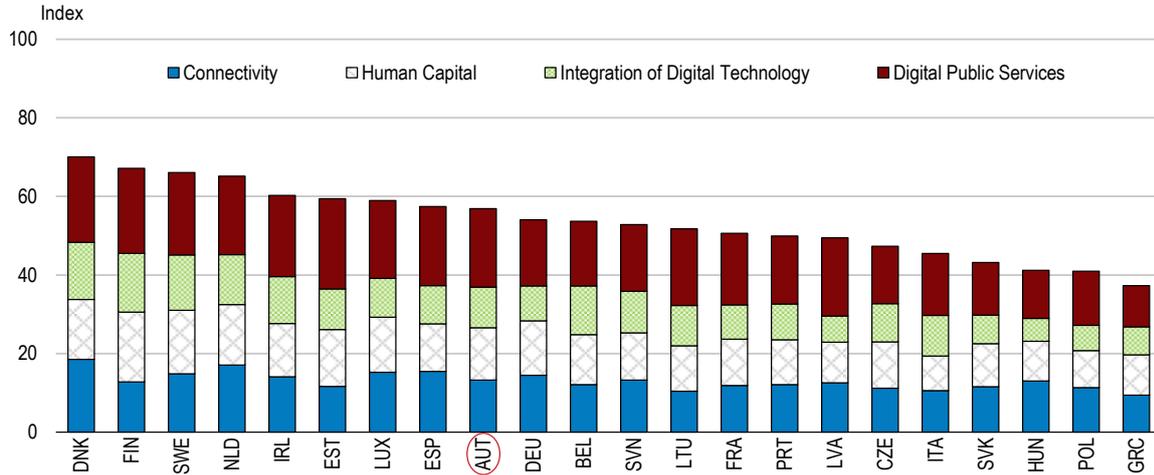
Fostering Austria's digitalisation potential

Despite its relatively high income per capita, Austria experiences a lag in digitalisation. It ranks 10th in the EU according to a synthesis indicator developed by the European Commission, and is considerably less digitalised than peer countries (Figure 4). The lag in digitalisation to the top-performing countries mirrors aggregate ICT investment. The share of investment devoted to IT equipment and purchases of software and databases, at around 18% in 2017, was elevated but below that of the top performers (Figure 5). Further, it only increased by roughly 4 percentage points as compared to 1995, while the share grew by

around 7 percentage points in Switzerland and France and more than 13 percentage points in the Netherlands.

Figure 4. There is room for progress in digitalisation

Digital economy and society index, scale from 0 to 100, 2021

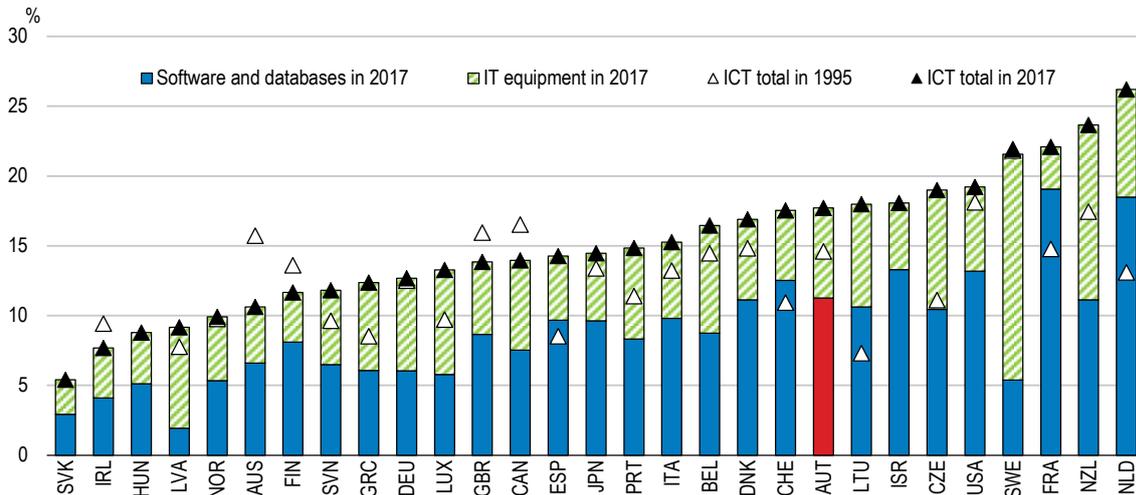


Note: A composite overall index is calculated as the weighted average of the four main dimensions: connectivity (25%), human capital (25%), integration of digital technology (25%) and digital public services (25%).

Source: European Commission (2021), Digital Economy and Society Index, <https://digital-agenda-data.eu/>.

Figure 5. The share of ICT investment is elevated but below the top-performers

Total economy, current prices, as a percentage of total non-residential investment

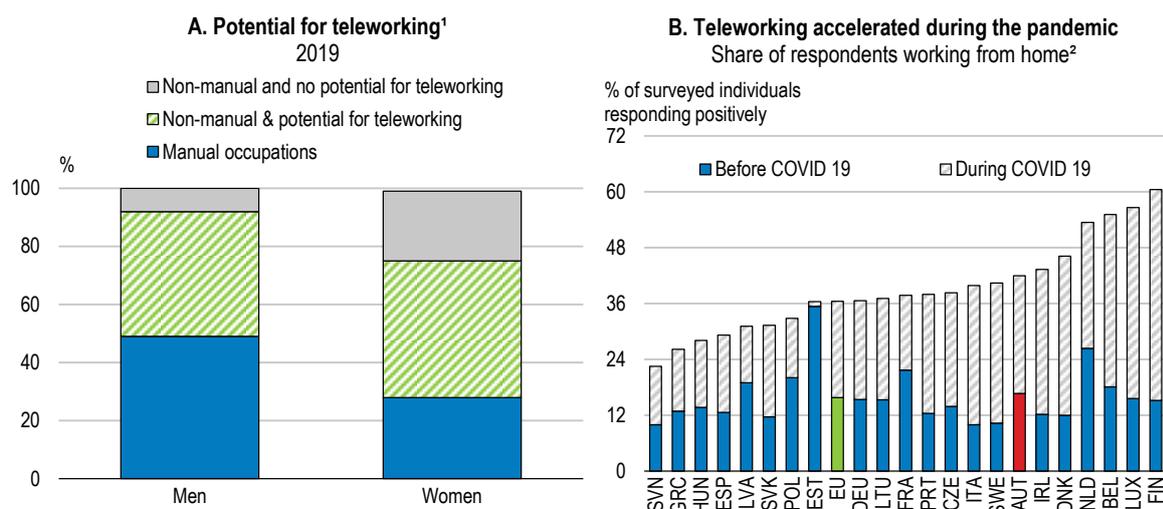


Note: Data on ICT, software and databases and IT equipment for Denmark, Japan, Latvia, Norway, Portugal and Spain correspond to 2016. Data on IT equipment for Sweden correspond to 2017, data for software and for total ICT correspond to 2016. Data on IT equipment for Greece correspond to 2017, data for software and for total ICT correspond to 2015. Data on software and databases for Poland correspond to 2015. Source: OECD Compendium of Productivity Indicators 2019 and OECD National Accounts database.

The COVID-19 pandemic has provided a much-needed push for digitalisation in Austria. Lockdowns and other measures to avoid physical interactions have increased digital activity through social media and

communication platforms of households. Government incentives during the pandemic and institutional innovations, including collective agreements facilitating teleworking, have helped to kick-start the catching-up process and should continue, if more supportive conditions are put in place. Teleworking and e-commerce activity have increased the priority of digitalisation for many Austrian firms (EY, 2021). While before the pandemic around 15% of all employees were working from home, a bit more than 40% of all dependent employees did so during the pandemic (Figure 6). The potential for teleworking is even higher than that (Figure 6). The share of firms which believe that digitalisation does not provide a significant potential for their businesses was only 3%, whereas it stood at 20% in 2018 (EY, 2021).

Figure 6. The pandemic has boosted teleworking



1. Based on the labour force survey conducted by Statistik Austria and WIFO calculations. The sum of shares do not correspond to 100 % for Women due to small differences decimals.

2. Respondents were asked to answer a question: "Have you started to work from home as a result of the COVID-19 situation?". "During COVID 19" requires careful interpretation as the period following the survey is not taken into account. Unweighted average for the EU aggregate.

Source: J. Bock-Schappelwein, "Welches HomeOffice-Potential birgt der österreichische Arbeitsmarkt?", WIFO Research Briefs 4/2020 and Eurofound (2020), Living, working and COVID-19 dataset.

Adapting to climate change will transform the business sector

Faster transition to climate neutrality is expected to foster the supply of related goods and services. Both local demand dynamics and international market share gains are expected to contribute. Austria's Ministry of Environment has estimated that for example, for every million Euro of government help for building rehabilitations and insulations, five net new jobs are created. Knowledge- and skill-formation dynamics and spill-overs may play an even more important role.

Prospects are particularly promising in renewable energy clusters. Austria is a world leader in this area, especially in hydropower and in bio energies. Austrian designers and producers of related goods and services start to face highly supportive domestic and international market conditions. Their capacity to seize ensuing growth and job creation opportunities, including in privately owned small-size niche firms, will contribute to the aggregate supply performance of the economy. Technological start-ups should be able to mature into fully-fledged business organisations in domestic and international markets. With the recently passed "Renewables Expansion Law" Austria has committed to a strong growth path in renewable energies. The business environment should support this path.

There are also adjustment challenges in carbon-intensive sectors, i.e. industrial activities using emission-intensive processes or inputs, or producing goods and services servicing emission-intensive activities.

Austria hosts a wide range of such sectors, including iron and steel, stone and earth, paper and pulp, refineries and petrochemicals. They employ large numbers of workers and may be the principal employer in certain regions. Under stricter emission regulations and higher carbon prices, they can either renew their production processes, or scale down their operations. In turn, synergies may arise between emission-saving endeavours and digitalisation. This is exemplified by the optimisation of fertiliser use in Austrian agriculture with the help of digital management tools. All in all, both investment needs and skill adjustments are bound to be large, as illustrated by the ongoing transformations in the car cluster (Box 1).

Box 1. Restructuring in the Austrian car cluster

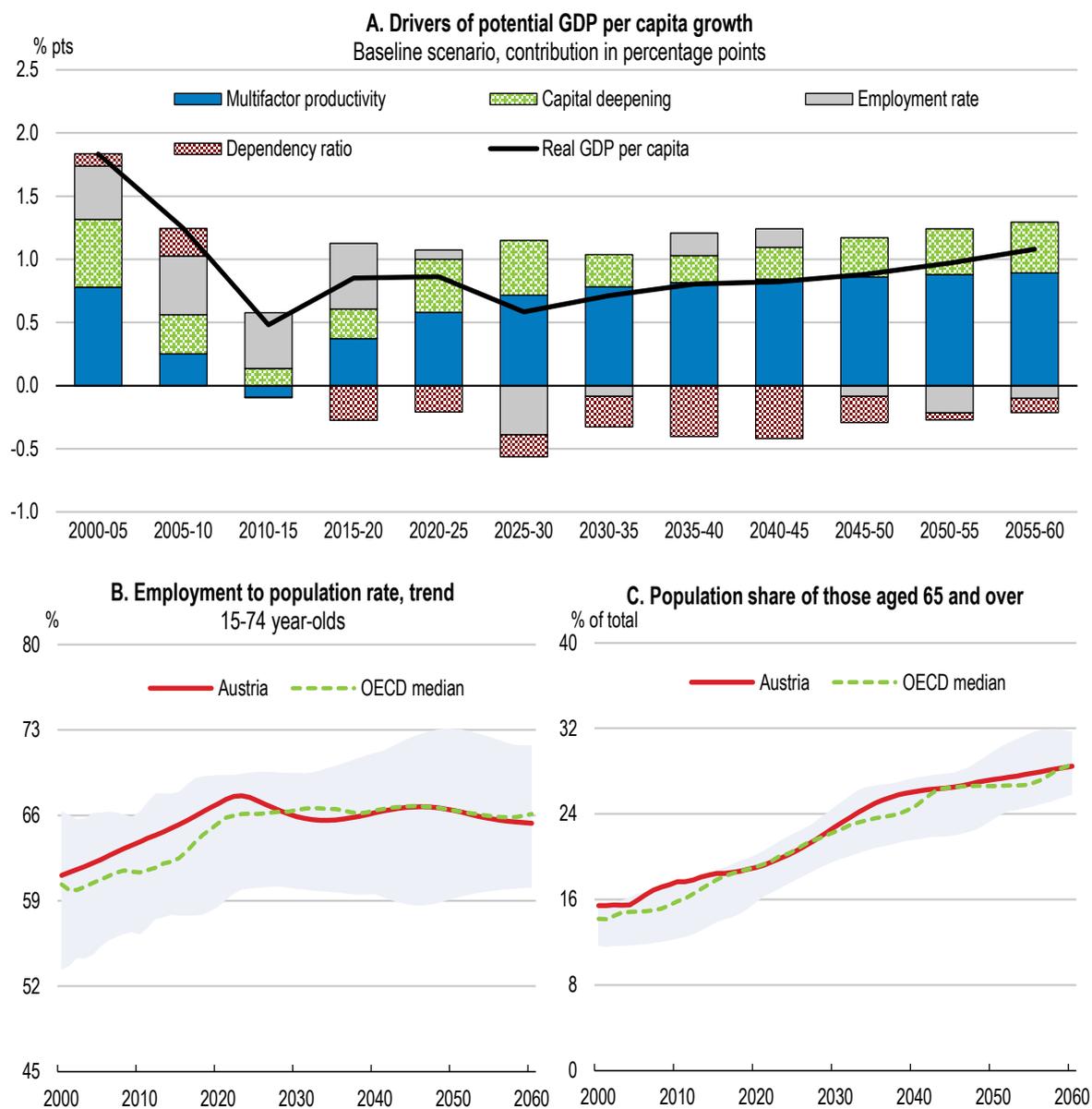
The transition to a more effervescent business environment is exemplified by Austria's large car cluster. The sector employs nearly 10% of total manufacturing employment and is specialised in the production of high-quality car and car engine parts. It works principally, but not only, for German global car brands. The ongoing transition to electrical traction is overhauling the entire value chain. It is reducing demand for mechanical parts and boosting demand for electro-mechanical and electronic components. Several Austrian firms are well-resourced and are already positioning themselves in these new niches. Projections suggest that Austria's total value-added in the sector will grow through 2030 and beyond. However, part of the sector's know-how, production capacity and skilled labour is turning obsolete. Winners and losers are different people and firms, and are located in different regions. Policymakers will need to cater, in the period ahead, to the specific co-operative research and development project proposals of emerging businesses and to their specific vocational training needs. They will also have to accompany the adjustments in the shrinking parts of the sector. Upcoming technologies such as hydrogen engines and synthetic fuels are also in sight and Austria invests in these new frontiers. For example, the city of Graz is planning to put the first hydrogen buses into operation. Synthetic fuels are being investigated in firms using or producing heavy commercial vehicles. New business opportunities and restructuring are emerging in the value chains.

Sources: Streicher et al. (2020); Fraunhofer Austria (2021); Friesenbichler et al. (2021); Keil (2021); McKinsey (2021).

The population is ageing

Advances in medicine and healthier lifestyles lead to longer and healthier lives. While this development increases happiness and well-being, ageing also constrains the growth of the working-age population and thus has a direct negative effect on output growth. Fertility rates declined from around 2.7 births per woman in 1960 to 1.5 in 2020. Life expectancy rose at the same time from 67 years for new-borns in 1960 to more than 80 years in 2020. Going forward, the share of the working-age population, the 15-74 years old according to OECD's new definition, in the total population is projected to decrease from around 76% in 2020 to around 69% in 2060 (Figure 7, Panel B and C).

Figure 7. Productivity growth set to be the main driver of GDP growth



Note: In Panels B and C, the shaded area denotes the 25th to 75th percentile range of available data for OECD countries.

Source: OECD calculations based on OECD Economics Department Long-term Model and United Nations (2019), World Population Prospects: The 2019 Revision, Online Edition.

The smaller and older working-age population will intensify pressures on labour markets. Ageing limits the talent pool and exacerbates existing skill shortages. Through its relationship with health, ageing has a further constraining effect on the potential workforce. The share of 80-year olds will double by 2045. It will amount to around 15% of the total population by 2060. Rising female participation has offset some of the negative ageing effects in recent decades, but without reforms that further incentivise the uptake of work by women, these gains are projected to be exhausted by the end of the 2020s. If well managed, labour migration can alleviate the negative effects of ageing. Ageing requires a better allocation of workers across occupations and firms to compensate the impact of the declining workforce on potential growth. This needs to be combined with measures to address skills mismatches.

The aggregate productivity effects of ageing are undetermined. A smaller workforce and an intensified search for suitable talent may push employers to be more innovative in organising work and may thus lead to higher productivity (Goodhart and Pradham, 2020). Ageing may also come with a change in tastes and preferences and thus expand existing markets or create new business opportunities for entrepreneurs (Lewis and Ollivaud, 2020). However, ageing could weigh on multifactor productivity growth (Aiyar et al., 2016) through a reduction in innovative capacity resulting from a decline in up-to-date skills, knowledge and adaptability (Dixon, 2003; Aksoy et al., 2015).

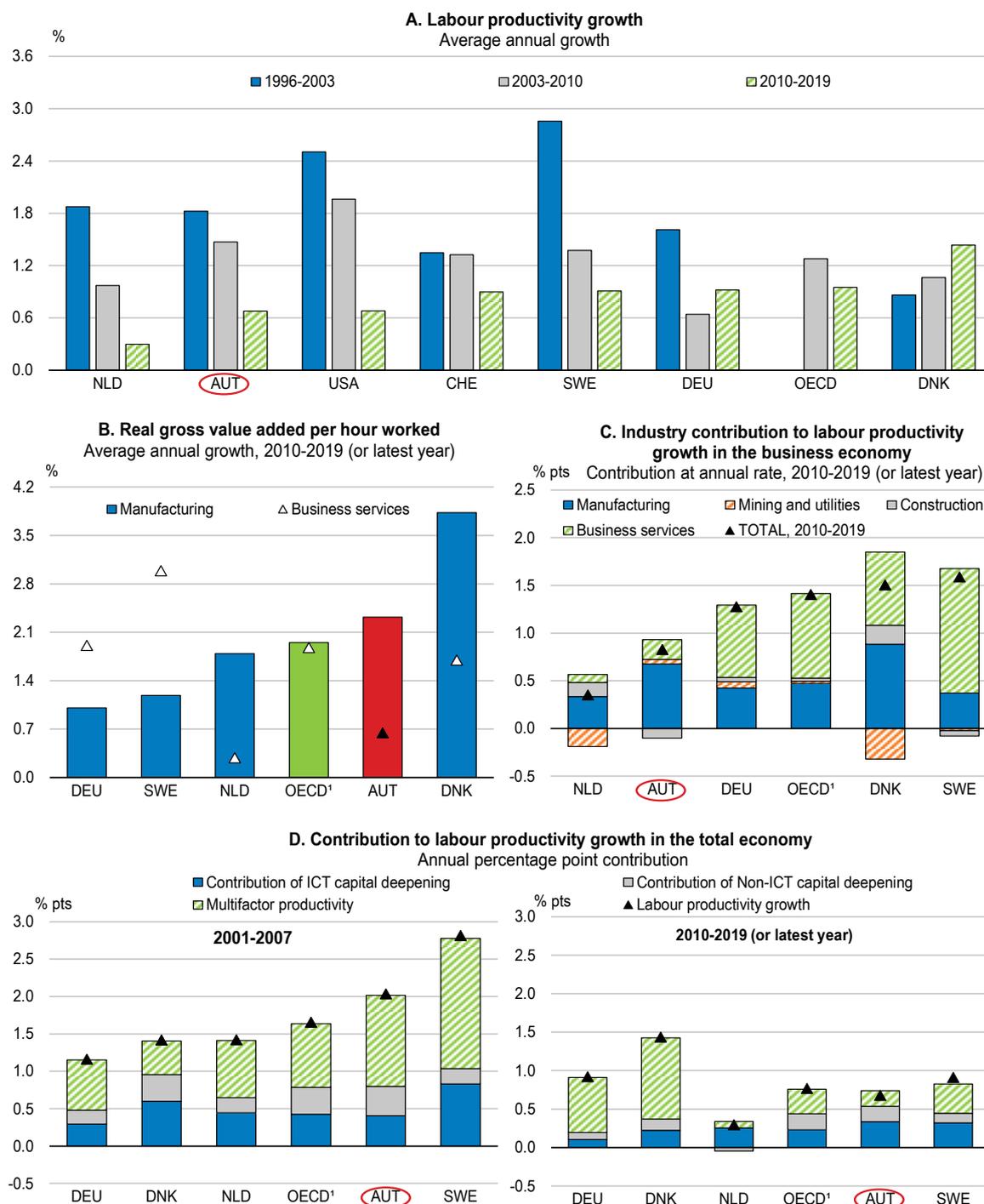
Adapting business framework conditions to promote productivity growth, an efficient allocation of resources and investments

Productivity growth before the pandemic has slowed down

While the level of productivity is high, productivity growth, as in many other OECD countries, has been disappointing since the Global Financial Crisis (Figure 8). A major factor in explaining this slowdown relates to the increasing share of service sectors (European Commission, 2020; Fenz et al., 2020). The productivity growth of Austrian service sectors over the past decade was one of the weakest in the OECD (Figure 8). This results, at least partly, from relatively rigid regulation of professional services. While preserving high service standards and consumer safety norms should continue to be a high priority, an increase of competition in service sectors would benefit productivity (OECD, 2019).

There is considerable heterogeneity in productivity across service sectors. Sectors like financial and insurance activities are highly productive in Austria. The more labour-intensive service sectors, in particular accommodation and food services, lag behind (Fenz et al, 2020). However, the relatively low productivity growth in tourism activities should not necessarily be interpreted as a weakness. Room for productivity improvements in these sectors appears limited given that there is only some leeway for increasing output with the same number of inputs while preserving high quality standards. In international rankings of the competitiveness of tourism, e.g. the World Economic Forum's tourism competitiveness ranking, Austria ranks favourably.

Figure 8. Productivity growth has slowed down

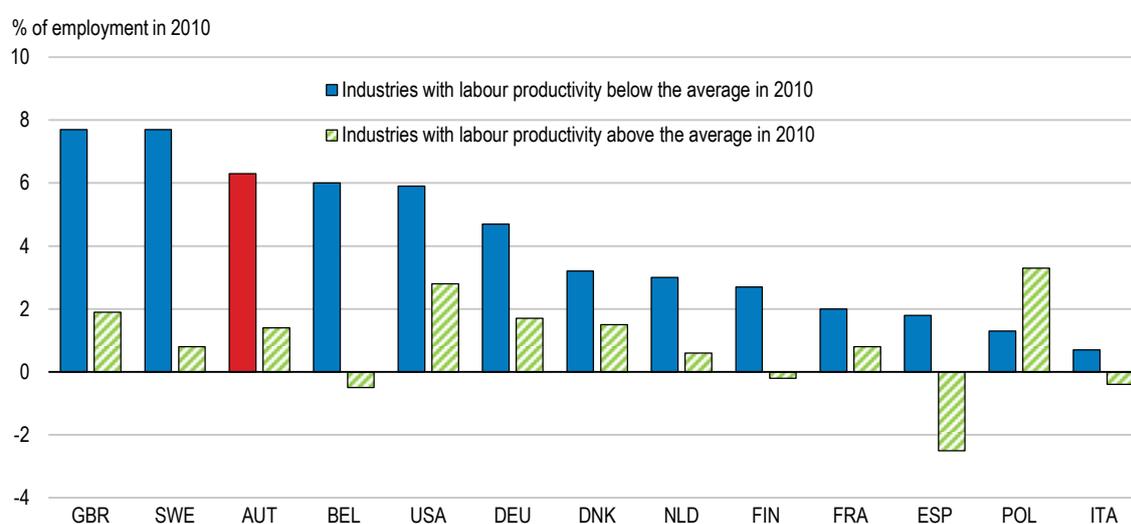


Note: In Panel A, labour productivity refer to GDP per hour worked at constant prices (USD, 2015 PPPs). In Panel B and C, business services refer to business services sector excluding real estate. Unweight 1. Unweighted average for the OECD aggregate.
Source: OECD (2021), OECD Productivity Statistics (database) and OECD (2021), OECD Compendium of Productivity Indicators (online Webbook).

The reallocation of resources to more promising sectors and firms tends to be low (Figure 9). The efficiency of resource allocation can be evaluated by comparing employment growth of more and less productive sectors. While business sectors that had a below average level of productivity in 2010 saw an increase in their employment of around 6%, employment in sectors with above average productivity only grew by 1.4%. Analysis based on more granular data, e.g. from the OECD's DynEmp Database, confirms this finding but also suggests that the impact of reallocation is heterogeneous across sectors (OECD, 2019c). While its impact on productivity is positive and significant for non-financial market-services, it is negative for manufacturing sectors (Peneder and Prettnner, 2021). Long employment spells, low levels of regional mobility but also, possibly, a high coverage of workers in centralised collective bargaining systems may be factors that constrain a faster pace of reallocation (Huber et al., 2017).

Figure 9. More productive industries grew less than other industries

Change in total employment, 2010-17 or latest year



Note: Industries are separated into two groups: below and above the average of labour productivity in 2010. Average labour productivity is measured as gross value added per person employed. Data for France, Germany, Italy, Poland, Sweden and the United States refer to the period 2010-16. See the source for more details.

Source: OECD (2019), OECD Compendium of Productivity Indicators 2019.

Foundations based on the 1993 Private Foundation Act constitute a peculiarity of the Austrian economy (see also Box 2). Foundations were granted certain tax advantages upon their introduction and were intended to counteract capital outflows and facilitate business transfers, in particular across the numerous small- to medium-sized family businesses. Over the years, foundations lost most of their tax advantages. Distributions from a foundation are taxed with a 27% withholding tax.

After various reforms of the Private Foundation Act, the governance of foundations appears overly restrictive. A series of leading decisions of the Austrian Supreme Court have brought relatively far-reaching curtailments of beneficiaries' rights of influence, supervision and control (Österreichischer Stiftungsverband, 2021). A foundation's initial purpose may be in contradiction with the business objectives and needs the foundation is holding or building up. Potentially, this could hamper firms' upscaling and growth. To what extent this rather rigid framework of private foundations constitutes an impediment to business dynamism requires an in-depth analysis. This would provide the necessary information base and thus complement the reform agenda on "making the private foundation law more attractive in an

international comparison while strengthening the position of beneficiaries” of the current government programme.

Box 2. The role of private foundations

The 3 014 private registered foundations hold interest in around 10 200 companies, which account for 350 000 workers, roughly 10% of total employment. The 1993 Private Foundation Act created the legal base for private for-profit foundations, which are legal entities without a proprietor. This complemented legislative rules for non-profit foundations, which have been in place in Austria before, as in many other OECD countries.

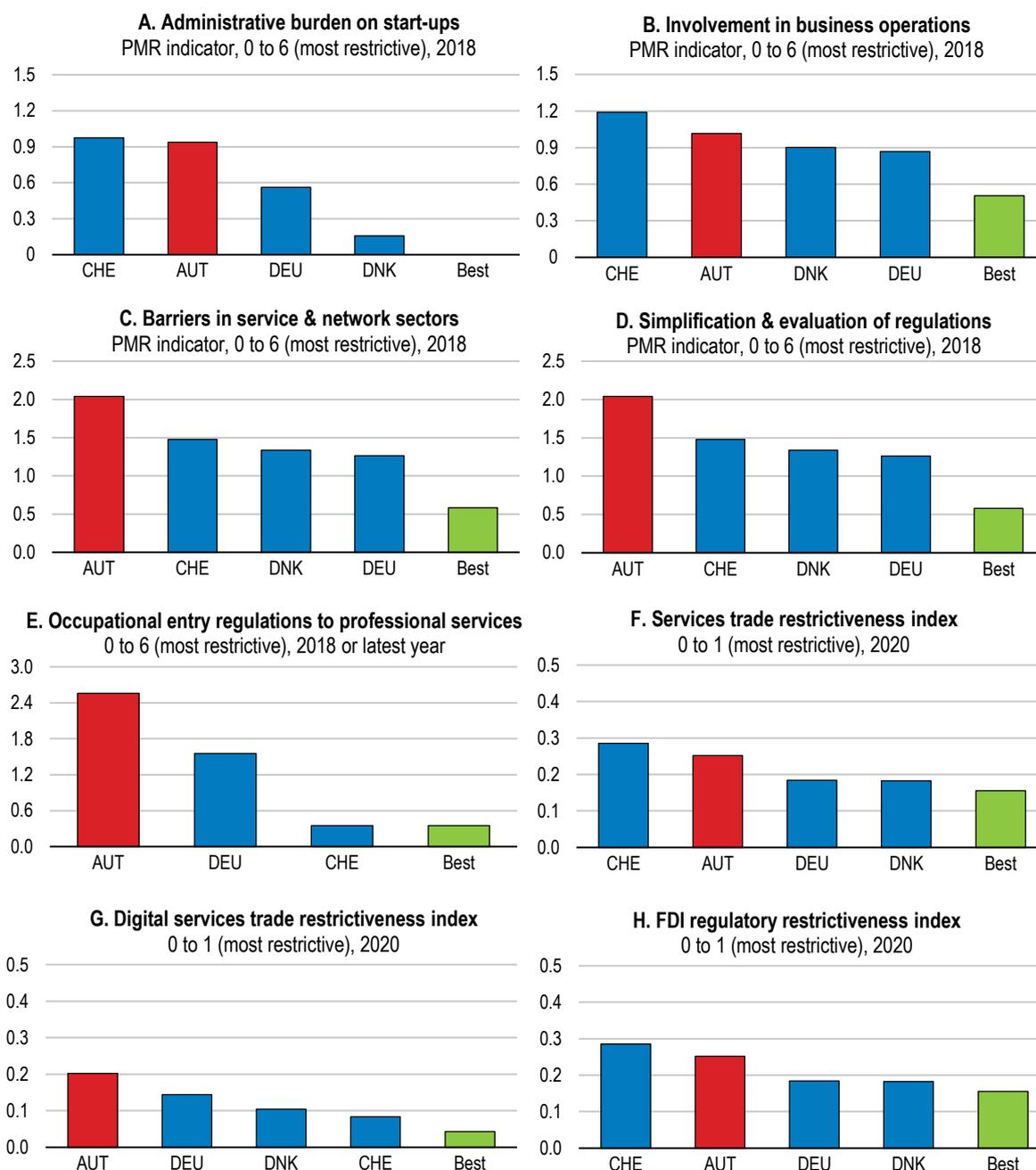
At their introduction, foundations were granted certain tax advantages. The asset transfer to a foundation was taxed at a reduced inheritance and gift tax flat rate. Changes in Austria’s tax system, in particular the abolishment of inheritance and gift taxes in 2008, have reduced the attractiveness of private foundations. Asset transfers to private foundations are subject to a transfer tax of 2.5% and in addition –if applicable- to land transfer taxes. While the income of private foundations is subject to corporate income taxes, income in the form of domestic and foreign dividends are exempt from corporate taxation. Distributed donations from a foundation to a beneficiary are subject to a withholding tax of 27.5% (Österreichischer Stiftungsverband, 2021).

A main motivation of introducing private foundations was to provide a highly flexible framework for private wealth planning, in particular for family-owned businesses to ensure business continuity within the family (Österreichischer Stiftungsverband, 2021). The founder enjoys great flexibility in setting up the foundation deed and in determining the purpose of the foundation, which is then implemented and executed by the Board of Directors of the foundation. Private foundations created for the benefit of a natural person can be set up for a maximum period of 100 years, which can be extended by the ultimate beneficiaries for another 100 years. A private foundation allows to keep the business within the family, i.e. protects assets within the family, and can help to avoid split-ups in case successors disagree about the future of the business (Österreichischer Stiftungsverband, 2021). Similarly, foundations can also be used to withhold business assets from heirs and thus protect the assets from the family. A further motivation was to counteract an outflow of capital and subsequent employment and to attract foreign capital (AK, 2009).

More vibrant service markets would spur productivity growth

Overall regulatory barriers to competition are broadly in line with the OECD average, but are higher than in the peer countries (Figure 10 and Figure 11). The 2018 OECD review of product market regulations underlines that regulations in several areas are close to international best practice, notably the governance of state-owned enterprises, regulations in e-communication sectors but also the assessment of impacts of new reforms on competition. While administrative barriers to start-ups are overall similar to the OECD average, they pose a consistent hurdle and lifting remaining barriers would help to increase business dynamism.

Figure 10. Austrian competition rules are restrictive in several market segments



Note: Data in Panel E are based on Von Rueden and Bambalaitė (2020). The occupational entry regulations (OER) indicator is highly correlated with the PMR indicator for the professional services, resulting from the inclusion of the information embedded in the 2018 vintage of the PMR indicator. The sample of the analysis covers 18 OECD countries only.

Source: OECD (2020), OECD 2018 Product Market Regulation Database; Von Rueden, C. and I. Bambalaitė (2020), "Measuring occupational entry regulations: A new OECD approach", OECD Economics Department Working Papers, No. 1606; OECD (2021), "Service Trade Restrictions Index by services sector" and "Digital Services Trade Restrictiveness Index" in OECD Industry and Services Statistics (database); and OECD FDI Regulatory Restrictiveness Index (database).

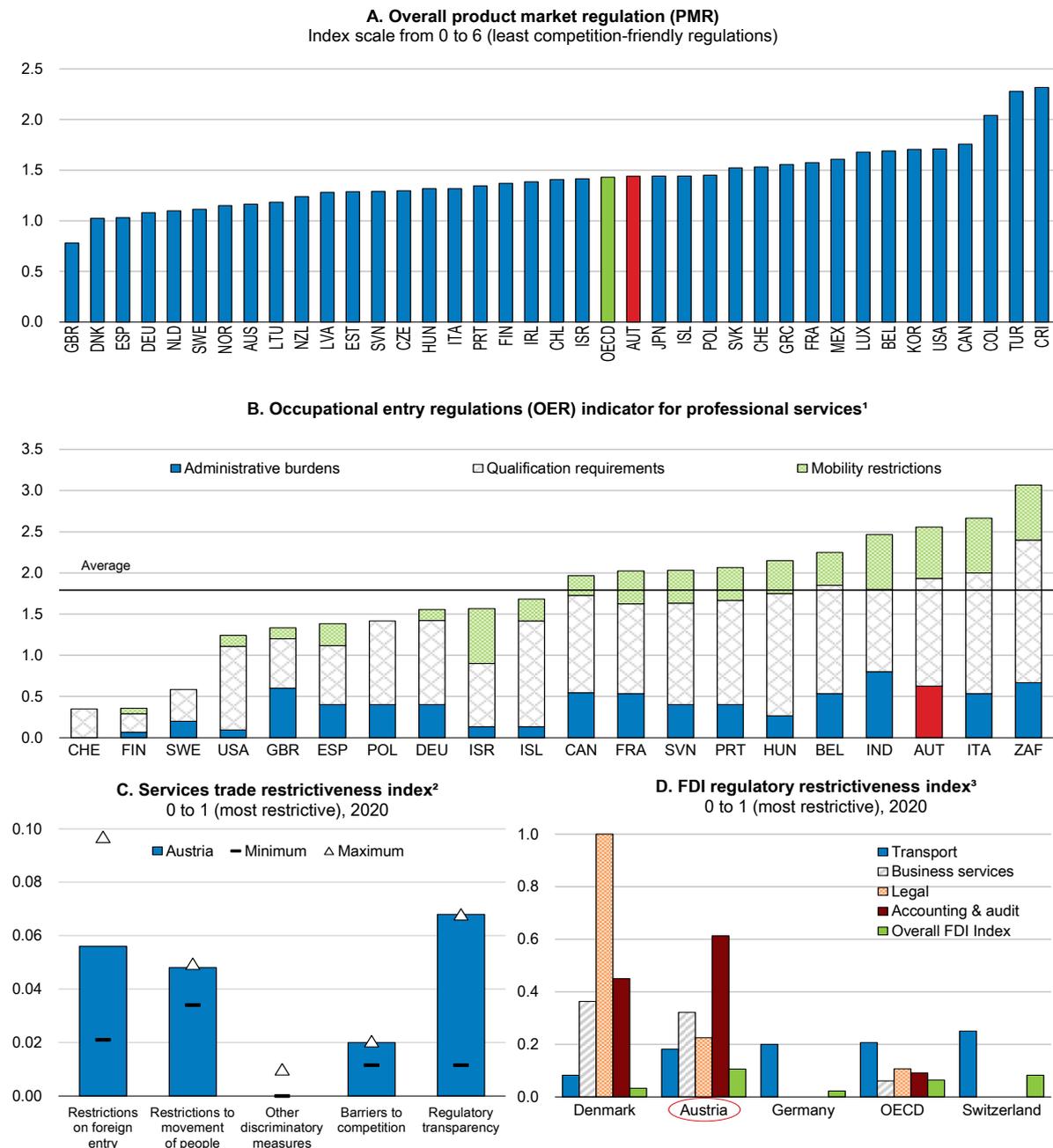
There is ample room for improvement regarding barriers to competition in service and network sectors. While earlier reforms in network sectors had opened them to competition, the framework remains restrictive in rail transportation, road freight, retail trade and the distribution of pharmaceuticals.

Occupational entry regulations for professional services are among the most restrictive in the OECD area (Figure 10 and Figure 11). The share of the workforce subject to occupational licences is elevated as compared to other European countries (Bambalaite et al., 2020). Making the licensing system more open to competition, while preserving high quality standards, would improve the efficiency of labour allocation and benefit aggregate productivity.

Restrictions to trade in services are slightly above the OECD average and significantly tighter than in the peer countries (Figure 10 and Figure 11). The share of services in inward foreign direct investment is elevated. Services play an important role in adding value to Austria's exports (OECD, 2020). More open markets for service trades would help to boost the productivity of the service sectors. This pertains particularly to market need tests applied to foreign service firms' workers. They constrain the mobility and inward migration of high-skilled labour, ultimately impeding productivity-enhancing inward foreign direct investments.

Barriers to foreign investment are higher than the OECD average (Figure 10 and Figure 11). In particular, peer countries like Germany and the Netherlands rank better than Austria. Reducing these barriers would help to address the sluggish growth rates of inwards FDI in recent years and thus underpin investment, employment and productivity growth. The sectoral breakdown of FDI restrictions confirms that Austria tends to be more rigid in terms of regulations regarding professional services, in particular regarding audit, legal, accounting and engineering professions. Reducing these restrictions to the EU average would help to spur resource allocation and ultimately productivity.

Figure 11. Business regulations are in line with OECD averages but professional service restrictions remain high



1. Based on Von Rueden and Bambalaite (2020). The occupational entry regulations (OER) indicator is highly correlated with the PMR indicator for the professional services, resulting from the inclusion of the information embedded in the 2018 vintage of the PMR indicator.
 2. In Panel C, national median is calculated over the 22 subsectors. The minimum and maximum for each category are chosen as the corresponding STRI score among Austria, Denmark, Germany, Netherlands and Sweden.
 3. The index scores for business services, legal and accounting and audit are registered as the least restrictive (zero) for Germany and Switzerland.

Source: OECD (2020), OECD Product Market Regulation Database, Von Rueden and Bambalaite (2020), "Measuring occupational entry regulations: A new OECD approach", OECD Economics Department Working Papers, No. 1606, OECD (2021), "Service Trade Restrictions Index by services sector" in OECD Industry and Services Statistics (database); and OECD FDI Regulatory Restrictiveness Index (database).

Austria has a well-functioning insolvency and restructuring system

The number of corporate insolvencies in Austria has decreased by around 40% in 2020 (OeNB, 2021a; OeNB, 2021b). A similar decline has been observed in many other OECD countries, too. While this appears counter-intuitive at first sight, the decrease in insolvencies can be attributed to two factors. First, the government support package has helped to prevent a widespread liquidity shortfall by supporting the financing of working capital (OeNB, 2021a). Across all support measures, deferrals of corporate taxes and social security contributions had the biggest dampening effect, followed by fixed costs subsidies and short-time work (OeNB, 2021b). Second, the authorities have lifted the obligation to file for bankruptcy from March 2020 to June 2021, similar to other OECD countries (OECD, 2021a). The decrease in insolvencies was more pronounced in the most hard-hit sectors, which have also received substantial government support (Elsinger et al., 2021). Insolvency rates for smaller firms also tended to be lower than for larger firms, underlining that SMEs have benefitted relatively more from the government support package (Elsinger et al., 2021).

Austria has a well-functioning insolvency and restructuring system and would be prepared for an elevated number of COVID-19 related insolvencies. Corporate insolvencies are expected to increase with the full rolling back of the government support package. Further, the requirement to file for insolvency in case of over-indebtedness has been resumed since June 2021. Besides the comparatively high recovery rate, about one third of all insolvent firms are restructured successfully. The Insolvency Act, implemented in 2017, provides the legislative framework for bankruptcies and re-organisations of commercial entities and private individuals. Across legal entities, limited and unlimited partnerships, incorporated businesses but also municipalities are subject to insolvency proceedings. Austrian insolvency law is debtor friendly. It supports the restructuring of debtors and aims to achieve a high recovery rate for creditors. On average, Austrian insolvency law leads to relatively strong efforts for helping debtors to continue their business, thereby not excessively punishing business failure.

The insolvency system has been adjusted during the pandemic. While suspending insolvencies helps to preserve precious human and organisational capital of viable firms, the authorities should encourage timely debt restructurings of unviable firms to accelerate productivity-enhancing resource allocation (Demmou et al., 2020). Austria has implemented the EU Directive on Preventive Restructuring Frameworks and Second Chance in July 2021. The preventive restructuring proceedings allow for a version of pre-pack proceedings. Preventive proceedings can occur if a business insolvency is likely, for example if the share of equity capital over total assets falls below a certain threshold or if it would take a long time to pay back existing debt. If the debtor agrees with a majority of financial creditors on a restructuring plan, the business can opt for a simplified procedure that does not involve going through a formal bankruptcy procedure. The simplified procedure is not part of the EU Directive and thus not available for claims against foreigners. The initiative to introduce this simplified procedure alongside preventive restructurings is welcome and should contribute to alleviate pressure on the insolvency system if a wave of insolvencies materialises. Further simplifying and speeding-up insolvencies and restructurings would help to prevent congested courts. This is important because empirical evidence highlights that insolvency systems are less efficient when courts are congested. Congested courts are positively associated with the liquidation of a higher number of viable firms than desirable (Iverson, 2018). For example, Sweden could improve the prevention of potentially costly and time-consuming restructurings through viability tests, which screen for eligible businesses before undergoing a procedure (OECD, 2021a).

Stimulating the adoption of key digital technologies

Relatively low business dynamism constrains the diffusion of digital technologies

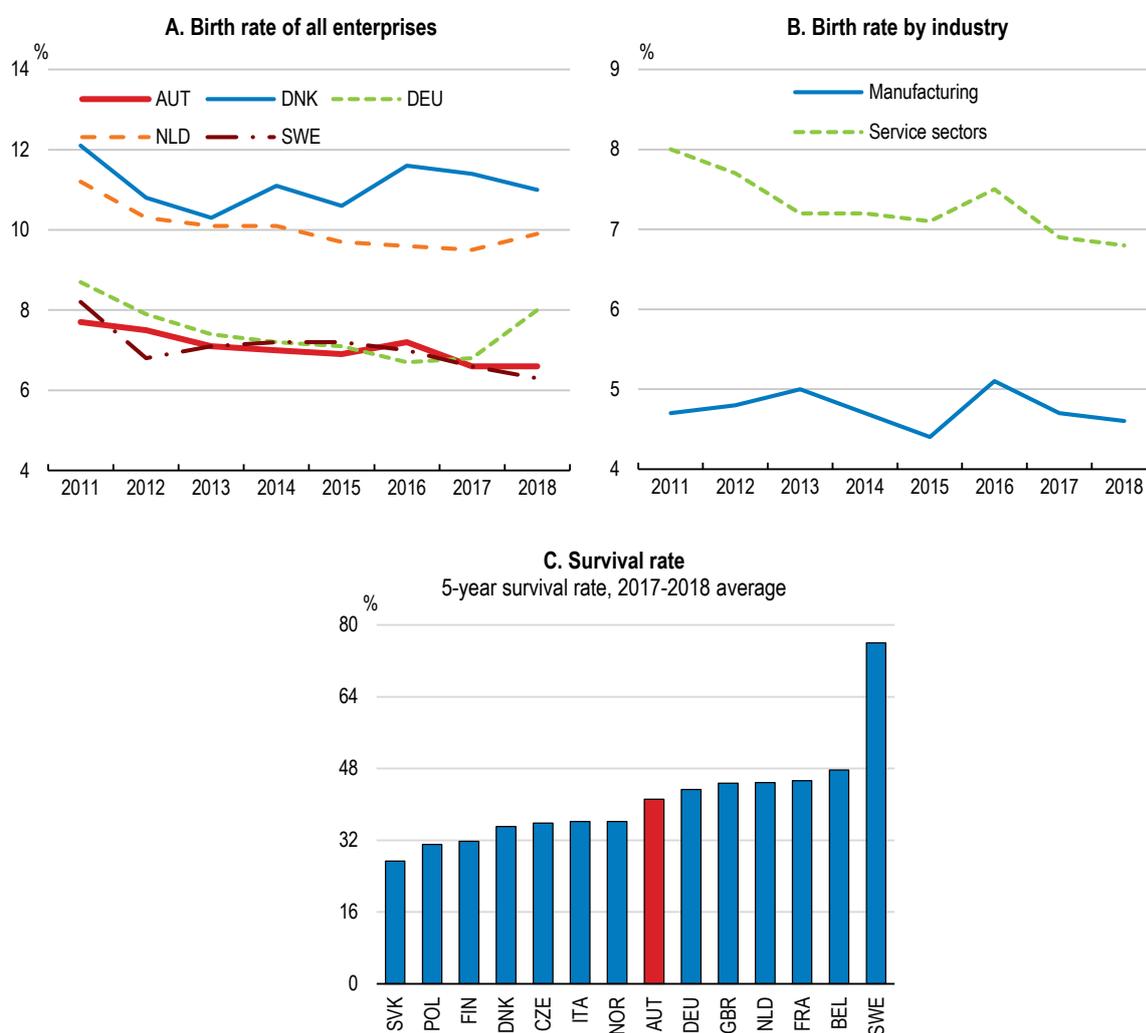
Entrepreneurship and a dynamic business sector are crucial for the diffusion of new technologies and are closely linked to digitalisation and innovative capacity (OECD, 2015; European Commission, 2020). Young firms are often the first adopters of new technologies, in particular regarding digital tools and services and business models, and are a vital factor in making them more broadly available for the rest of the business sector (OECD, 2017). Further, young firms also tend to engage more in very risky break-through innovations and thus account for a significant part of aggregate innovative activity (Farnstrand Damsgaard, 2017).

The entry of new firms has been on an upward trend recently but overall, the low level of business dynamism prevails (OECD, 2019c; Figure 12). Survival rates of start-ups are elevated, though the share of total employment in young firms is low pointing to barriers to upscaling (OECD, 2021b; Figure 12).

Entry rates in service sectors, notably in ICT service sectors, are among the lowest in the OECD (Figure 12). The service sector also lags behind with respect to the upscaling of existing firms. The gap in labour productivity of SMEs to large firms in service activities is higher than in peer countries. This is in contrast to manufacturing where the gap is relatively low (OECD, 2019). Besides framework conditions and skills, the relatively small size of markets for risk capital, which includes venture, growth and equity capital, are also key reasons behind the low level of business dynamism. Despite that, the number of dependent employees in information sectors increased in the wake of the pandemic by almost 12% in two years.

Figure 12. Business dynamism is lagging behind

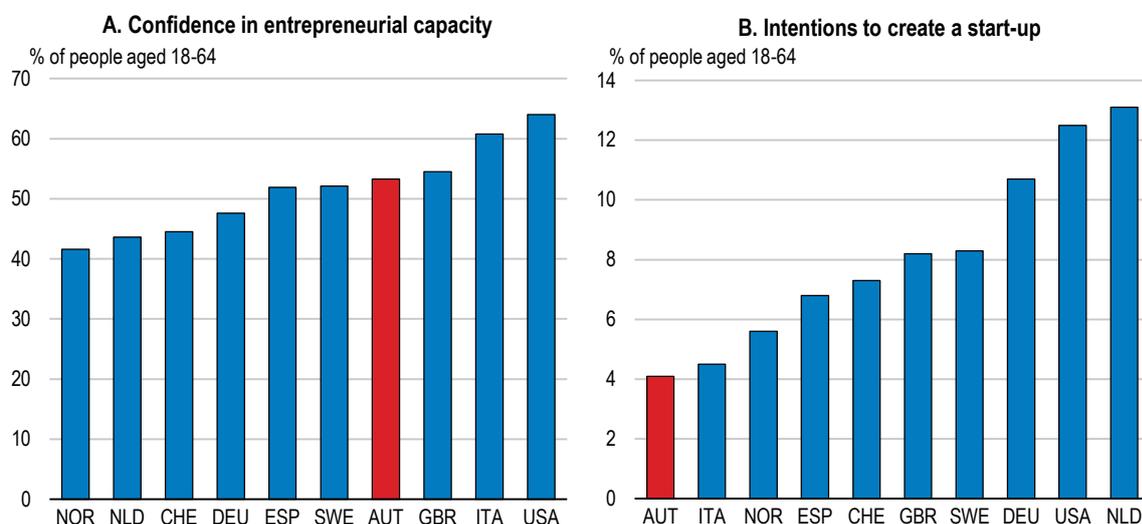
Total business economy



Note: The total business sector refers to total industry, construction and market services, except holding companies. Manufacturing refers to ISIC Rev.4 Divisions 10 to 33. Services refer to business sector services: Divisions 45 to 82 excluding 642 (activities of holding companies). Source: OECD (2021), OECD Structural and Demographic Business Statistics (database).

Figure 13. Austrians display high entrepreneurial self-confidence but limited willingness to start a business

Entrepreneurial behaviour and attitudes indicators, 2020

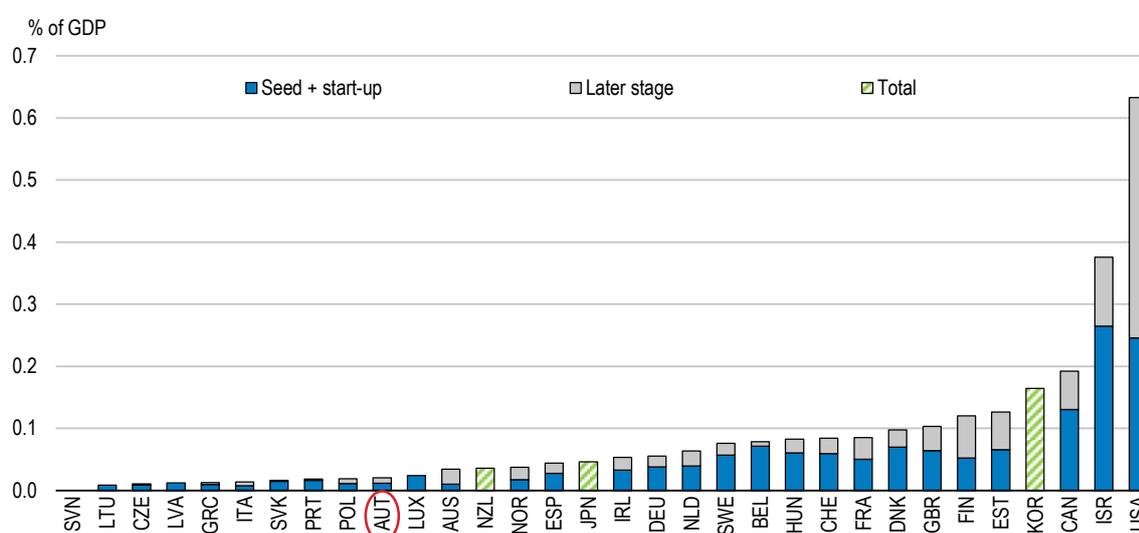


Note: Based on the 2020/2021 Global Entrepreneurship Monitor (GEM) Global Report. Data in Panel A refer to the percentage of respondents who believe that they have the knowledge, skills and experience required to start a business. Data in Panel B refer to the percentage of respondents who are expecting to start a business in the next three years. People involved in any stage of entrepreneurial activity are excluded. Source: Global Entrepreneurship Monitor (2020/2021).

The low supply of risk capital for Austrian start-ups and young firms constitutes a major bottleneck (Figure 14). The authorities stimulate venture and growth capital through public subsidies and several initiatives. While the public hand provides around one-half of venture capital funding in Austria, the supply of risk capital from private investors falls short (OECD, 2018b). The lack of private venture and growth capital also impedes the development of an equity eco-system. Venture capital investors often not only contribute financially, but provide leadership and support in areas like marketing and thus benefit business development beyond finance (Bottazzi et al., 2008; Colombo and Grill, 2010). A new corporate form is under way and should help a faster scaling-up of start-ups and young firms. The new capital company form will combine aspects of stock corporation law and limited liability law. Further, it allows for less bureaucratic founding procedures, more flexible capital measures and greater employee participation in the company's business success. While this new initiative is welcome, the authorities should also consider tax incentives to stimulate the provision of private risk capital, including by experienced foreign venture capital investors. The United Kingdom's Enterprise Investment and Seed Enterprise Investment schemes, which grants tax breaks for investments in start-ups and other eligible firms, has been successful in stimulating the financing of young firms (European Commission, 2017).

Figure 14. Early and later stage venture capital is underdeveloped

Venture capital investments, 2019 or latest year



Note: Venture capital (VC) is private equity capital provided to young enterprises not quoted on a stock market. VC stages are defined according to the OECD VC Harmonised Stages Definition and include support for pre-launch, launch and early stages under “Seed/start-up/early stage”, which also includes support provided by angel investors, and support for expansion and growth stages under “Later stage”. Data refer to 2019, except for Slovenia (2018), Japan (2018) and Israel (2014).

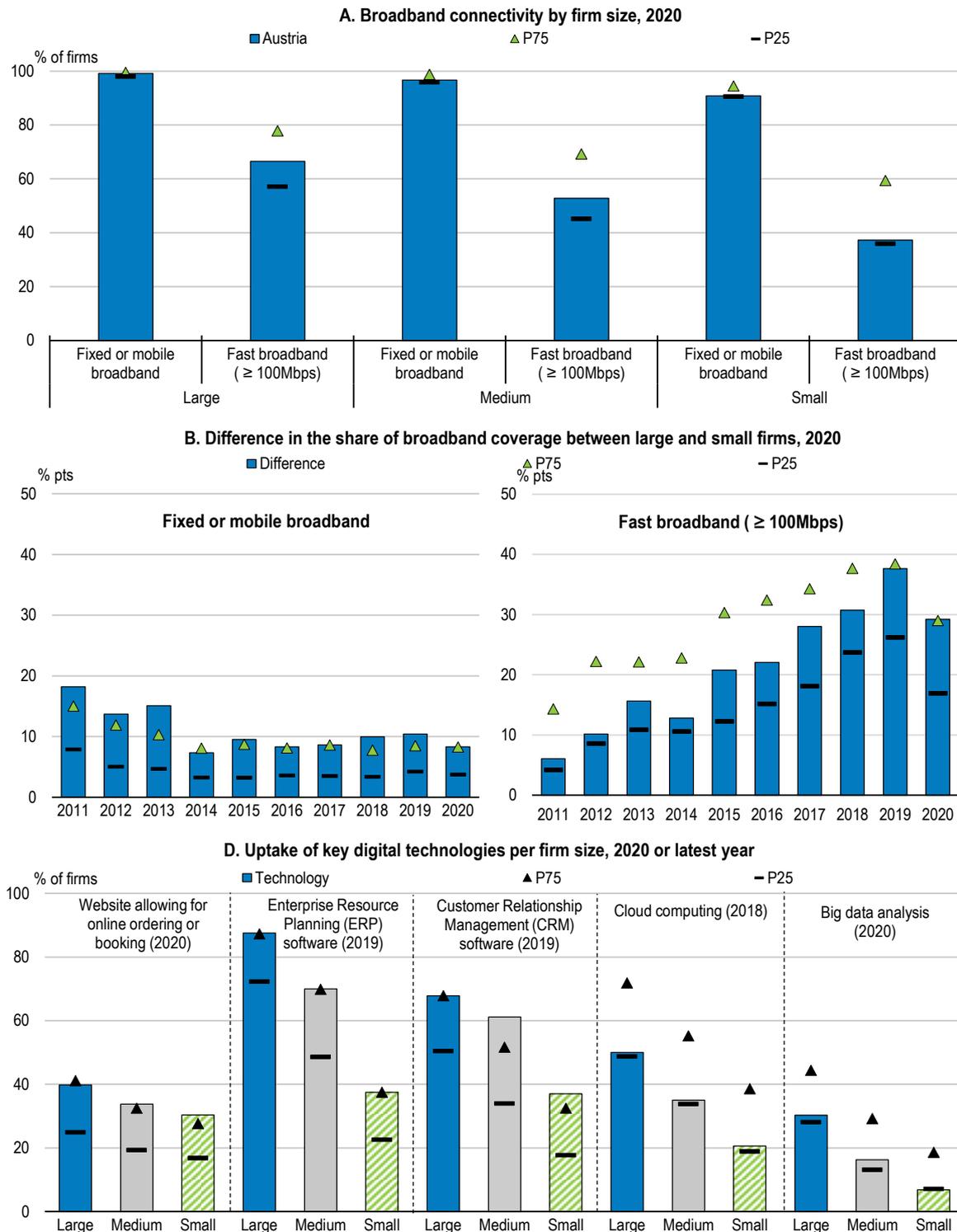
Source: OECD (2021), OECD Enterprise Statistics (database).

The adoption of digital technologies lags behind innovation leaders

The diffusion of digital technologies constitutes a key productivity lever (Gal et al., 2019; OECD, 2021b). Digitalisation can help SMEs to tap international markets and talent but also to balance some of their disadvantages (OECD, 2017; WTO, 2019). The potential dividends from higher adoption rates to key digital technologies are high (Sorbe et al., 2019). Policymakers have different tools at hand to boost adoption rates, like better availability of high-speed broadband, lower regulatory barriers to competition and better financing options for young innovative firms. The COVID-19 pandemic has underlined the crucial importance of well-developed and fast broadband networks for economic resilience. E-commerce and teleworking have helped to avoid a more severe downturn.

Digitalisation is a key priority for the Austrian government and a central element in the Next Generation EU package. The new business location strategy “Chancenreich Österreich” sees digitalisation as a key priority and aims at establishing Austria as one of the top 10 business locations in the world by 2040. Further, the “Digital Roadmap” includes a set of 12 overarching ambitious targets and seeks to position Austria as a leading digital business location. While progress has been made since the first “Digital Roadmap” in 2016, the digitalisation of businesses lags behind the European innovation leaders (Holzl et al., 2021; Figure 15). Differences in broadband subscriptions, especially at higher speed tiers, between large and small firms tend to be larger and have decreased less than in other OECD countries over the last years (Figure 15). While the use of corporate software solutions, like ERP and CRM systems, is relatively widespread across Austrian firms of all sizes, they tend to have the lowest adoption rates of cloud computing services and big data analysis, two promising technologies for productivity growth (Sorbe et al., 2019; Figure 15).

Figure 15. Digitalisation of businesses lags behind innovation leaders



Note: Firms with at least 10 employees. Small firms are those having 10-49 employees, medium-sized firms 50-249 employees, and large firms 250 employees or more. P75 and P25 refer to the 75th and 25th percentile of the distribution of each bar.

Source: OECD (2021), ICT Access and Usage by Business (database).

Better access to high-speed broadband and improving digital skills promise large gains

Policymakers should build on the increased readiness for digitalisation and increase efforts to advance digitalisation. Recent OECD simulations suggest that increasing access to high-speed broadband promises large productivity gains (Sorbe et al., 2019). Part of these gains are indirect.

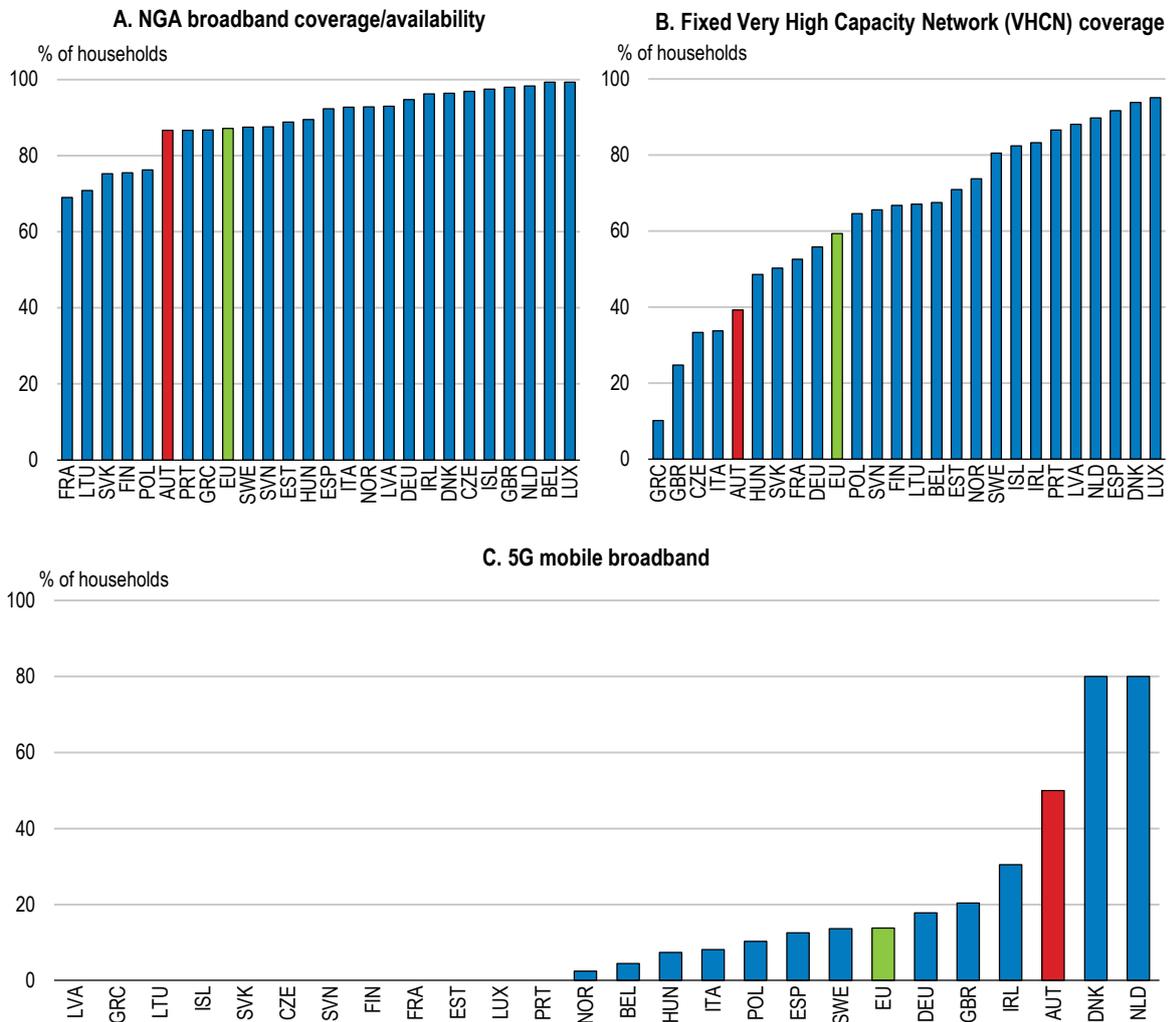
Broadband coverage in Austria has been improving significantly in recent years, notably by around 8 percentage points in 2020 as compared to 2019. While the coverage of very high capacity networks has also improved from 14% to 39% in 2020 as compared to 2019, it still lags behind the EU average (Figure 16, Panel B). However, Austria performs very well on mobile coverage, in particular regarding 5G networks (Figure 16, Panel C). Despite the relatively good availability of fixed broadband, the overall take-up is below the EU average. Moreover, with only 12% of its households subscribing to offers of at least 100 Mbps, Austria is far below the EU average. Broadband prices do not appear to be excessive. Nevertheless, facilitating more entries in the broadband service market could help to lower prices by increasing competition.

The authorities continue to provide fiscal support for a better broadband coverage. The “Breitband Austria 2020” (Broadband Austria 2020) project has boosted coverage across the country but did not fulfil its ambitious target with respect to high-speed broadband (Neumann et al., 2020; Hölzl et al., 2021). The new “Breitbandstrategie 2030” (Broadband strategy Austria 2030), adopted in August 2019, parallels the 2025 EU Gigabit goals and intends to achieve a nationwide access to Gigabit-capable broadband services (fixed and mobile) by the end of 2030. Therefore, the authorities announced that EUR 1.4 billion, supported by EUR 891 million from the EU Recovery and Resilience Facility, will be invested in the deployment of fibre broadband connections throughout the whole country.

Austria’s topography combined with its comparatively low population density constitutes a challenge for a more widespread broadband coverage. This pertains especially to high-speed broadband in more rural and mountain areas and impedes a faster digitalisation of SMEs. The low-hanging fruits with respect to the deployment of high-speed broadband appear to have been exploited already. In more rural and mountain areas, the roll out of fibre broadband may not be commercially feasible (OECD, 2014). This suggests a bigger role for the public hand, including through public-private-partnerships, in which the public sector builds the infrastructure and rents it to private firms (Hölzl et al., 2021). While developments in high capacity mobile communication technologies could offer alternatives to fiber infrastructures in low-density rural areas, these are not expected to be available in the coming 10-15 years. Besides infrastructure investments, fostering competition and innovation in broadband deployment and reducing digital divides and barriers to broadband deployment would help (OECD, 2021c). Regular assessments of the broadband markets would contribute to identifying bottlenecks and ensuring a competitive framework for broadband service deployment and provision (OECD, 2021c).

Figure 16. Access to high-speed broadband needs to be improved

2020



Note: In Panel A and B, data are based on components of broadband take-up and coverage indicator for the Digital Economy and Society Index (DESI). In Panel C, data are based on one component of mobile market. The EU refers to the average of EU member countries including the United Kingdom. Next Generation Access (NGA) includes the following technologies: FTTH, FTTB, Cable Docsis 3.0, VDSL and other superfast broadband (at least 30 Mbps download).

Source: European Commission (2021), Digital Economy and Society Index, October.

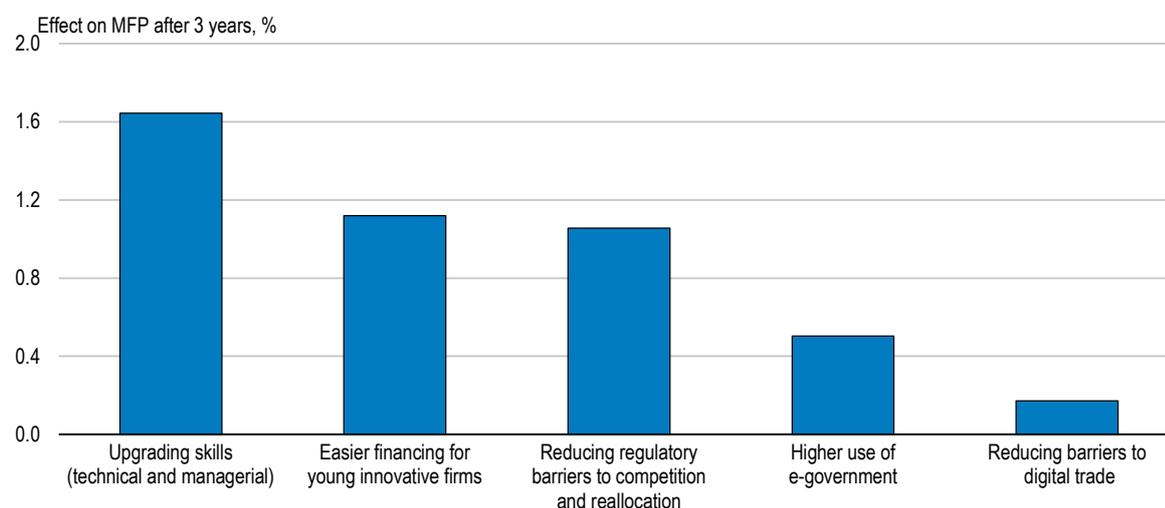
Apart from better access to high-speed broadband, structural policies that stimulate the upgrading of technical and managerial skills, easing access to financing for young innovative firms and reducing regulatory barriers to competition and reallocation have been found to have the highest potential for productivity gains in Austria (Figure 17). Contrary to many other OECD countries, potential gains from a more widespread use e-government services are estimated to be very low in Austria. This is because Austria is already a leader in many areas of e-government applications, in particular regarding the provision of digital public services for citizens (European Commission, 2021a). A new composite indicator, the eGovernment maturity score, further underlines that Austria performs very well with respect to e-government as compared to other European countries (European Commission, 2021b). The provision and use of e-government applications has several advantages, including a more efficient use of government

resources, increased transparency and is positively correlated with adoption to key ICT technologies by firms (Sorbe et al., 2019). Continued efforts to maintain Austria's strong position would be welcome.

Figure 17. Estimated productivity gains from higher adoption to key ICT technologies

Effect of higher digital adoption on productivity closing quarter of the gap to best performers

Effect of higher digital adoption on productivity closing quarter of the gap to best performers¹



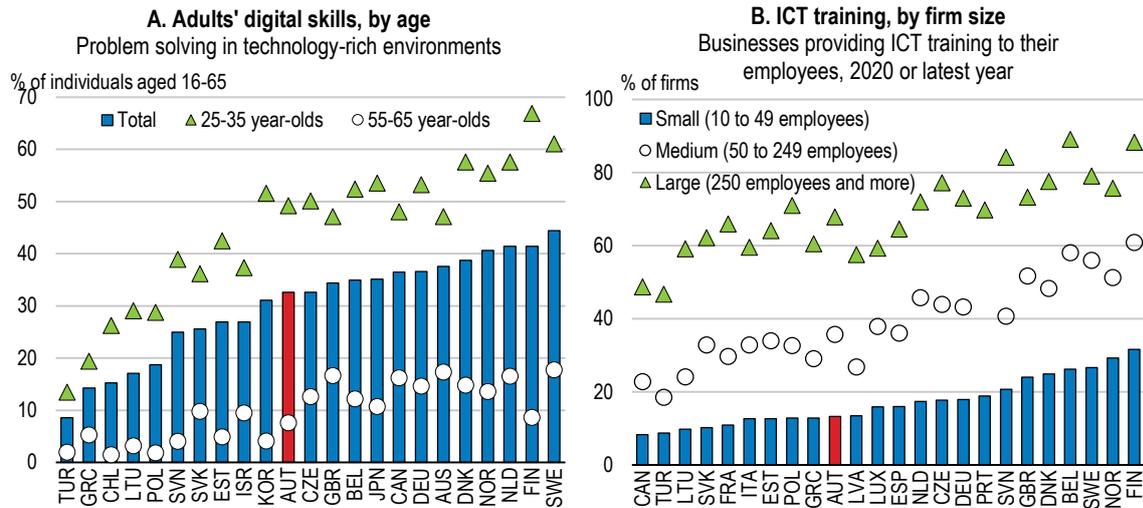
Notes: Estimated effect on multi-factor productivity (MFP) (Panel B) of the average firm resulting from higher adoption to key ICT technologies incentivised by the closing of one-fourth of the gap to best-performing countries across a range of policy and structural factors (see Box 1 in Sorbe et al., 2019). "Reducing regulatory barriers to competition and reallocation" includes lowering administrative barriers to start-ups, relaxing labour protection on regular contracts and enhancing insolvency regimes. "Easier financing for young innovative firms" covers the development of venture capital markets and the generosity of R&D tax subsidies. "Upgrading skills" covers participation in training, quality of management schools and adoption of High Performance Work Practices. "E-government use" is measured by the share of the population that uses the internet to interact with authorities (source: OECD Science, Technology and Industry Scoreboard). "Reducing barriers to digital trade" includes lowering barriers to cross-border data flows and online sales and enhancing regulatory regimes for data privacy and security.

Source: Sorbe et al. (2019), "Digital dividend: policies to harness the productivity potential of digital technologies", OECD Economic Policy Papers, No. 26.

Problem-solving skills of adults for technology-rich environments fall short of top performers, though they are higher than the OECD average (Figure 18). This goes hand in hand with the share of firms which provide ICT training (Figure 18). Across all size classes, many Austrian firms provide adequate training though significantly below European innovation leaders like Finland or Norway. Developing digital skills is a major priority for the government. Programmes like the "Digital Competence Pact" aim at improving digital skills across all age groups. Various programmes, like "Digital Skills Vouchers", "Innovation Camps" and "Digital Pro boot camps", target SMEs specifically. Awareness campaigns complement efforts to improve skills. Besides the "know how", awareness of the potential gains of digitalisation is important to increase diffusion of ICT technologies, in particular across SMEs (ACR, 2021).

Improving the skill base should also consider importing skills from abroad. However, this would require making the existing Red-White-Red card -- a criteria based avenue for permanent immigration for highly-skilled talent in shortage occupations from non-EU countries -- more attractive, for example by lowering administrative obstacles and better promotion of Austria as a destination for professional migration.

Figure 18. Adults' skills and ICT training in firms lag behind top performers



Note: Data for Panel A are based on OECD Survey of Adult skills (2012 and 2015). Problem solving in technology-rich environments refers to Level 2 or Level 3 of PIAAC proficiency and measures adults' abilities to solve the types of problems they commonly face as ICT users in modern societies: co-ordinated use of several different applications, evaluating the results of web searches, and responding to occasional unexpected outcomes. For most countries, data refer to 2012; for Chile, Greece, Israel, Lithuania, Slovenia and Turkey, data refer to 2015. For Panel B, firms with at least 10 employees that provided any type of training to develop the ICT related skills of their employees within the last 12 months. Data for Canada, Greece and the UK refer to 2019.

Source: OECD (2019), How's Life in the Digital Age?: Opportunities and Risks of the Digital Transformation for People's Well-being. OECD (2021), ICT Access and Usage by Businesses (database) and OECD (2021), OECD Telecommunications and Internet Statistics (database).

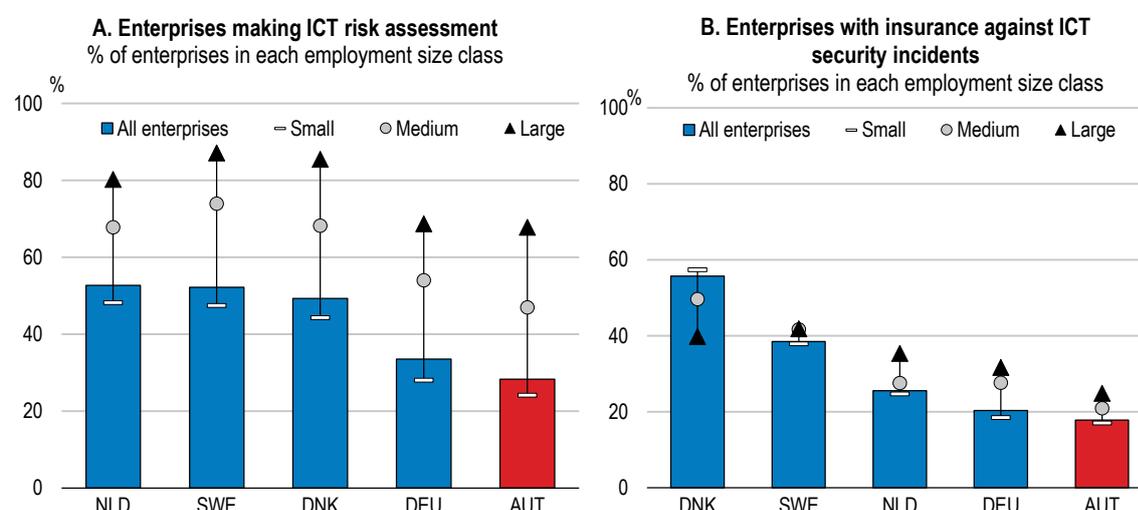
Strengthen digital security

Strong digital security provides the necessary ground for a reliable use of digital technologies and services. Risks to digital security emerge from intentional exploits of existing vulnerabilities but can also result from unintentional threats, such as human errors. The COVID-19 pandemic has come hand in hand with an increase in the number of cyber attacks and consumer fraud related to the use of online shops. This results from a combination of higher use of digital technologies and intentional temporary lowering of IT security barriers of firms to enable workers to work remotely from home (Bundeskanzleramt, 2021). According to a survey of 500 firms in Austria, 60% of them were victims of cyber attacks in 2020 (KPMG, 2021). This coincides with a low development of digital security risk management practices across Austrian firms, in particular smaller ones, as compared to peer countries (Figure 19). Moreover, the Internet Ombudsman for online consumer protection, an independent body supported by the Federal Ministry of Social Affairs, Health, Care and Consumer Protection, has registered a 37% increase in consumer complaints and a 55% increase in reports about fraudulent websites during 2020.

The Austrian authorities have put in place a digital security strategy in 2013. It aims at building a “culture of cyber security” through various measures to secure a trustworthy ground for the digital society to operate, international cooperation at the European and global level and by increasing awareness amongst consumers and firms. The 2016 Network and Information Security Directive of the European Union, which ensures common security measures of networks and information in the European Union, was implemented into Austrian law in 2019. Nevertheless, an awareness campaign on digital security targeted at smaller businesses could help to address lagging practices in digital security risk management. For example, the Netherlands have spent around EUR 5 million in 2019 on building more awareness of threats to digital security. Their Digital Trust Centre regularly organises workshops for smaller businesses and gives independent advice on enhancing digital security.

Figure 19. Digital security risk management of smaller firms needs to be improved

2019



Source: Eurostat (2021), Digital Economy and Society Statistics.

Reinvigorating investments for a resilient recovery

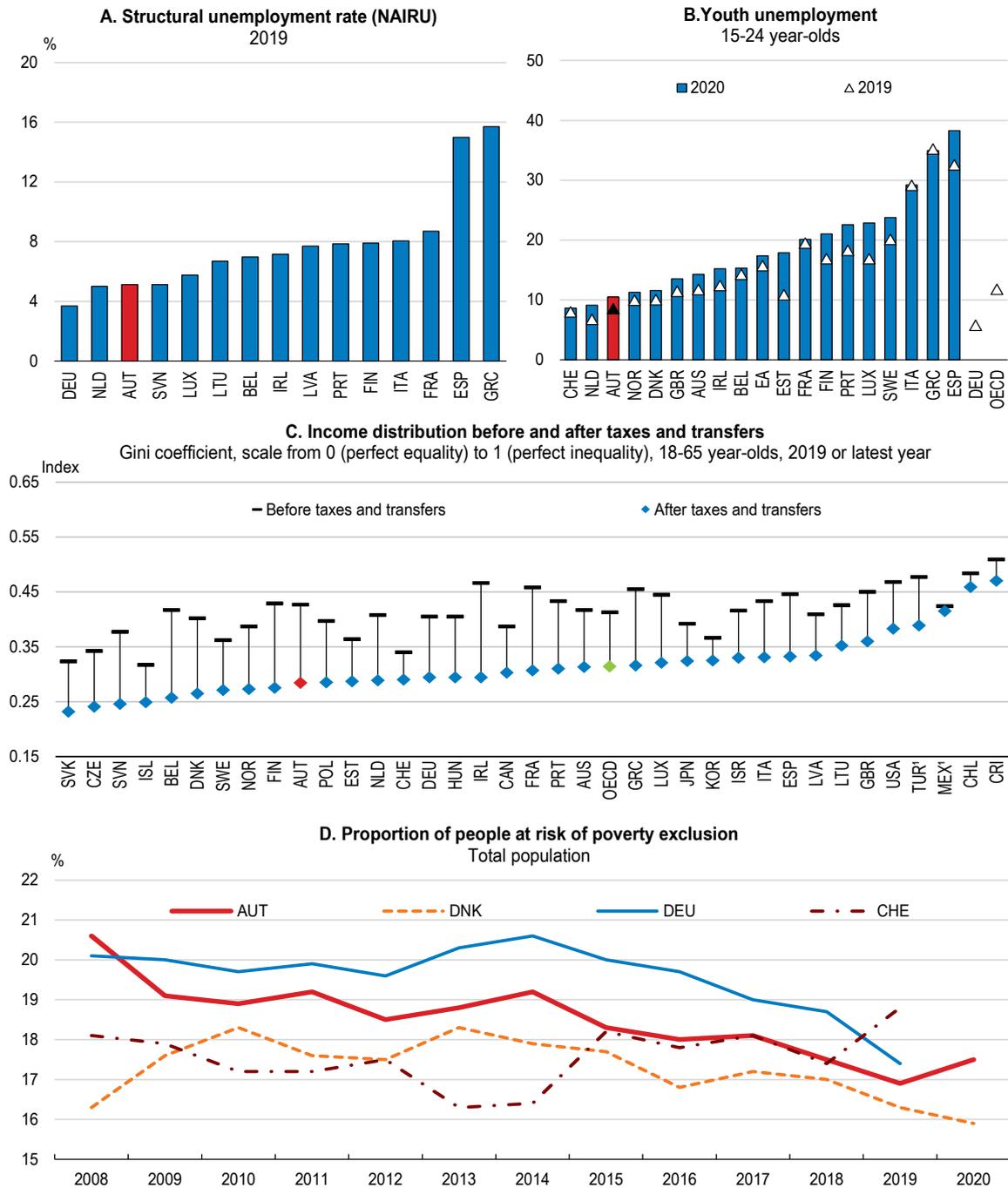
Investment in intangible assets lags behind top performers

Investment activity in Austria is high but still less concentrated in intangible assets, e.g. software, databases and R&D, as compared to the top performing countries (Figure 20, Panel A and B). However, given Austria's higher investment rate, the share of investments in intellectual products over GDP is significantly higher than the OECD average, but still below the top performing countries. Due to an elevated share of manufacturing, manufacturing industries account for more investment than in most other OECD countries (Figure 20, Panel C). This extends to the regional pattern of investment. Regions where manufacturing accounts for a higher share of local GDP, with the notable exception of the Land Salzburg, have seen larger increases in investment since the Great Financial Crisis (Figure 20, Panel D). FDI inflows have been lagging behind the OECD average and the peer countries in recent years (Figure 22, Panel E). A large part of foreign direct investment in Austria is concentrated in financial and real estate activities, while foreign investment in Austrian information and communication sectors lag behind (WKÖ, 2019).

The composition of investment is changing. While investment in intellectual property products has risen significantly in the recent decade, investment in tangible assets has remained at their 2000 level (Figure 21, Panel B and C). Service sectors, where productivity growth has been small and the resulting productivity gap with the international frontier is largest, have only seen modest investment activity, in particular driven by an expansion of intellectual property products (Figure 21, Panel A).

Skills shortages and stringent regulations pertaining to product and labour markets are the major factors holding back higher investment activity (EIB, 2020). Seven in ten firms in Austria already operate at full or above full capacity, significantly higher than the EU average of 61% (EIB, 2020). Lifting these constraints would spur growth.

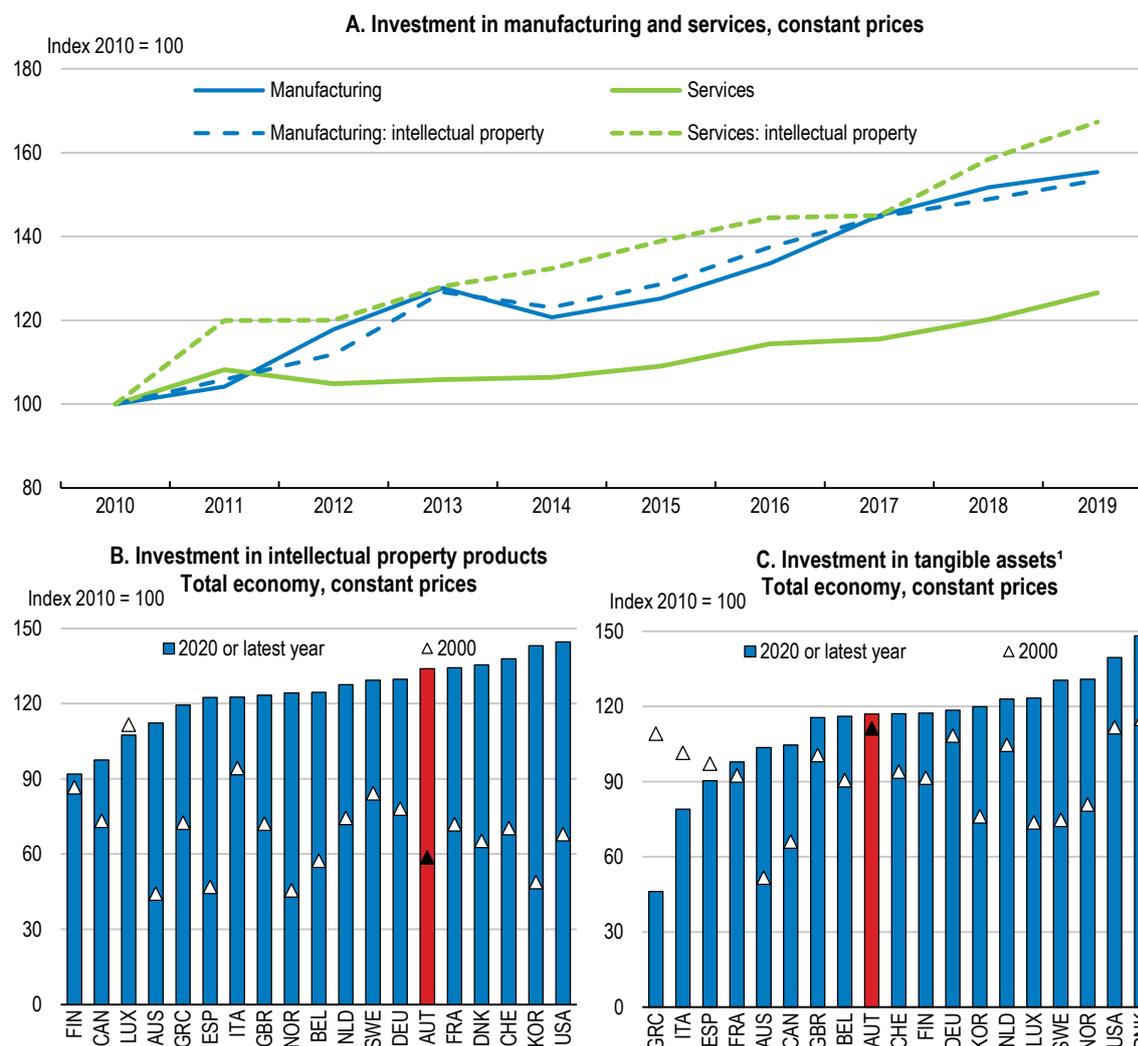
Figure 20. Aggregate labour market performance and social transfers were upholding social cohesion before the pandemic



1. After taxes and before transfers for Mexico and Turkey.

Source: OECD (2021), OECD Economic Outlook: Statistics and Projections (database), OECD Labour Market Statistics (database), and OECD Social and Welfare Statistics (database) and Eurostat (2021), People at risk of poverty or social exclusion by age and sex (database).

Figure 21. Investments have risen fastest in manufacturing sectors and intellectual property assets



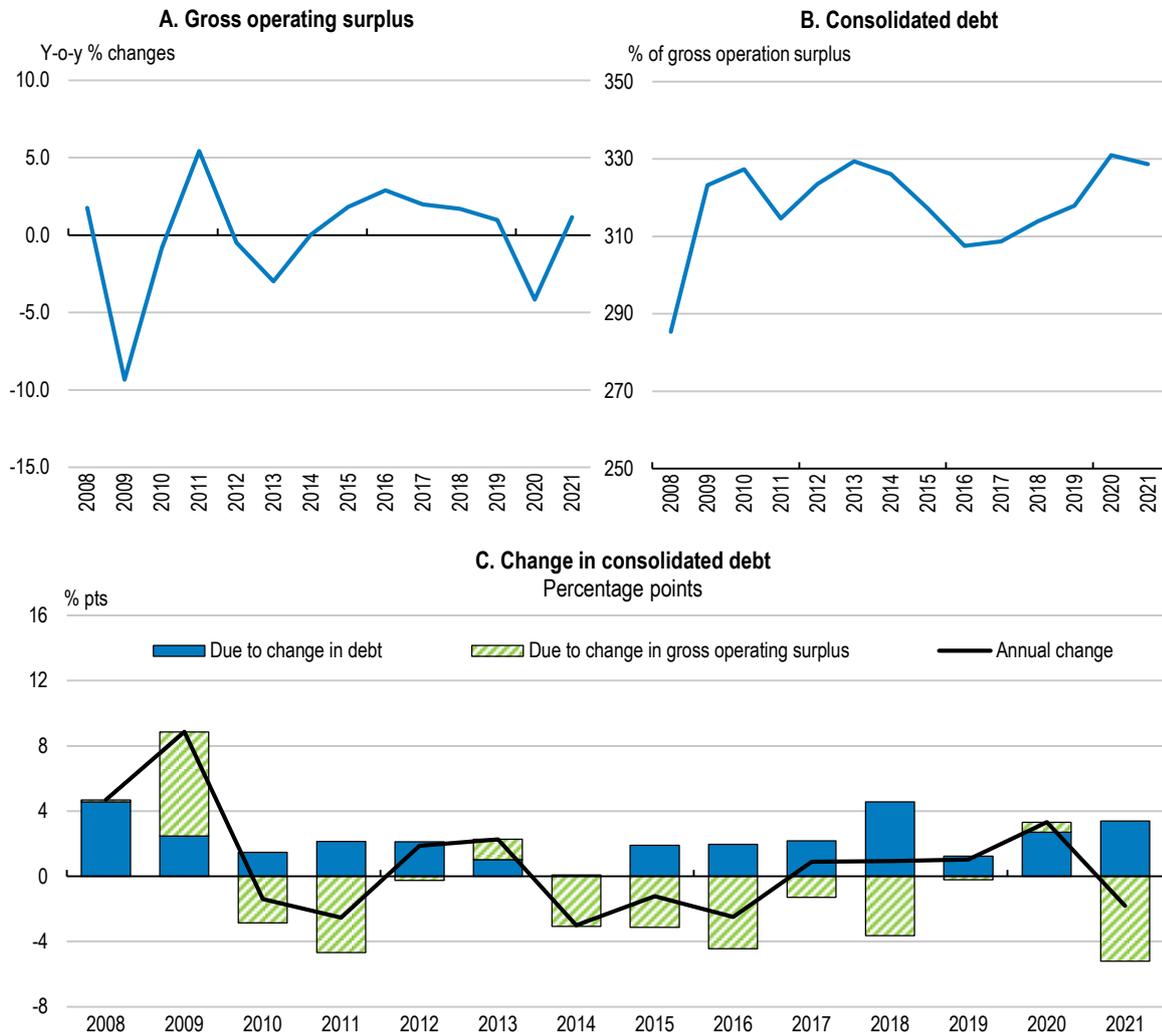
1. Tangible assets include dwellings, non-residential construction, machinery and equipment and cultivated assets. The sum of components in constant prices may not fully correspond to real aggregate tangible assets. Services refer to the business sector services.
Source: OECD (2021), OECD National Accounts Statistics (database).

Corporate balance sheets have weakened

The impact of the COVID-19 pandemic on corporate revenues has been uneven across sectors. Contact-intensive service sectors have been hit hardest. According to preliminary estimates, output contracted by more than 30% in 2020 as compared to 2019 in arts and entertainment sectors and accommodation and food services. In manufacturing sectors, which account for around 19% of total value added in Austria, above the OECD country average, output only dropped by roughly 6%.

Figure 22. Support measures have upheld profitability and contained a faster rise of corporate debt

Austrian non-financial corporations



Note: Based on the average of four quarters. Consolidated gross debt is the sum of total loans granted to and debt securities issued by nonfinancial corporations net of intra-sectoral lending. Debt data for 2020 and 2021 are preliminary.
Source: Statistik Austria and OeNB.

Due to the generous support package and despite strains on corporate balance sheets, aggregate profitability only decreased slightly in 2020. (OeNB, 2021). The loss in aggregate gross operating surplus of nonfinancial firms was only 1.4% throughout the year 2020 and less than the fall in aggregate economic activity (Figure 22). While corporate debt has increased by more than 13 percentage points in 2020, Austrian firms could also build up new liquidity buffers (OeNB, 2021). The increase of corporate debt as compared to before the crisis does not appear to significantly challenge corporate debt sustainability as the strong recovery will further stabilise corporate debt ratios. Besides liquidity support, the authorities have also provided a generous premium for corporate investments, which subsidised up to 14% of the underlying amount of investments in green and digital technologies as well as health projects and life sciences Preliminary evaluations show that this subsidy was successful in stimulating investment. Roughly half of the support was channelled to smaller enterprises and around three quarters of the companies state

that they would have not carried out the submitted investment project without public funding - partly not at all, partly not to the same amount and partly later.

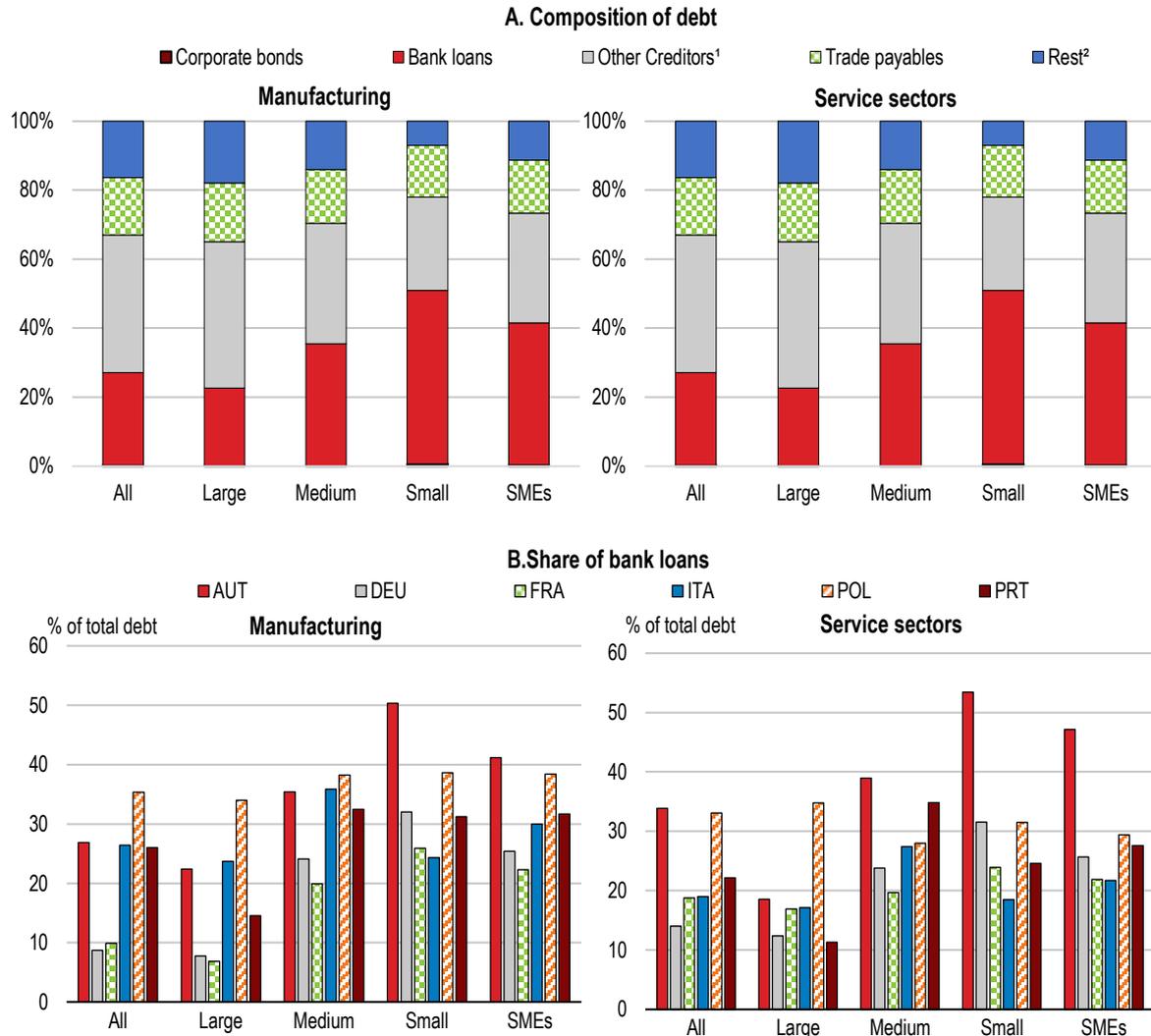
SMEs are particularly vulnerable to the ramifications of the COVID-19 crisis. They have usually limited or no access to capital markets and thus have fewer options to accommodate a liquidity shortfall (OECD, 2020d). A wide range of simulation studies point to the fact that SMEs are particularly concerned by risks related to over-indebtedness and insolvency (Demmou et al., 2021a; Demmou et al., 2021b; Gourinchas et al., 2021; Elsinger et al., 2021). This constitutes a key challenge for the Austrian economy.

The capital structure of Austrian businesses risks constraining investment

The likely increase in bank borrowing costs and the weakened corporate balance sheets may pose a challenge for the recovery of business investment. Austrian firms, in particular SMEs, have a strong preference for internal sources of financing (EIB, 2020). Any deterioration in corporate debt sustainability may make the use of internal sources of financing more difficult in the near future. The second major pillar of investment financing in Austria are bank loans. The use of bank loans is more prevalent than in other European countries (Figure 23, Panel A and B), notably for SMEs. However, bank loans will likely be costlier in the aftermath of the pandemic. On the one hand, increased corporate leverage will tend to increase corporate borrowing costs. Reclassifications of some corporate loans under IFRS 9 stage 2 and increased provisioning for bad loans tend to increase the cost of risk and could reduce the ability of banks to provide loans at pre-pandemic costs (ERSB, 2021).

Figure 23. Bank loans are the most important form of external credit for small- and medium-sized firms

2018



1. Other creditors include intra-group debt, accounts payables (except trade payables and payables to other financial creditors), mainly tax and social security payables, staff debt and active dividends to be paid. Rest includes payments received on account of orders and deferred liabilities.

2. Rest includes payments received on account of orders and deferred liabilities.

Source: Bank for the Accounts of Companies Harmonized (BACH) database.

A resilient banking sector will play a key role in financing investments. While insolvencies are expected to increase, the banking sector appears resilient to withstand a significant increase in insolvencies (Box 3).

Box 3. Banking sector resilience and expected insolvencies

Austrian banks are well-capitalised (OeNB, 2020a; OeNB, 2020b) but could improve capital adequacy and structural deficiencies, e.g. high operating costs (IMF, 2021). The ratio of non-performing loans stood around 2% at the onset of the pandemic, highlighting the good quality of loan portfolios. An in-depth stress test of the Austrian financial sector by the IMF confirmed the resilience to pronounced macro-financial shocks (OeNB, 2020a).

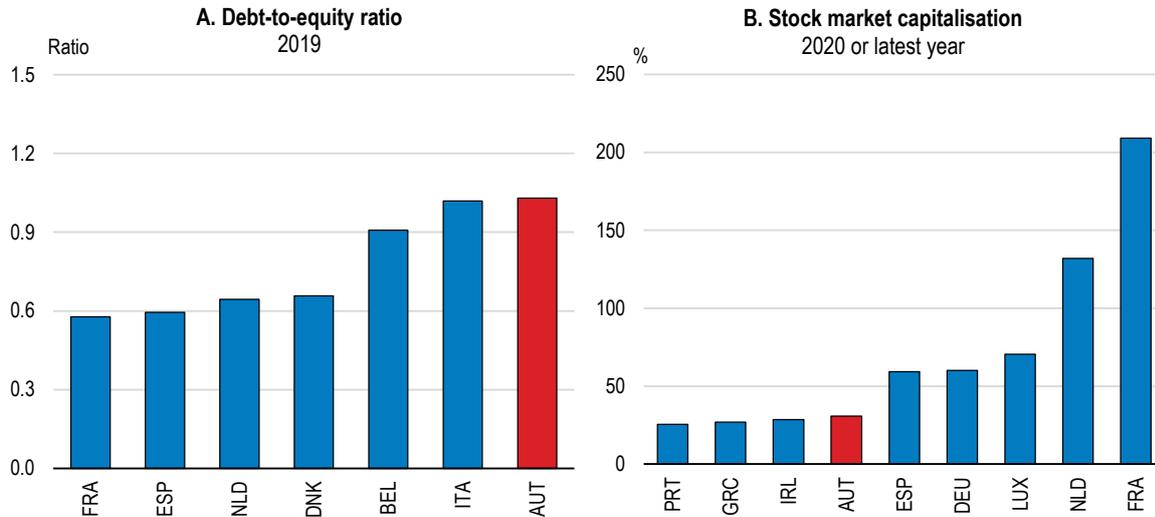
While the impact of the COVID-19 crisis can be seen in increases in loans classified as stage 2 under IFRS, even in a severe scenario where half of the loans supported by the government were to default, the ratio of non-performing loans would only jump from 2% to 5.6% (OeNB, 2021a). As a result, the risks of capital depletion and sudden deterioration of lending conditions to firms, due to stress in the Austrian banking sector with significant adverse effects on corporate investment, appear small (IMF, 2021). There is nonetheless a case for raising banks' capital adequacy in response to other vulnerabilities (such as mortgage risks as discussed in Chapter 1), which would further reinforce their lending capacity.

As analysed in-depth in the 2019 OECD Economic Survey of Austria, markets for equity capital are smaller than elsewhere (Figure 24). While the average equity ratio of Austrian nonfinancial companies has improved significantly since 2005 (Breyer et al., 2021), corporate leverage is elevated as compared to other OECD countries (Figure 24). This finding holds for both manufacturing and service sectors. Additionally, the sensitivity of investments to debt owed to banks tends to be higher for SMEs than larger firms (see Box 2.4). As a result, higher borrowing costs will disproportionately affect the investments of SMEs.

The main impediments to a more widespread use of externally raised equity capital pertain to the aversion to lose control of business owners and the debt bias of the corporate tax system (OECD, 2019; Breyer et al., 2021). A comprehensive survey of business owners and other major stakeholders further suggests that a lack of information regarding the various options of raising equity and misalignments of the reporting practices of smaller firms with the information needs of external investors hinder a more widespread use of equity capital (Breyer et al., 2021). A new market segment at the Vienna Stock Exchange, introduced in January 2019, is geared towards smaller listings and comes with less stringent disclosure requirements.

While making it easier for SMEs to tap external equity capital, policymakers need to address the information gaps of business owners by improving financial literacy. Higher financial literacy constitutes an effective tool to better understand advantages and disadvantages of equity financing and can thus foster its use (Boschman and Pissareva, 2017). Moreover, higher financial literacy has also found to increase stock market participation (v Rooij, Lusardi and Alessie, 2011), thereby potentially also benefitting the supply of equity capital. Results from various surveys suggest that Austria has overall above average financial literacy as compared to other OECD countries (Cuprak et al., 2018; Reiter and Beckmann, 2020). Further, the financial literacy has improved over the past five years (Fessler, Jelovsek and Silgoner, 2020). In October 2021, a new national financial literacy strategy for Austria was disclosed to the public. The strategy aims at increasing financial literacy but also at raising the awareness of existing and potential entrepreneurs with regard to the existing alternative financing options on the capital market. It is further complemented with advisory services for SMEs and start-ups.

Figure 24. Corporate leverage in Austria is elevated and the stock market is less developed



Source: OECD (2021), OECD Financial Dashboard and World Bank.

Box 4. Investment of smaller firms is more sensitive to higher leverage

The empirical framework developed by Dlugosch and Gul (2021) can be used to evaluate the sensitivity of investment to demand and debt owed to banks for different firm sizes.

Data

The underlying dataset rests on the Bank for the Accounts of Companies Harmonized Database (BACH) maintained by the Banque de France. It provides annual balance sheet data of European non-financial companies aggregated at the NACE2 industry level and by size -- for every sector the dataset provides aggregate information for small, medium and large firms. The estimation sample includes 74 non-financial industries in Austria over the 2000-2016 period. All regression variables are cleaned for outliers by winsorizing them at the 1% percentile symmetrically to avoid large outliers.

Modelling the investment to capital ratio

The empirical model rests on an error-correction framework, i.e. a long-run specification for firms' demand for capital derived from the optimisation problem of profit maximising firms but also short-run deviations from this equilibrium. Covariates to capture debt owed to banks are added to all specifications. The estimation of the dynamic panel model addresses the endogeneity that arises from the correlation of the unobserved cross-sectional fixed effect and the lagged dependent variable by using the Arellano/Bond/Blundell-Bond system GMM approach.

Empirical results

The regressions are well-specified and pass the usual specification tests (see Table 1). The estimated coefficient for the capital-to-output ratio is negative and significant across all specifications. This implies that firms invest if the long-run value of the desired capital-output ratio differs from its actual value.

Sales growth and cash-flow are positively associated with investment, higher amounts of debt owed to banks scaled by lagged capital, i.e. bank-based leverage, is negatively associated with investments.

The same amount of debt owed to banks is associated with less investment for small and medium-sized firms than for large firms. For large firms, an increase of debt owed to banks by one standard deviation leads to a fall by around 11 percentage points, whereas a similar increase reduces the investment-to-capital ratio of small firms by roughly 16 percentage points.

The analysis also suggests that the sensitivity of investment to demand of smaller firms tends to be higher than that for larger firms, though the difference 0.5% is relatively small.

Table 1. Results for empirical investment models for different firms' size

	All sizes	Large firms	Medium-sized firms	Small-sized firms
Investment (t-1)	-0.3633*** (0.0848)	-0.2666** (0.1197)	-0.4791*** (0.1264)	-0.4699*** (0.1750)
Sales growth (t)	1.2302*** (0.0865)	1.2537*** (0.1205)	1.3546*** (0.1462)	1.2607*** (0.1653)
Sales growth (t-1)	0.2317 (0.1570)	0.4358** (0.1737)	0.4497 (0.2701)	0.4386 (0.3667)
Capital-output ratio (t-1)	0.2604*** (0.0805)	0.2852*** (0.0836)	0.3842** (0.1905)	0.5128* (0.2722)
Cashflow / K (t-1)	1.1660** (0.4883)	0.1110 (0.5344)	0.9277 (0.7051)	1.3925 (1.1959)
Debt owed to banks / K (t-1)	-0.3021*** (0.0814)	-0.1796* (0.1015)	-0.2487** (0.1103)	-0.3234** (0.1488)
Constant	-0.0535 (0.1026)	-0.1554 (0.1945)	-0.3000* (0.1674)	-0.0796 (0.1255)
Observations	2,554	653	889	1,012
Number of id	193	55	67	71
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
# of instruments	100	83	95	99
AR(1)	0	1.22e-05	3.73e-05	0.00417
AR(2)	0.836	0.117	0.777	0.252
Hansen p	0.996	1	1	1

Note: Cluster robust standard errors in parentheses. *** denotes significance at the 1% level, ** at the 5% level and * at the 10% level.

Tax incentives to stimulate equity financing

Deep markets for equity capital improve access to finance for firms. They should complement the relatively strong banking sector rather than substitute bank loans. The banking sector, which champions relationship banking through the so-called *Hausbank* model, constitutes a strength of the Austrian economy. The very close relationship between bankers and business owners decrease information asymmetries and thus ensures very good access to bank loans for firms of all sizes with comparatively lower borrowing costs (OECD, 2019). The Hausbank tends to continue to support firms in dire financial situations and may thus even take up some of the functions equity capital provides elsewhere (Dirschmid and Waschizcek, 2005).

Incentives in the corporate tax system can stimulate the financing of new projects through equity, either internal, i.e. retained profits, or external. As in many other OECD countries, the corporate tax system incentivizes debt-financing (Table 2). This is because interest payments can be deducted from pre-tax

earnings and thus give rise to a lower tax liability. Usually, the returns on equity capital cannot be deducted. Consequently, financing the same investment project with debt yields a higher post-tax return than equity. An allowance for corporate equity (ACE) can help to alleviate the debt-bias. Apart from the incentives in the corporate tax system, full neutrality across debt and equity financing would require addressing the differential treatment of interest, dividend income and capital gains in the personal income tax system. However, even without such changes to personal income taxes, an allowance for corporate equity would help to moderate the debt-bias.

Table 2. Effective average and marginal corporate tax rates for different investment projects and financing options

EATR (in %) EMTR (in %)	Manufacturing Equity	Manufacturing Debt	Software Equity	Software Debt
Austria	29.1 27.3	18.4 -2.1	34.2 40.1	24.4 9.8
Germany	32.5 36.1	22.2 -2.5	34.2 39.8	24.7 10.8
Denmark	20.4 12.8	12.7 -34.3	22.3 19.6	16.0 -9.0
Italy	24.7 4.8	20.9 -21.4	33.1 34.8	21.6 24.6
Sweden	19.7 14.3	12.6 -25.0	29.1 39.3	22.0 21.9

Note: Effective average and marginal corporate tax rates were calculated based on the simulations of the costs of a “hypothetical investment project”, assuming real interest rates of 5% and a rate of inflation of 2%. See Hanappi (2018) for details on the calculation and model assumptions (higher inflation and investment scenario).

Source: OECD Corporate Tax Statistics Database and Hanappi (2018).

A few OECD countries have implemented an ACE (Zangari, 2014; Hebous and Ruf, 2017). Austria has experimented with a tax incentive to equity financing during the 2000-2004 period (Genser, 2002), where a reduced corporate income tax rate applied to the return on equity. This stimulus became less attractive after a statutory corporate income tax rate cut and was abolished soon after. Italy also has a tax allowance for corporate equity which has reduced corporate leverage by 11 percentage points for manufacturing firms over the period 2011-2014, corresponding to the first three years of implementation (Branzoli and Caiumi, 2020). Across firm sizes, the reduction in leverage was more pronounced for micro- and small corporations. Evidence from the Belgian and the Austrian variant of this allowance tends to confirm its effectiveness (Hebous and Ruf, 2017; Frühwirth and Kobialka, 2011).

The ACE has at least three key design features, which determine its efficacy, the associated fiscal costs and potential negative side-effects. First, a notional return on equity needs to be determined. This notional return determines the deductible amount from taxable income and therefore the attractiveness of the tax incentive. In practice, the notional interest rate is usually proxied with the interest rates on long-term government bonds. A slightly higher notional interest for SMEs, e.g. 50 basis points like in Italy, would be welcome to incentivize small and medium-sized businesses. Second, the base of the allowance must be established. This can encompass the existing stock of equity or only additions in the form of newly issued equity with respect to a reference year. The additions can also include internal sources of equity, i.e. retained earnings. Granting the allowance to the whole stock of existing equity can entail sizeable fiscal costs. Third, the implementation requires a careful design to avoid any incentives to cross-border tax planning. Here, effective anti-avoidance frameworks, as in Italy, can help to prevent intra-group lending and contribute to limit tax planning in multinationals (Zangari, 2014; Hebous and Ruf, 2017; Zangari, 2020).

Estimates of an ACE for Austria granted to the stock of existing equity capital suggest a yearly fiscal loss of around EUR 1.3 billion, around 10% of the corporate tax revenues in 2019 (EcoAustria, 2021). The estimates for Austria are based on a notional return of 1.5% and an allowance limited to equity capital of up to EUR 1 million. Limiting an ACE to additional equity capital would give rise to much lower fiscal costs. As a comparison, the ACE in Italy, which was initially used by 20% of incorporated firms, generated a loss in corporate tax revenues of around 1.3% of total corporate income tax revenues in 2011.

As part of the COVID-19 support programme for firms, Austria has introduced a carry-back provision for tax losses for 2020. This complemented the provision granted by Austrian tax law which allows to carry forward losses indefinitely to offset up to 75% of future profits. The tax loss carry-back provision allows to offset profits generated in 2018 and 2019 up to a maximum amount of EUR 5 million. Firms that have been profitable in the past could thus restore their corporate working capital and means of internal financing. The loss-carry-back measure is countercyclical and thus effective in times of crises. It also comes at possible large costs for governments and potentially, could be used for tax planning. Therefore, the carry-back provision should be discontinued once the recovery is firmly underway, but kept in the policy toolkit as a discretionary measure to support firms' working capital in times of crisis.

Making the most out the available pool of talent

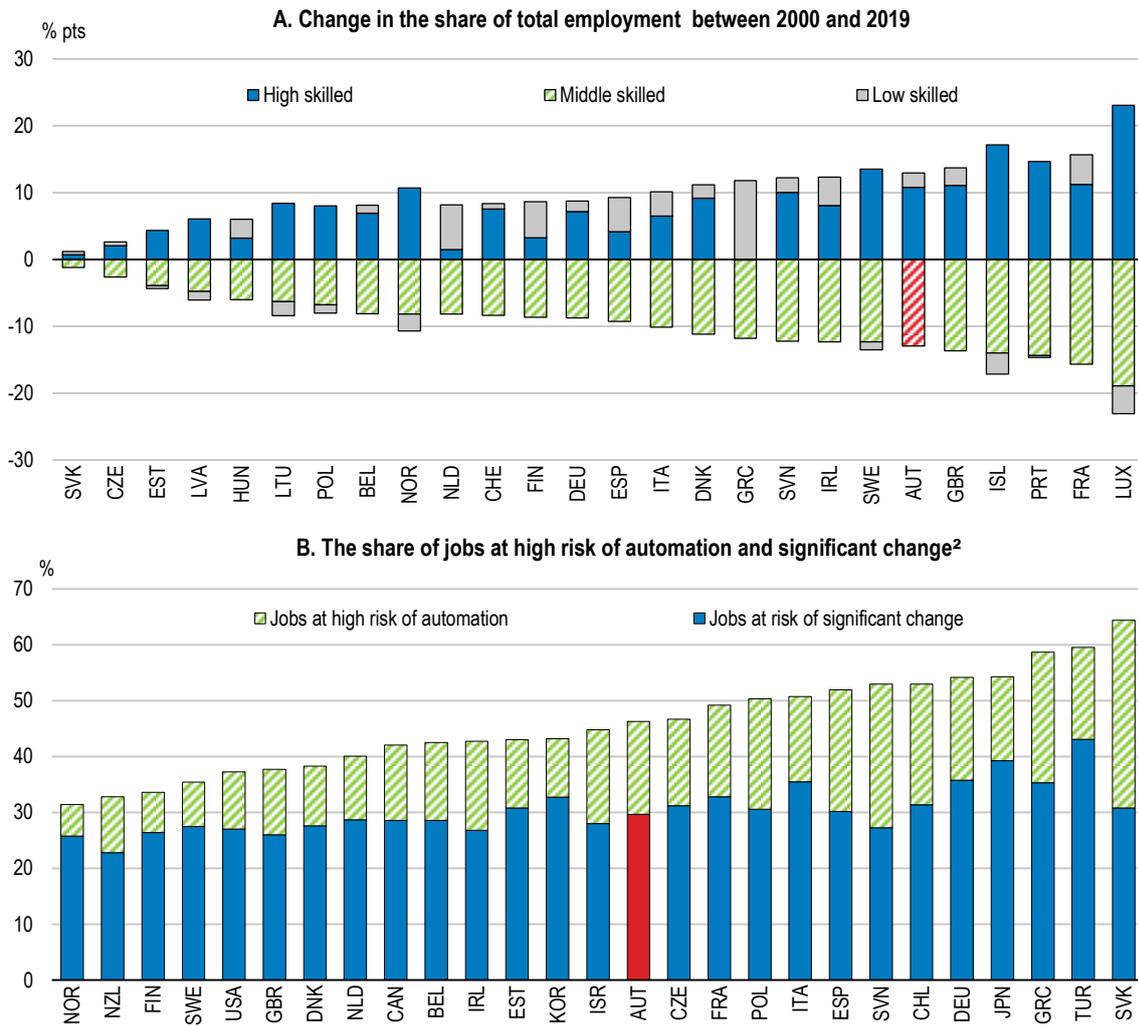
Structural change will require a more efficient allocation of labour

The COVID-19 induced structural change and the digital transition will likely accelerate the polarisation into high- and low-skilled jobs at the cost of middle-skilled jobs (OECD, 2020e). High-skilled workers benefit from an increased use of digital technologies, which tend to complement their skills and help them to become more productive (Goos et al., 2009). Many non-routine manual tasks, in particular in service-oriented sectors, are usually very difficult to automate. Further, long-established preferences of customers may limit the potential for efficiency enhancing digitalisation or automation in close-contact service sectors. On the contrary, many middle-skill jobs, e.g. those of clerical workers, are at risk or have already disappeared (OECD, 2017b). In the last two decades, the loss of middle-skilled jobs in Austria was more pronounced than in peer OECD countries (Figure 25). Moreover, the rate of long-term unemployment has increased since 2010 as discussed in Chapter 1.

Employment rules do not seem to be a major obstacle to resource reallocations. Still, while employment legislation is formally flexible, collective agreements, depending on their terms, may make resource re-allocations more difficult in specific sectors and businesses. In the past, collective agreements have not hindered structural changes. On the contrary, consensual employment relations contributed to flexibility. Co-operative arrangements between employers and employees (for example, the so-called “labour foundations”) facilitated the re-skilling and upskilling of redundant workers in declining activities (Winter-Ebmer, 2001). More sweeping employment adjustments due to digitalisation and green growth may however become more challenging in the future. The ongoing re-organisation in the car cluster has, for example, triggered labour tensions, including a rare strike.

The COVID-19 shock led to a revival of social partnership in Austria. The Chamber of Economy (WKÖ) and the Chamber of Labour (AK) co-operated to adapt the short-time work scheme to the circumstances of the pandemic; to facilitate teleworking with adjustments in social security law, tax law and accident insurance; to adapt the safety and hygiene rules for the continuation of work in the construction sector; and to establish mask-wearing and testing protocols in workplaces. An international survey identified Austria as the country where social partnership has been particularly active during the COVID-19 shock (Eurofund, 2021). This momentum should be extended to the policy design needs of the more re-allocation intensive economy.

Figure 25. Set of jobs available continues to change



1. The panel shows the percent point change in employment shares by skill intensity between the fourth quarter of 2000 and the fourth quarter of 2019. High-skilled occupations include jobs classified under the ISCO-88 major groups: legislators, senior officials, and managers, professionals, and technicians and associate professionals. Middle-skilled occupations include clerks, craft and related trades workers, and plant and machine operators and assemblers. Low-skilled occupations include service workers and shop and market sales workers, and elementary occupations.

2. Based on the survey of Adult Skills (PIAAC, 2012). Jobs are at high risk of automation if the likelihood of their job being automated is at least 70%. Jobs are at risk of significant change if the likelihood is between 50 and 70%.

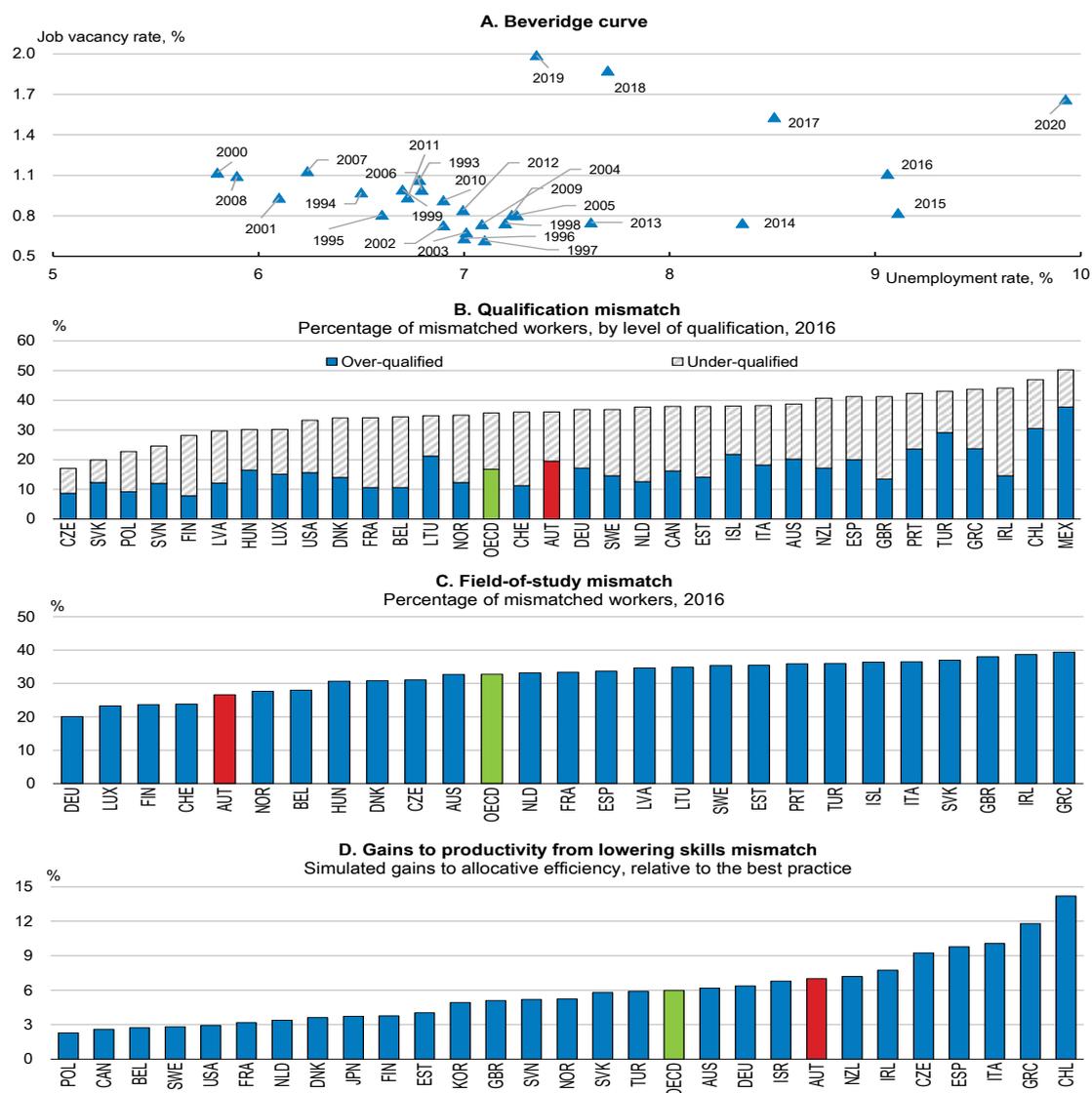
Source: Calculations based on Eurostat (2020), Employment by occupation and economic activity (database) and L., Nedelkoska and G. Quintini (2018), "Automation, skills use and training", OECD Social, Employment and Migration Working Papers, No. 202.

Ageing risks exacerbating labour market mismatches

Mismatches in labour supply have been increasing (Figure 26). Since 2014, the Beveridge curve, i.e. the relationship between the job vacancy rates and unemployment rates, has shifted outwards. This shift can result from several factors including a significant increase in labour supply due to the EU enlargement process (Schiman, 2020) or, a decreasing efficiency in matching suitable talent to jobs or skill shortages (Christl, 2020). Empirical evidence from the OECD Survey on Adults Skills, underlines that qualification mismatches are elevated. Roughly 4 out of 10 workers are either over- or underqualified for their current

job. Skill mismatches are highest in areas related to verbal reasoning, reasoning and quantitative abilities and mainly pertain to high-skilled jobs (OECD, 2018). Moreover, the vibrant economic recovery in 2021 has amplified recruitment difficulties and require businesses to make the most out of the available pool of talent to remedy skill- and labour-shortages.

Figure 26. Labour supply mismatches have been increasing



Note: In Panel B, qualification mismatch occurs when a worker has a higher or lower level of qualification than is required for his/her job. In Panel C, field-of-study mismatch occurs when a worker has a qualification in a different field than required for his/her job. Panel D shows the difference between the actual allocative efficiency and a counterfactual outcome based on lowering the skills mismatch in each country to best practice. Mismatch indicators are aggregated for 11 market industries using a common set of weights based on the industry employment shares for the United States. Skills mismatch is captured using the 2012 and 2015 waves of PIAAC data.

Source: OECD (2021), OECD Skills for Jobs Database, Statistik Austria and Arbeitsmarktservice (AMS) and Adalet McGowan, M. and D. Andrews (2017), "Skills mismatch, productivity and policies: Evidence from the second wave of PIAAC", OECD Economics Department Working Papers, No. 1403.

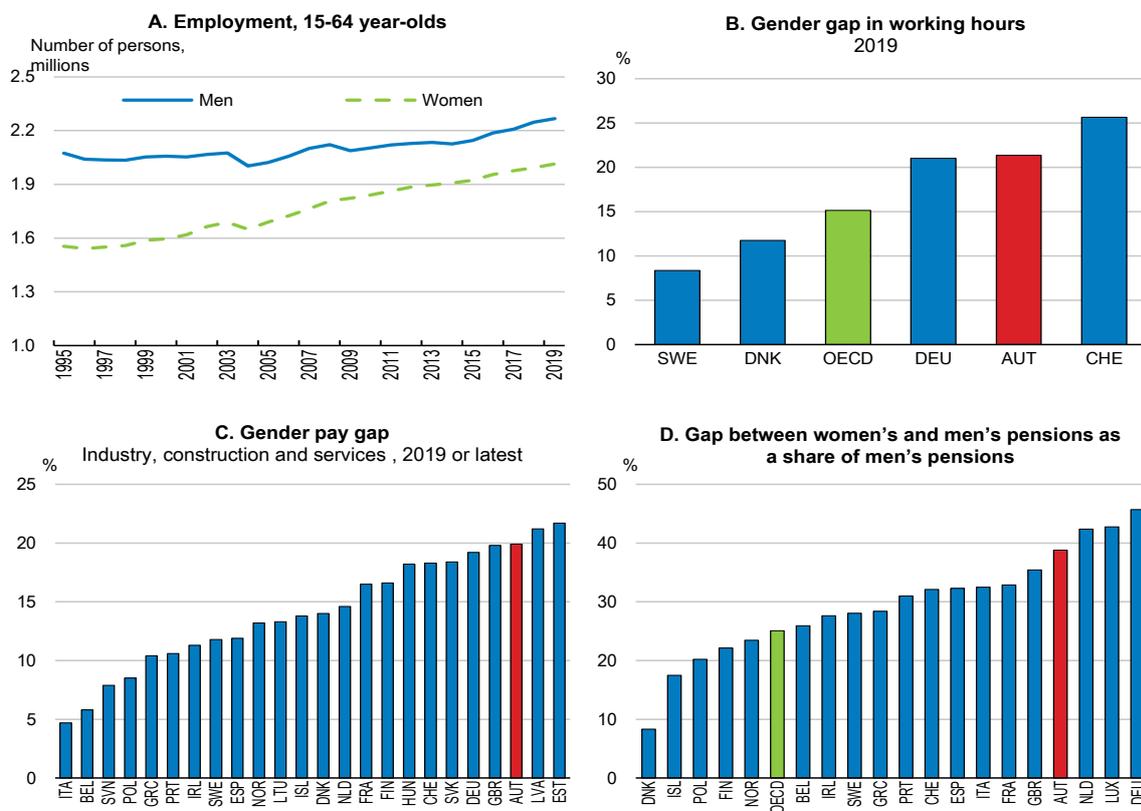
The shrinking of the Austrian workforce may exacerbate these mismatches. Sustaining relatively high levels of material well-being in the future necessitates a more efficient allocation of so far underutilised labour resources, in particular female, migrant and older workers. Their integration lags behind other peer

countries. This should be flanked with steady efforts across all layers of the educational system and policies to promote life-long learning programmes to equip workers with the most relevant skills.

Underutilised labour resources need to be better mobilised

Gender gaps in career attainment and wages remain high. As discussed in Chapter 1, the deeply entrenched male breadwinner model but also the limited availability of childcare and full-day schooling throughout the whole country impede full-time employment of female workers (OECD, 2019). Further, women tend to take on more caretaking responsibilities within the family. As a result, a large share of women only work part-time leading to a large gender gap in part-time employment, undermining the supply of labour but as well as retirement incomes (Figure 27).

Figure 27. Gender differences in retirement incomes and salaries are high



Note: Panel B refers to the gap between women's and men's average usual weekly working hours on the main job as a share of men's working hours, total declared employment. Panel C refers to the unadjusted gender pay gap which is the difference between average gross hourly earnings of male and female paid employees as a percentage of male paid employees' earnings, irrespective of the type of work performed, the number of hours worked and the duration of the contract. For Panel C, the sector excludes public administration, defense and compulsory social security. For Panel D, calculations based on EU-SILC, 2016, version: March 2018. Data refers to population aged 65 or older. Gender gap in pensions calculated using the following formula: $1 - \text{women's average pension} / \text{men's average pension}$. It includes persons who obtain old-age benefit (public or private), survival pension or disability benefit. 2014 for Iceland.
 Source: OECD (2021), OECD Labour Force Statistics (database), OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators and Eurostat (2021), Gender pay gap in unadjusted form by NACE Rev. 2 activity.

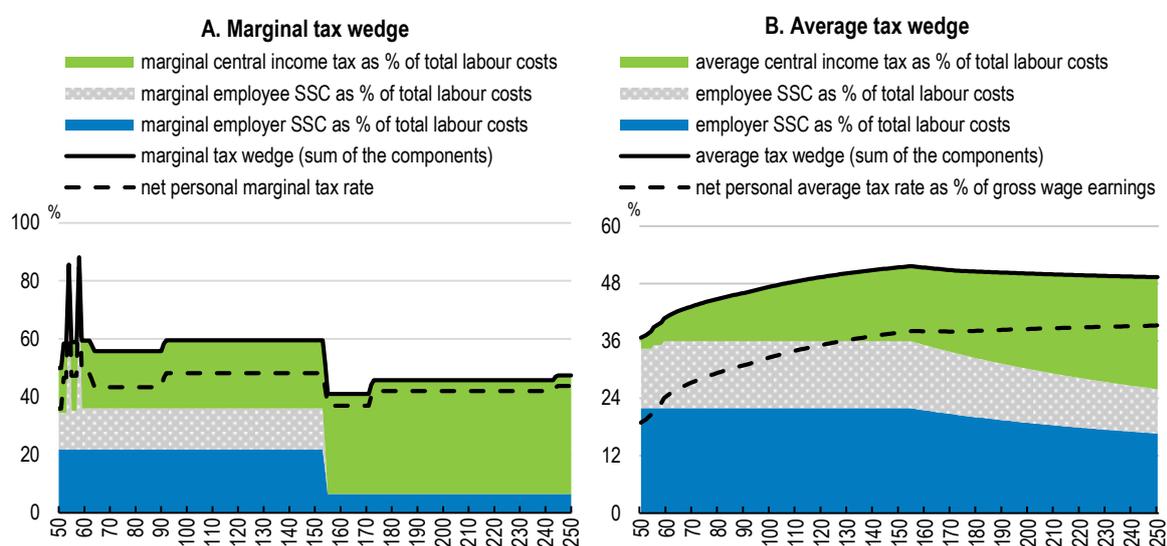
The COVID-19 crisis has somewhat put the spotlight on gender gaps in labour market outcomes. Since the share of women on part-time jobs is elevated and part-time work in the most hard hit sectors tends to be higher, female workers have been more affected by the pandemic. They have also been more likely to get unemployed instead of benefitting from short-time working (Bock-Schappelwein and Famira-

Mühlberger, 2021). Nevertheless, both female and male employment surpassed the pre-crisis level in May 2021 and have been growing since then. Policy action is needed to avoid that the pandemic effects this setback turn into a deeper scar.

The Austrian personal income tax system is dual-earner friendly but taxation is high and steep labour tax wedges hamper full-time work (Figure 28). Second earners, which are often women in Austria, do not face higher net personal average tax rates than singles. Labour tax wedges are nevertheless the third-highest across OECD countries and contribute to the entrenchment of part-time work, in particular of women (OECD, 2017). A reduction of income taxes, initially planned for 2022, was brought forward and lowered the labour tax wedge for low-income earners. Employer social security contributions were reduced. Nevertheless, the Austrian tax system rests on relatively elevated taxes on labour.

Figure 28. Labour tax wedges are high

Tax wedge decomposition by level of gross earnings as % of the average wage, one-earner married couple without children, 2020



Source: OECD (2021), Taxing Wages 2021.

Employment rates of elderly workers are lower than in other European countries. Their unemployment rate has increased more than in peer countries and they account for nearly half of all long-term unemployed, as discussed in Chapter 1. The authorities are aware of this problem and provided EUR 50 million in 2019 and 2020 in the form of extended financial subsidies to incentivise firms to hire older workers. The so-called “Eingliederungsbeihilfe” appears to be successful.

Policymakers need to take a comprehensive approach to boost employment at older ages. As specified in the OECD Recommendations of the Council on Ageing and Employment Policies, this approach should encourage employers to retain and hire older workers to boost labour demand, augment the employability of older workers by improving their skills and by enhancing incentives to continue working at an older stage. An important part of these incentives pertains to the pension system. While the official retirement age for men and women is 65 and 60 respectively, men retire effectively at around 63 and women at 60. The main motivation for different retirement ages for men and women was to counterbalance the higher share of household tasks, including childcare. However, besides the lower lifetime employment incomes of women, the earlier retirement age for women is the second major driver of the elevated gender pensions gap (Mairhuber and Mayrhuber, 2020). The alignment of retirement ages of men and women until 2033 is

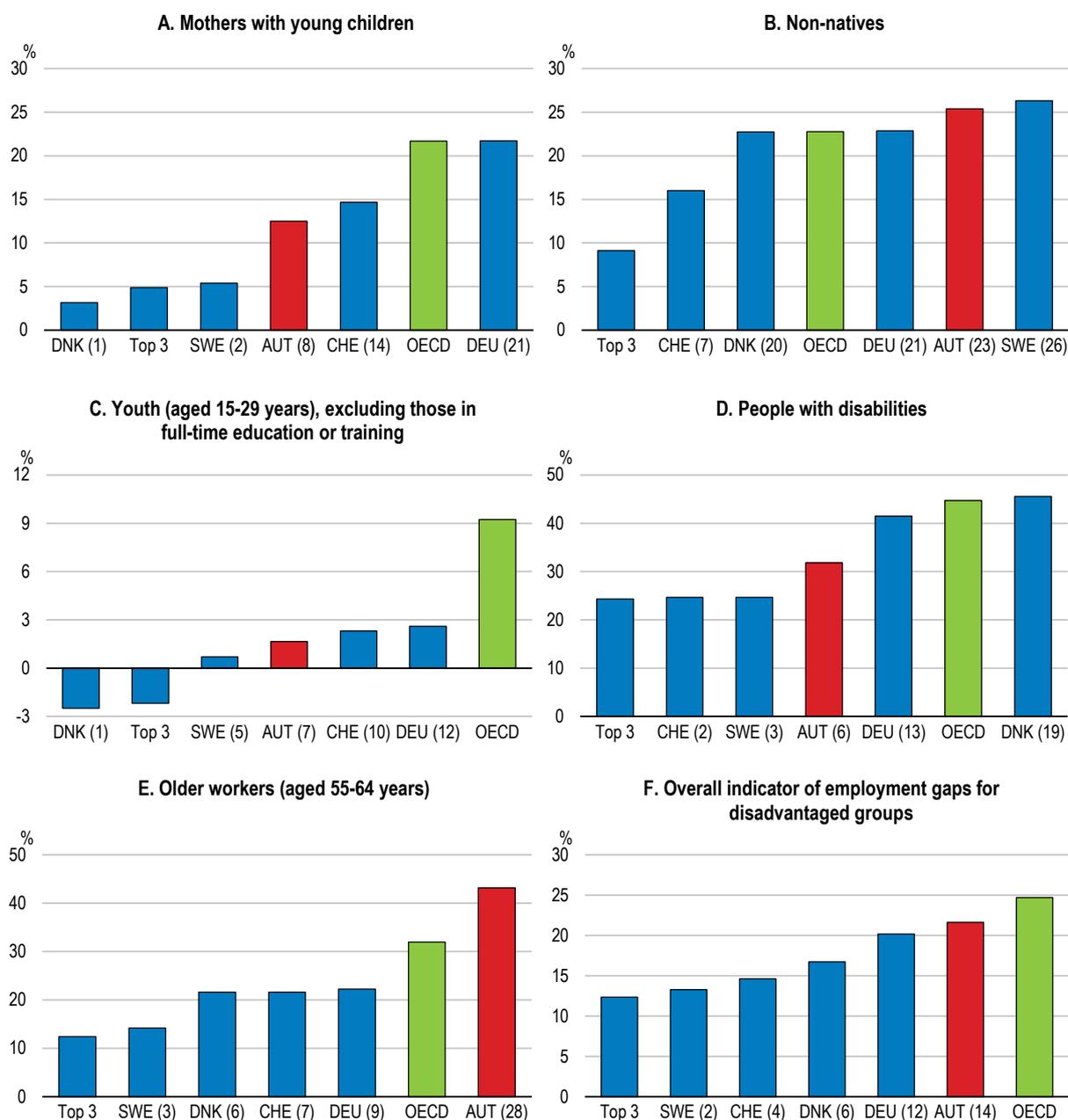
therefore welcome. Moreover, linking retirement age to life expectancies, either automatically or through continued legislative changes, would allow older workers to participate longer in labour markets while alleviating pressures on public balances and thus contribute to a more sustainable retirement system. Restricting the use of publicly-funded early-retirement schemes, which incentivise older workers to leave workforce earlier, would also help. The recent reform from December 2020, which abolished a pathway to early retirement for workers of certain occupations without deductions, was a step in the right direction. The abolishment of deduction-free early retirement pensions will enter into force as of 31 December 2021. It will be accompanied by the so-called “Early Starter Bonus”, which adds to the pension amount each month up to 60 EUR for workers who have started working between the ages 15-20. The expenditure calculated for the “Early Starter Bonus” is significantly lower than for the deduction-free early retirement pension scheme.

Unemployment rates and labour market mismatch of migrants are high (Figure 29). The employment gap of migrants in Austria as compared to prime-age male nationals is among the highest in Europe (European Commission, 2020). This results predominantly from lower employment rates of foreign-born female workers and older foreign-born male workers. Employment gaps of prime-age foreign and native born men are lower than in the peer countries. At the same time, educational outcomes in Austria are heavily dependent on socio-economic status, impeding social mobility (OECD, 2019). Due to travel restrictions and their elevated share in the most hit sectors, in particular in the food and accommodation sectors, migrant workers have been more affected by the COVID-19 crisis than nationals (Bock-Schappelwein et al, 2020). Factors like long employment spells combined with an emphasis of steady within-firm adjustments, in particular in SMEs, may complicate the integration of outsiders, e.g. migrants. As discussed in more detail in Chapter 1, policymakers need to continue to improve German language capabilities and make educational outcomes less dependent on their parents’ background. A higher availability of full-day childcare and schooling could thus provide a double-dividend.

The Federal Ministry of Labour has announced during the summer 2021 that it envisages a significant reform of the unemployment system. The ultimate goal of the reform is to “durably reduce unemployment rates”. A concrete reform proposal, based on substantive discussions with all important stakeholders, notably social partners and national and international experts, is expected at the end of the first quarter of 2022. A faster and more efficient transfer of unemployed workers into new and good quality jobs, one goal of the reform, is welcome and could help to better activate available talent.

Figure 29. Employment gaps are sizeable for disadvantaged groups

Employment gaps with respect to prime-age men for selected disadvantaged groups, 2016 or nearest



Note: Countries are sorted in ascending order of the employment gap (i.e. from best to worst performing). Number in parenthesis indicates the rank from best performing. For each group, the employment gap is the difference between the employment rate of prime-age men (aged 25-54 years) and that of the group, expressed as a percentage of the employment rate of prime-age men. Panel A: Mothers with young children refer to working-age mothers with at least one child aged 0 to 14 years. Panel B: Data refer to all foreign-born people with no regards to nationality. Panel C: In the case of youth, those that are in full-time education are excluded from the denominator of the employment rate. Panel D: Data refer to 2011 except for Norway (2016). Panel F: The overall indicator is a weighted average of the employment gaps for each group. Unweighted average of 36 countries except the average of 32 countries in Panel D.

Source: OECD (2018), Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy, <https://doi.org/10.1787/9789264308817-en>.

Upgrading and adjusting skills

The professional and technical skills of business owners, managers, engineers and workers will need to be updated more frequently than before. Up-lifting skills in all professional areas subject to technological changes will help businesses to remain close to the global frontier. Human resource upgrading is therefore not only a skill matching challenge for the low-skilled, but an agenda for the entire workforce. The productivity and employment performance of the economy will depend on this process (OECD, 2021e).

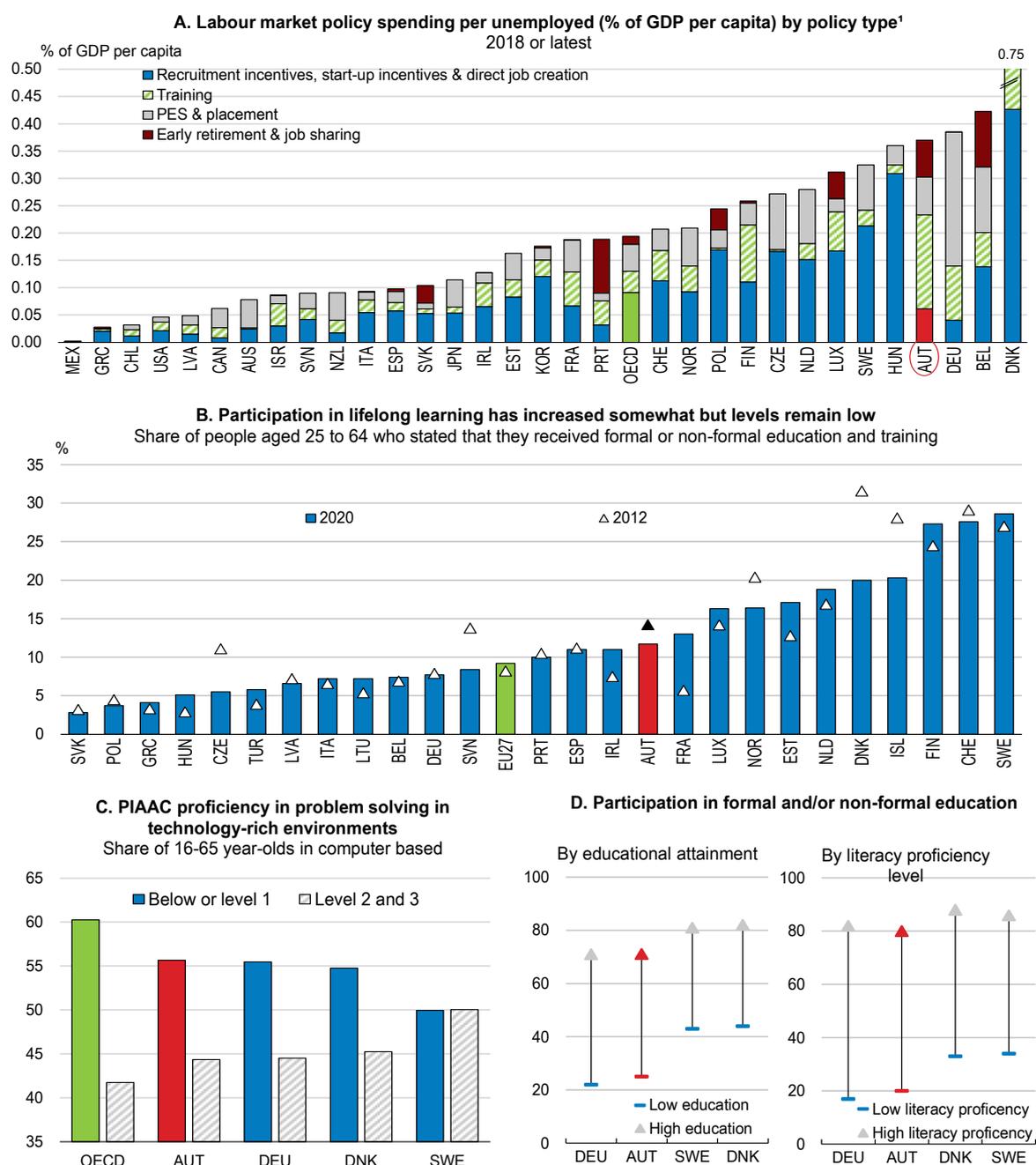
A fine-tuning of life-long learning policies and institutions appears desirable in Austria. While training spending per unemployed person is the highest in international comparison (Figure 30, Panel A), average participation stays low (Figure 30, Panel B). A comparison of lifelong learning costs per participant in different countries revealed that two Austrian programmes are among the costliest. Austria's active labour market policies devote also more resources to early retirement and job sharing, compared to re-skilling and upskilling (Figure 30, Panel A).

Highly educated Austrians participate less in life-long learning than counterparts in the peer countries. The gap for the low-educated is even larger, while their generic skills are comparatively weaker (Figure 30, Panels C and D). While relatively high compared to the OECD average, internal training within firms falls also somewhat behind peer countries: Both large and small businesses engaged a lower share of their employees in lifelong learning in 2020, despite the room offered by short-time working schemes. The gap is relatively small for large businesses (less than 70% of large Austrian firms offered training programmes, against 80% in Denmark and Sweden) but the gap is larger for firms employing less than 50 workers (around 15% in Austria, against nearly 30% in Denmark and Sweden). The Economic Chamber (WKÖ) emphasises that there is room for progress in business owners' realising the potential of digitalisation "as a strategic transformation lever".

There is a strong case for fostering life-long learning. Three avenues are available:

- Supporting employers via tax deductions for the re-training of their workers, either in activity or newly hired, and at all hierarchical levels. Deduction rates for eligible spending may be adjusted to reflect technological, sectoral, regional and social priorities. They could go above 100%.
- Individual training accounts can be put in place to create a competitive market for re-skilling services. International experience from various countries, notably France (see Box 5), is encouraging, provided that policy guidance secures reliable information and quality safeguards for all participants (OECD, 2021f). Austria has individual learning accounts at the Länder level since the early 1980s. However, the criteria for the accreditation to be able to supply trainings eligible for individual learning accounts may create entry barriers for foreign and domestic training providers and should be evaluated regularly. In particular, the criteria to be active on Austrian markets for at least for three years could be reduced to lower entry costs. A further key design feature pertains to replacement incomes. The experience from France shows, that the provision of replacement incomes can lead to higher participation rates, in particular across temporary and lower-skilled workers (OECD, 2019e).
- On-line courses made major progress in recent years. They were actively used by many motivated participants during the lockdowns, but Austria appears to have faced a gap in this area. The population's lower familiarity with ICT media may have been an impediment. Publicly supported pedagogical research on on-line adult education could help make progress.

Figure 30. Austria dedicates considerable public resources to life-long learning, but participation by the high-skilled remains average and participation by the low-skilled is low



1. Spending on public employment services (PES) includes funding for authorities that connect jobseekers with employers through information, placement and active support services. Unweighted average for the OECD aggregate.

2. Low literacy proficiency refers to the lowest PIAAC proficiency in literacy (below or level 1) for below upper secondary education and high literacy proficiency refers to the highest PIAAC proficiency in literacy (level 4 or 5) for tertiary education. Low education refers to below upper secondary education and high education refers to tertiary education.

3. Low education refers to below upper secondary education and high education refers to tertiary education. Panel D shows the share of adults who participated in at least one learning activity, in formal and /or non-formal education in the previous year of the interview on the Survey of Adult Skills.

Source: OECD (2021), Labour Market Programmes (database); and OECD (2021), OECD Economic Outlook: Statistics and Projections (database).

Box 5. Individual training accounts in France

The French individual training account system, *Compte Personnel de Formation* (CPF), is frequently cited as a promising approach to help to improve participation in adult learning programmes. CPF allows to accumulate training rights over time at two different rates, conditional on the starting level of education. Workers with at least a lower secondary degree get allocated EUR 500 per year. They can accumulate up to EUR 5 000 in total. Workers who do not have a lower secondary degree get EUR 800 per year, up to a maximum of EUR 8 000. Additional funds are disbursed for workers who need professional retraining. The CPF covers employees, jobseekers and the self-employed. The funds for the CPF are financed by firms, through a compulsory training levy of 0.2% of gross wages. The self-employed contribute an equal amount of their turnover to a training fund.

Initially founded in 2015, a main goal was to promote access to training opportunities, in particular for lower-skilled individuals and workers, who are likely to switch jobs often. The initial CPF system was complex and not transparent enough and implied a relatively costly learning phase for all participants. A reform in 2018 addressed these shortcomings. Notably, the number of actors involved was reduced.

Source: OECD (2017c), OECD (2019d) and OECD (2019e).

A lack of geographical mobility impedes a better allocation of workers to jobs

Removing barriers to geographical mobility can improve the allocation of workers to jobs and thus reduce mismatches (OECD, 2015). A more flexible economy will likely entail more geographical mobility of the population. Progress in tele-working will reduce commuting needs and will offer wider settlement choices to the population. The so-far successful housing policies may deserve a re-evaluation (Box 6).

Box 6. Re-evaluating housing policies

Social housing represents nearly 25% of the housing stock in Austria, second only to the Netherlands in the OECD area. The share reaches higher levels in large urban areas, notably in Vienna where it represents more than 40% of all residential dwellings: 22% of households live in municipal houses and 21% in housing provided by limited-profit housing associations. In rural areas (where more than 40% of the population live, a higher proportion than in comparable countries) owner-occupied houses dominate. Rural housing markets are thin and owners' mobility is made difficult when local activities decline. A cross-country OECD study found an inverse relationship between home ownership and residential mobility (outright owners are less mobile than owners paying mortgages, who are less mobile than tenants paying subsidised rents, who, in turn, are less mobile than tenants paying market rents. This pattern seems to prevail also in Austria.

Social housing has provided affordable high-quality housing for large parts of the population in the past. It may now be facing certain challenges. As tenures are based on open-ended, non-portable, long-term contracts, they may be denting geographical mobility. Many beneficiaries have also reached upper-middle income status, which may create bottlenecks when demand by lower-income and younger cohorts expands. Low-income households may also be constrained by the deposit that is required at entry into social dwellings (to co-finance a share of construction and land costs) (OECD, 2020h). Concerning private rental housing, rent control over dwellings in buildings constructed before 1945 (which form the majority of the rental housing in historical cities) keep rents at artificially low levels (significantly below levels for recently constructed commercial rental housing). An OECD analysis found

that the price elasticity of total long-term housing supply in Austria remains particularly low (OECD, 2019a).

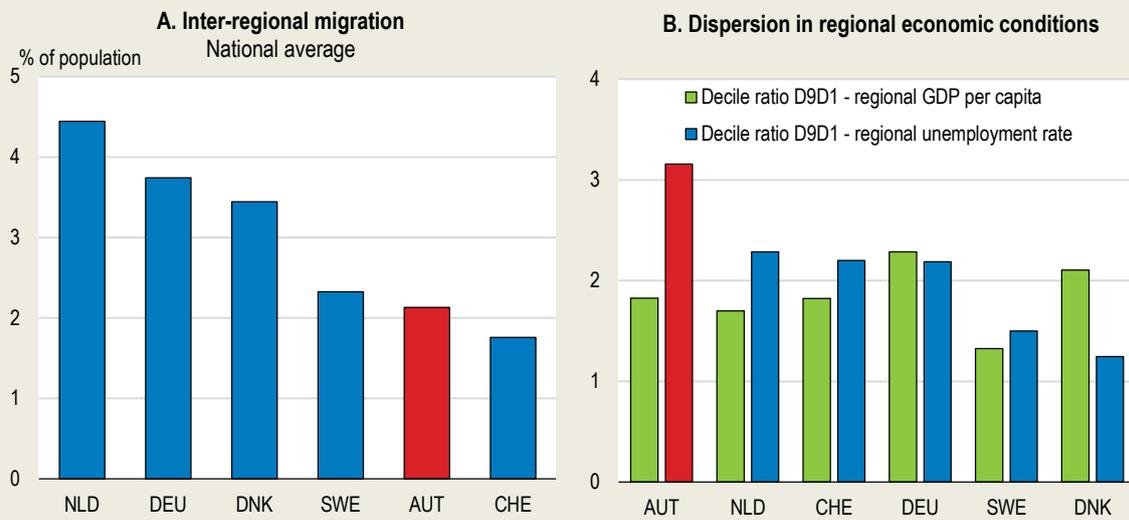
OECD's Horizontal Housing Project has documented Austria's positive aggregate outcomes: "housing costs, comprising actual and imputed rents, make up a smaller share of the household expenditures than in the average OECD country. House price volatility, a standard indicator of vulnerability, has been relatively low". Overall, Austria's housing sector is indeed relatively affordable and sustainable and has not experienced the same volatility as in many other OECD countries. Emergency measures adopted during the COVID-19 shock supported both tenants and landlords, with forbearance for rent arrears for tenants and tax depreciations for landlords (OECD, 2021g). An in-depth examination of the responsiveness of Austria's housing market institutions and policies to new needs, based on the information being gathered in the OECD Horizontal Housing Project may be informative for policymakers.

The inter-regional migration in Austria is lower than in peer countries. The stability of economic activities across regions, de-centralised manufacturing clusters, and strong service activities in regional urban centres sustained this relative stability. At the same time, regional disparities in unemployment rates are elevated (see Box 7). New OECD analyses sheds lights on the policy levers that are associated with higher regional mobility (Causa et al., 2021). In particular, the study looks at structural policies, which increase intra-country migration towards regions with higher economic growth. It suggests that reducing barriers to innovative entrepreneurship would have the biggest positive impact on labour mobility in Austria.

Box 7. Inter-regional migration and labour market dynamism in Austria

Inter-regional migration can spur economic growth, for instance by enhancing labour market dynamism, but also social mobility by allowing people from disadvantaged areas to move to areas that give them better opportunities. This is likely to be particularly relevant in the COVID-19 crisis context where workers' relocation may help a smooth and inclusive labour market recovery. With an annual inter-regional migration rate¹ of around 2%, the Austrian population is less mobile than its European neighbours are such as Germany and the Netherlands (Figure 31, Panel A). At the same time, Austria exhibits relatively high regional inequalities, especially in terms of unemployment (Figure 31, Panel B). In this context, enhancing the responsiveness of inter-regional migration to regional labour market conditions could contribute to enhance labour market dynamism and potentially reduce regional inequalities.

Figure 31. Inter-regional migration and regional economic conditions: Austria in a comparative perspective, 2015-2018



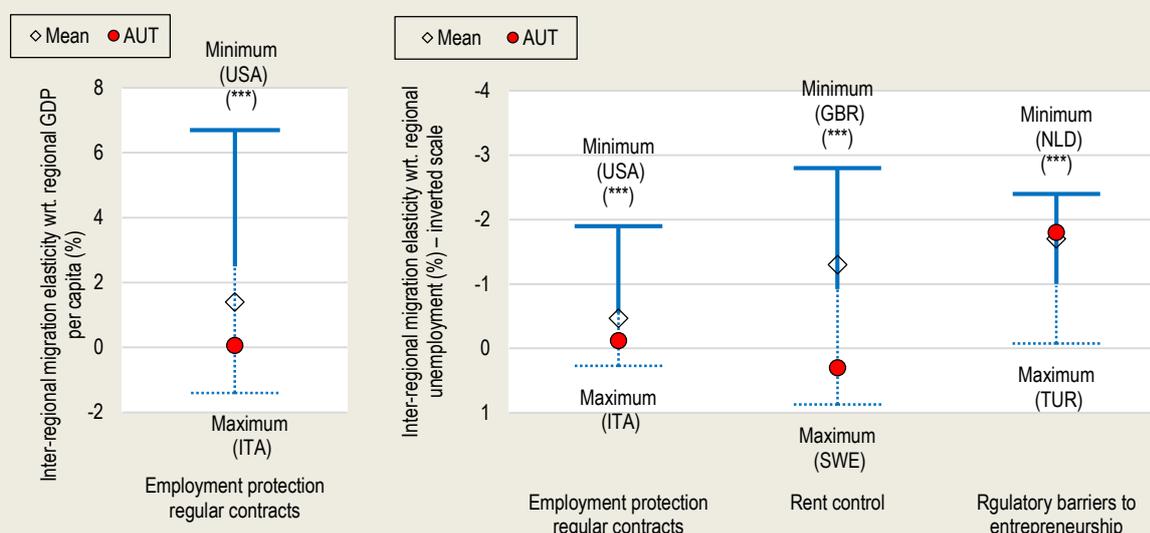
Note: For Panel A, the national average is calculated as the sum across regions of new residents from another region divided by the sum across regions of regional population one year before. Average of years 2015-2018 or closest period i.e.: DEU (2015-17), DNK (2015-19). Regions are defined as small (TL3) regions based on the OECD regional classification scheme. For Panel B, regional dispersion is measured as the ratio of the 90% and 10% decile of the distribution of regional GDP per capita (unemployment) over the period 2015-2018. Regional GDP per capita is measured in constant US-Dollar as of 2015 and based on small (TL3) regions according to the OECD regional classification. Unemployment rate is based on large (TL2) regions

Source: Calculations based on OECD Regional database and Causa et al. (2021), "The laws of attraction: Economic drivers of inter-regional migration, housing costs and the role of policies", OECD Economics Department Working Papers, No. 1679.

New empirical evidence by the OECD (Causa et al., 2021) shows that a number of housing-related and structural policies influence the responsiveness of inter-regional migration to regional economic conditions. This evidence makes it possible to identify major areas of policy reforms that Austria could consider implementing to increase the pass-through from regional economic conditions to inter-regional migration. (Figure 32) provides an illustrative quantification exercise in the following areas:

- Reducing job protection on regular contracts, as too high levels of protection may discourage job mobility.
- Easing rent control regulations insofar as those can reduce incentives to move among tenants in rent-controlled dwellings and also spur inflation in local house prices, reducing affordability and in turn the economic returns to inter-regional migration.
- Reducing barriers to entrepreneurship to foster the entry of new firms, job creation and labour market dynamism.

Figure 32. Policy reform proposals to foster the responsiveness of inter-regional migration to local economic conditions in Austria



Note: OECD calculations based on selected interaction effects included in a regression of inter-regional migration on regional GDP per capita, regional unemployment and further regional variables and controls. The dot is the estimated in-migration elasticity evaluated at the average policy. The distance between the Min/Max and the average is the change in the estimated elasticity associated with a policy change. Dashed line means that the estimated elasticity is no longer statistically significant. *** denotes to the statistical significance of the estimated elasticity at 1%.

How to read: An increase in regional GDP per capita by 10% is estimated to trigger a rise in in-migration in that region by 1.4% at the mean of the cross-country distribution of employment protection of regular contracts, 6.7% at the minimum and -1.4% at the maximum. A decline in regional unemployment by 10% is estimated to trigger a rise in in-migration in that region by 0.47% at the mean of the cross-country distribution of employment protection of regular contracts, 1.9% at minimum and -0.27% at the maximum. The policy indicators used refer to 2017 or the latest available year.

Source: Calculations based on OECD Regional database and Causa et al. (2021), "The laws of attraction: Economic drivers of inter-regional migration, housing costs and the role of policies", OECD Economics Department Working Papers, No. 1679.

Inter-regional mobility is not an end in itself, however it can create depopulation in some areas that are left behind and that sometimes suffer from the closure of essential public amenities, and it can create congestion, hence contributing to environmental and health damages. There is no ideal level of inter-regional mobility and the extent to which policies should encourage people to move from one area to another will depend on country-specific context and social preferences. The implication is that structural policies to encourage mobility can only be one pillar of a policy agenda to promote a smooth and inclusive recovery from the COVID-19 crisis. There is a need for articulating structural policies with place-based policies that focus on improving local economic conditions. Creating opportunities in less-developed regions can be about deploying quality infrastructure and amenities, for instance to allow individuals to live there and work elsewhere, especially in a context of rising digitalisation and teleworking. Place-based policies also allow tailoring policy interventions to the local context, which can enhance the effectiveness of policy interventions. One example is designing active labour market and training programmes targeted to the characteristics of the local workforce, of local firms and of industrial structure.

"Place-based policies" cater to social preferences for the stability of living places when economic activities are re-shuffled. They aim at attracting investment and jobs to replace lost local activities. OECD's Economic Policy Committee suggested recently that geographical mobility increases microeconomic

efficiency, but also generates externalities which may not be properly priced, making excessive geographical concentration of activities undesirable (Chair conclusions of the EPC WP/1 discussion on regional mobility, 18 March 2021). Loss of social connections and social capital is also not accounted for. Place-based policies may improve collective outcomes under such circumstances. Länder and municipal authorities have long been implementing such policies in Austria, via specialised educational facilities and technology parks (OECD, 2017d). These initiatives may successfully stimulate local activities and employment. Still, in the future, social policies may also need to facilitate and support the mobility of workers and their families when conditions require it. Social partners may contribute to the discussion and design of such policies (Bax, 2020).

Fostering knowledge creation and R&D to boost innovation

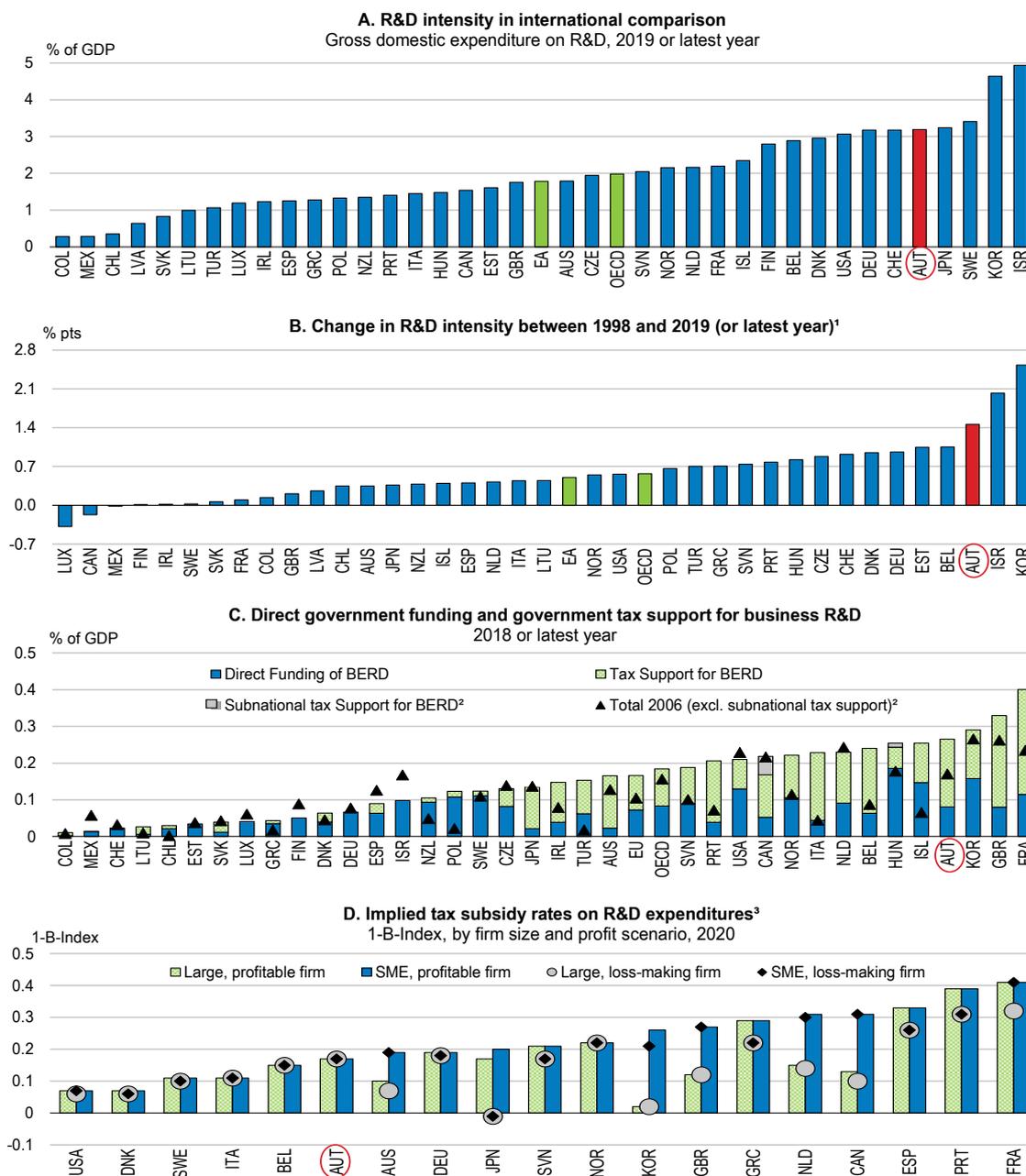
Innovative activity is concentrated in well-established sectors but not diversified enough

Empirical evidence supports the view that higher shares of equity financing significantly improves innovative activity like patenting and R&D expenditure (Hsu, Tian and Xu, 2014). Thus, improving the development of risk capital markets would not only diversify the composition of sources of external financing but also foster R&D and therefore entail a double dividend.

R&D intensity in Austria is high and saw one of the largest increases since the end of the 1990s (Figure 33). Implied tax subsidy rates for R&D expenditure have increased steadily throughout the last two decades (OECD, 2020f). Public support for business R&D is generous compared with other countries and is mainly provided through tax incentives (Figure 33). As a result, Austria reached the European Union's target to bring R&D expenditure above 3% of GDP already in 2014. The majority of this increase was accounted for by the private sector (OECD, 2020f). The strong increase in R&D intensity has also benefitted from an above-average share of R&D expenditures in the form of foreign direct investments. Boosting R&D continues to be a key lever for the government to position Austria as an innovation leader.

R&D activity in Austria fortifies specialisation in established industries but falls short of developing new markets, in particular in high-tech industries (OECD, 2018b). Compared to other OECD countries, Austria has a significantly higher R&D intensity in the historically grown and already competitive industries (Janger et al., 2017), mainly across low- to medium tech industries (Figure 34). The share of business R&D in the high-tech sector is low and lags behind the innovation leaders (Figure 34). The distribution of R&D activity across sectors goes hand in hand with an economic model that favours the steady upgrading within sectors.

Figure 33. R&D intensity is high and R&D tax incentives generous



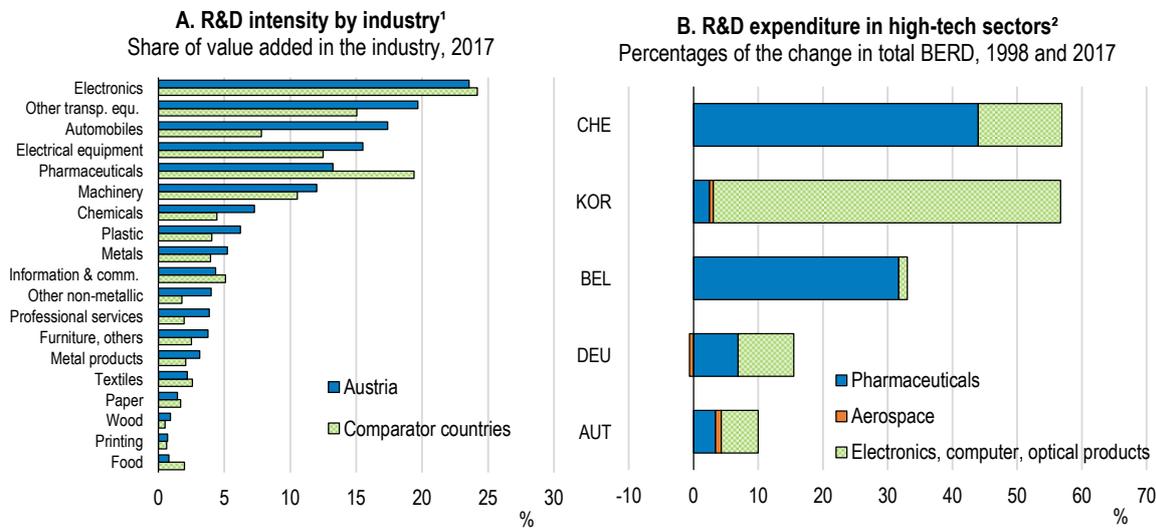
1. Due to a lack of data in 1998, data for Colombia, Luxembourg and Switzerland refer to 2000 and data for Greece, New Zealand, Norway and Sweden refer to 1999.

2. Data on subnational tax support are only available for a group of countries. Depending on the data availability, data for the closest year to 2006 are also used instead of 2006.

3. Implied marginal tax subsidy rates, presented for different firm size and profitability scenarios, are calculated based on headline tax credit/allowance rates providing an upper bound value of the generosity of R&D tax support, not reflecting the effect of thresholds and ceilings that may limit the amount of qualifying R&D expenditure or value of tax relief.

Source: OECD (2021), OECD Main Science and Technology Indicators (database) and OECD, R&D Tax Incentives Database, <http://oe.cd/rdtx>, March 2021.

Figure 34. R&D activity specialised in medium to low R&D intensive industries



1. According to ISIC rev. 4. Comparator countries refer to the unweighted average of industry R&D intensities for Belgium, Denmark, Finland, Germany, Netherlands and Sweden. Data for Sweden refer to 2018.

2. Data for Aerospace are not taken into account for Switzerland due to a lack of data.

Source: OECD (2021), Main Science and Technology Indicators (database) and OECD calculations based on the ANBERD database, <http://oe.cd/anberd> (March 2021) and OECD STAN and National Accounts Statistics.

Going forward, Austria should attach a high priority on increasing the efficiency and effectiveness of its investments in research and innovation (OECD, 2018b). The “new RTI Strategy 2030”, adopted in December 2020, which aims at catching up with international leaders, is therefore welcome. The strategy could benefit from changing the composition of public support towards more well-designed R&D grants. This would help to better diversify Austria’s research portfolio and potentially also increase its share in high-technology intensive sectors. While well-designed R&D tax incentives tend to be better suited to boost R&D projects that are already close to hit the market, grants have been found to support longer-term and riskier research but also benefits innovations that either generate public goods, e.g. in the area of health or climate transition, or have a significant potential for knowledge spillovers (OECD, 2020g). While identifying best practices regarding well-designed R&D grants is challenging given that these grants are usually very specific to the context in which they are used and therefore replication in other country settings may be difficult, the US DARPA programme is widely considered a success. The “OECD Mission-Oriented Innovation policies online toolkit” provides detailed explanations and a wide range of country examples in order to help countries with some of the elements of well-designed R&D grants, e.g. how to achieve a specific goal within a defined timeframe, with a clear direction to innovation and a strategic orientation and strong policy co-ordination.

MAIN FINDINGS	RECOMMENDATIONS
Adapting business framework conditions to promote productivity growth, an efficient allocation of resources and investments	
Many service sectors have long been sheltered from full competition by regulations, self-regulations and trade and investment protections.	Reduce regulatory barriers in entering market services without undermining their quality and skill standards.
Strict product market regulations in rail transportation, road freight and the distribution of pharmaceuticals create barriers to entry and to international trade and investment.	Liberalise market entry in rail transportation, road freight and the distribution of pharmaceuticals.
Enterprise birth rates are lower than in peer countries, though a large proportion of Austrians state that they have the entrepreneurial capacity to create their own business.	Continue reducing regulatory barriers for start-ups.
The growth rate of inward FDI has been sluggish in recent years. Barriers to inward foreign direct investments are higher than the OECD average.	Reduce barriers to inward FDI across all sectors to the OECD average.
Foundations hold interest in an elevated number of companies, accounting for around 10% of total employment. The governance of foundations may appear too rigid in certain aspects and may hamper firm growth.	Assess whether the governance of private foundations weighs on the upscaling of firms to guide the envisaged legal reform of private foundations.
Time-consuming restructurings can congest courts and may lead to the liquidation of otherwise viable firms.	Introduce viability screens for firms before initiating restructuring procedures.
Stimulating the adoption of key digital technologies	
The low supply of private risk capital constitutes a bottleneck for business dynamism.	Improve the effectiveness of start-up and growth financing instruments, including by avoiding complexity, scaling up later stage funding and improving conditions for institutional investors to invest in venture capital.
Fixed broadband coverage, in particular at higher speed tiers, is lower than in most other European countries.	Increase access to high-quality internet throughout the entire country and achieve the national and EU goal of Gigabit connectivity for all households by 2030.
The uptake of fixed broadband is lower than in most other European countries.	Facilitate new entries and stimulate further competition in broadband services.
The Broadband Strategy 2030 aims at considerable nation-wide investments in Gigabit connectivity but Austria's topography combined with its comparatively low population density constitutes a challenge for the deployment of high-speed broadband.	Regularly assess the state of connectivity through the collection, analysis, performance and publication of data on connectivity services and infrastructure deployment to determine whether public policy initiatives are appropriate, and whether and how they should be adjusted.
Skill shortages, in particular regarding skills of adults in technology-rich environments, are elevated. Importing skills from abroad would help to alleviate these shortages.	Continue to attract high-skilled foreign workers by facilitating their access to red-white-red cards.
Digital security risk management of smaller firms lags behind practices in peer countries.	Consider launching a digital security management awareness campaign, targeted at small- and medium-sized enterprises.
The provision and use of e-government services can help to use government resources more efficiently, increase transparency and is positively related with the adoption of key ICT technologies by firms. Composite indicators on e-government show that Austria performs very well in a European context.	Continue the already strong efforts in e-government to remain a best performer.
Reinvigorating investments for a resilient recovery	
The loss carry-back provision comes at a large fiscal cost and could be used for tax planning.	Discontinue the loss carry-back provision for corporate taxes once the recovery is fully underway but keep it in the policy toolkit as a discretionary measure for times of crisis.
Keeping up with structural change requires a more efficient allocation of labour and improving skills	
Both high- and low-educated Austrians participate less in life-long learning than in peer countries. Internal training within firms is also less developed.	Publicise the employment and income outcomes of various life-long learning programmes. Incentivise workers at all levels to participate in high-quality programmes, including with the help of individual learning accounts.
Employment rates of elderly workers are lower than in other European countries and their unemployment rate has increased more than in peer countries. Working conditions of seniors can be improved.	Address discrimination in employment on the basis of age and take a balanced approach to employment protection by ensuring that age is not a criterion in determining the level of protection.
The quality and labour market relevance of life-long learning programmes can be improved, particularly regarding digital technologies.	Involve employer and employee organisations more closely in the design and management of life-long learning programmes to improve quantity and quality of life-long learning programmes and consider reducing entry barriers for training providers to foster competition.
Fostering knowledge creation and R&D to boost innovation	
The share of business R&D in the high-tech sector is low and lags behind innovation leaders. Public support to R&D is provided mainly with tax incentives	Consider using well-designed direct R&D grants to support longer term, higher-risk research.

References

- Acemoglu, D. and P. Restrepo (2021), "Demographics and Automation", *The Review of Economic Studies*.
- Adalet McGown, M. and D. Andrews (2015), "Labour Market Mismatch and Labour Productivity: Evidence from PIAAC Data", *OECD Economics Department Working Papers*, No. 1209.
- AFME-PWC (2021), *Recapitalising EU businesses post COVID-19: How equity and hybrid markets instruments can drive the recovery*.
- Aiyar, S., C. Ebeke and Z. Shao (2016), "The Impact of Workforce Aging on European Productivity", *IMF Working Paper*, WP/16/238.
- Aksoy, Y., Basso, H.S., R. Smith and T. Grasl (2019), "Demographic Structure and Macroeconomic Trends", *American Economic Journal: Macroeconomics*, Vol. 11 (1).
- Bax, W. (2020), "Skills in Transition": Highlights from the OECD Forum Virtual Roundtable", The Forum Network.
- Bock-Schappelwein, J., U. Hümer and W. Hyll (2020), "COVID-19 Pandemie: Höchste Beschäftigungseinbußen in Österreich seit fast 70 Jahren", *Wifo Research Briefs 2/2020*, Österreichisches Institut für Wirtschaftsforschung.
- Bock-Schappelwein, J. (2020), "Welches Home-Office-Potential birgt der österreichische Arbeitsmarkt?", *Wifo Research Briefs 4/2020*, Österreichisches Institut für Wirtschaftsforschung.
- Bock-Schappelwein, J. and U. Famira-Mühlberger (2021), "Frauen auf dem Arbeitsmarkt vor und während der COVID-19-Krise", *WIFO Research Briefs 03/2021*, Österreichisches Institut für Wirtschaftsforschung, Wien.
- Botazzi, L., M. Da Rin, and T. Hellmann (2008), "Who are the active investors? Evidence from venture capital", *Journal of Financial Economics*, Vol. 89(3).
- Bundeskanzleramt (2021), *Bericht Cybersicherheit für das Jahr 2020*, Bundeskanzleramt, Wien.
- Breyer, P., E. Endlich, D. Huber, D. Oswald, C. Prenner, L. Reiss, M. Schneider and W. Waschiczek (2021), "Corporate equity financing in Austria – impediments and possible improvements", In: *Financial Stability Report No. 42*, forthcoming.
- Boschmann, K., and L. Pissareva (2017), "Fostering Markets for SME Finance", *OECD SME and Entrepreneurship Papers*, No. 6.
- Causa, O., M. Abendschein and M. Cavalleri (2021), "The laws of attraction: economic drivers of inter-regional migration, housing costs and the role of policies", *OECD Economics Department Working papers*, forthcoming.
- Chernoff, A.W, and C. Warman (2020), "COVID-19 and Implications for Automation", *NBER Working Paper*, No. 27249.
- Christl, M. (2020), "A Beveridge curve decomposition for Austria: did the liberalisation of the Austrian labour market shift the Beveridge curve", *Journal for Labour Market Research*, Vol.
- Colombo, M.G. and L. Grilli (2010), "On growth drivers of high-tech start-ups: Exploring the role of founders' human capital and venture capital", *Journal of Business Venturing*, Vol. 25(6).
- Cupak, A., Fessler, P., Silgoner, M.A. and E. Ulbrich (2018), "Financial literacy in Austria: a survey of recent research results", *Monetary Policy & the Economy Q1/18*, OeNB.
- Demmou, L., G. Franco, S. Calligaris and D. Dlugosch (2021a), "Liquidity shortfalls during the COVID-19 outbreak: Assessment and policy responses", *OECD Economics Department Working Papers*, No. 1647.
- Demmou, L., S. Calligaris, G. Franco, D. Dlugosch, M. Adalet McGowan and S. Sakha (2021b), "Insolvency and debt overhang following the COVID-19 outbreak: Assessment of risks and policy responses", *OECD Economics Department Working Papers*, No. 1651.

- Dirschmid, W., and W. Waschiczek (2005), "Institutional Determinants of Equity Financing in Austria", *Financial Stability Report 9*, Oesterreichische Nationalbank.
- Diez, F.J., R. Duval, J. Fan, J. Garrido, Ş. Kalemli-Özcan, C. Maggi, S. Martinez-Peria and N. Pierrri (2021), "Insolvency Prospect Among Small and Medium Enterprises in Advanced Economies: Assessment and Policy Options", *IMF Staff Discussion Note*, SDN/2021/002.
- Dixon, S. (2003), Implications for population ageing for the labour market, *Labour Market Trends*, February.
- ECB (2021), *Survey on the access to finance of enterprises (SAFE)*, European Central Bank.
- EIB (2020), *EIB Group survey on investment and investment finance 2020*, European Investment Bank.
- ERSB (2021), *Prevention and management of a large number of corporate insolvencies*, European Systemic Risk Board, April 2021.
- Elsinger, H., P. Fessler, S. Kerbl, A. Schneider, M. Schürz and S. Wiesinger (2021), "The calm before the storm? Insolvencies during the COVID-19 pandemic", in: OeNB Financial Stability Report, No. 41.
- European Commission (2017), "Effectiveness of tax incentives for venture capital and business angels to foster the investment of SMEs and start-ups", *Taxation papers - Working Paper*, No. 68.
- European Commission (2020), *Country Report Austria 2020*.
- European Commission (2021a), "Digital Economy and Society Index (DESI) 2021 – Thematic Chapters", European Commission
- European Commission (2021b), "eGovernment Benchmark 2021 – Entering a New Digital Government Era", Insight report written by Capgemini, Sogeti, IDC and Politecnico di Milano for the European Commission Directorate-General for Communications Networks, Content and Technology, October 2021.
- EY (2021), "Digitaler Wandel in österreichischen Mittelstandsunternehmen", Befragungsergebnisse Februar 2021.
- Fessler, P., M. Leovsek and M.A. Silgoner (2020), "Financial literacy in Austria – focus on millennials", *Monetary Policy & the Economy*, Q3/20, Österreichische Nationalbank.
- Färnstrand Damsgaard, E., P.Hjertstrand, P.-J. Norbäck, L. Persson and H. Vasconcelos (2017), "Why Entrepreneurs Choose Risky R&D Projects – But Still Not Risky Enough", *Economic Journal*, Vol. 127.
- Fenz, G., Ragacs, C., M. Schneider and K. Vondra (2020), "Entwicklung von Produktivität und Profitabilität heimischer Unternehmen während der EU-Mitgliedschaft", *Monetary Policy & the Economy*, Österreichische Nationalbank, Issue Q1-Q2/20.
- Friesenbichler, K.S., W. Hölzl, A. Koppl, B. Meyer (2021), *Investitionen in die Digitalisierung und Dekarbonisierung in Österreich*, Österreichisches Institut für Wirtschaftsforschung, Wien.
- Goodhart, C. and M. Pradham (2020), *The Great Demographic Reversal*, Plagrave Macmillian.
- Gourinchas, P.-O., Ş. Kalemli-Özcan, V. Penciakova and N. Sander (2021), "COVID-19 and SME failures", *NBER Working Paper*, No. 27877.
- Huber, P., T. Horbath, and J. Bock-Schappelwein (2017), *Österreich als Zuwanderungsland*, Österreichisches Institut für Wirtschaftsforschung, Wien.
- Dornmayr, H. and M. Rechberger (2020), "Demand for/Lack of Skilled Labour in Austria in 2020", *ibw research brief*, Issue No. 8.
- Goos, M., A. Manning and A. Solomons (2009), "Job polarization in Europe", *American Economic Review*.
- Gottholmseder, G. and H. Handler (2008), "Ziele und Optionen der Steuerreform: Reformoptionen für die Unternehmensbesteuerung", Österreichisches Institut für Wirtschaftsforschung.
- Gal, P., G. Nicoletti, T. Renault, S. Sorbe and C. Timiliotis (2019), "Digitalisation and productivity: In search of the holy grail – Firm-level empirical evidence from EU countries", *OECD Economics Department Working Papers*, No. 1533.

- Hanappi, T. (2018), "Corporate Effective Tax Rates: Model Description and Results from 36 OECD and Non-OECD Countries", *OECD Taxation Working Papers*, No. 38.
- Hausmann, R. and C. Hidalgo (2014), *The Atlas of Economic Complexity*, Puritan Press Cambridge.
- Huber, P., H. Oberhofer and M. Pfaffermayr (2017), "Who creates job? Econometric modelling and evidence for Austrian firm level data", *European Economic Review*, Vol. 91.
- IMF (2021), *Article IV Consultation with Austria*, Washington.
- Iverson, B. (2018), "Get in Line: Chapter 11 Restructuring in Crowded Bankruptcy Courts", *Management Science*, Vol. 64(11).
- Janger, J. and T. König (202), "Forschungspolitik in Österreich – Zentrale Ansatzpunkte für eine Leistungssteigerung in der Grundlagenforschung", Institut für höhere Studien, September 2020.
- Janger, J. A. Kügler and A. Reinstaller (2017), "Österreich 2025: Die Frontier in Wissenschaft, Technologie, Innovationen und Wirtschaft. Messung und Bestimmungsfaktoren", *WIFO Monatsberichte*, Vol. 90(2).
- Janger, J. and A. Strauss-Kollin (202), "Die Leistungsfähigkeit des österreichischen Innovationssystem", Österreichisches Institut für Wirtschaftsforschung, September 2020.
- Kierzenkowski, R., G. Machlica and G. Fulop (2018), "The UK productivity puzzle through the magnifying glass: A sectoral perspective", *OECD Economics Department Working Papers*, No. 1496.
- Klein, C., J. Høj, and G. Machlica (2020), "The impacts of the COVID-19 crisis on the automotive sector in Central and Eastern European Countries", *OECD Department Working Papers*, No. 1658.
- KPMG (2021), *Cyber Security in Österreich*, KPMG, Wien.
- Lee, R. (2016), "Macroeconomics, Aging, and Growth", in *Handbook of the Economics of Population Aging*, Vol. 1, Elsevier.
- Lewis, C. and P. Ollivaud (2020), "Policies for Switzerland's ageing society", *OECD Economics Department Working Paper*, No. 1600.
- Mairhuber, I. and C. Mayrhuber (2020), "Gender Gaps in Pensions in Austria: Quantitative and Qualitative Analysis", TRAPEZ.ANALYSIS, Austrian Federal Chancellery, Division for Women and Equality.
- Molnar, M., and T. Chalaux (2015), "Recent trends in productivity in China: shift-share analysis of labour productivity growth and the evolution of the productivity gap" *OECD Economics Department Working Papers*, No. 1221.
- OECD (2015), *The Innovation Imperative: Contributing to Productivity, Growth and Well-Being*, OECD Publishing Paris.
- OECD (2017a), *The Missing Entrepreneurs: Policies for inclusive Entrepreneurship*, OECD Publishing Paris.
- OECD (2017b), *Employment Outlook*, OECD Publishing, Paris.
- OECD (2017c), *OECD Economic Surveys France*, OECD Publishing, Paris.
- OECD (2017d), *Economic Survey Austria*, OECD Publishing, Paris.
- OECD (2018a), "Skills for jobs: Austria country note", October 2018, OECD Publishing, Paris.
- OECD (2018b), "OECD Reviews of Innovation Policy: Austria", OECD Publishing, Paris.
- OECD (2019a), *Economic Survey Austria*, OECD Publishing, Paris.

- OECD (2019b), Austria: Productivity, *OECD Insights on Productivity and Business Dynamics*, February, 2019.
- OECD (2019c), "Austria: Business Dynamics", *OECD Insights on Productivity and Business Dynamics*, October 2019.
- OECD (2019d), "The future of work: New evidence on job stability, under-employment and access to good jobs", in: *OECD Employment Outlook 2019: The Future of Work*, OECD Publishing, Paris.
- OECD (2019e), *OECD Economic Surveys France*, OECD Publishing, Paris.
- OECD (2020), *Employment Outlook 2020*, OECD Publishing, Paris.
- OECD (2020b), *Tourism: Trends and Policies*, OECD Publishing, Paris.
- OECD (2020c), "COVID-19 and Global Value Chains: Policy Options to Build More Resilient Production Networks", *OECD Policy Responses to Coronavirus (COVID-19)*, 3 June 2020, OECD Publishing, Paris.
- OECD (2020d), *Financing SMEs and Entrepreneurs: An OECD Scoreboard, Special edition: The impact of COVID-19*, OECD Publishing, Paris.
- OECD (2020e), *Job Creation and Local Economic Development 2020: Rebuilding Better*, OECD Publishing, Paris.
- OECD (2020f), "R&D Tax Incentives: Austria, 2020", www.oecd.org/sti/rd-tax-stats-austria.pdf, Directorate for Science, Technology and Innovation, March 2021.
- OECD (2020g), "Findings from the OECD microBERD project, 2016-19", *OECD Science, Technology and Industry Policy Papers*, No. 92.
- OECD (2020h), "Social Housing: A key part of past and future housing policy", *Employment, Labour and Social Affairs Policy Briefs*, OECD, Paris.
- OECD (2021a), *Economic Outlook*, Volume 2021 Issue 1, OECD Publishing, Paris.
- OECD (2021b), *Strengthening Economic Resilience Following the COVID-19 Crisis: A Firm and Industry Perspective*, OECD Publishing, Paris.
- OECD (2021c), *Recommendation of the Council on Broadband Connectivity*, [OECD/LEGAL/0322](https://www.oecd.org/legal/0322).
- OECD (2021d), "R&D Tax Incentives: Austria, 2020", www.oecd.org/sti/rd-tax-stats-austria.pdf, Directorate for Science, Technology and Innovation, March 2021.
- OECD (2021e), *OECD Skills Outlook 2021*, OECD Publishing, Paris.
- OECD (2021f), *OECD Employment Outlook 2021: Navigating the COVID-19 Crisis and Recovery*, OECD Publishing, Paris.
- OECD (2021g), "PH6.1 Rental Regulation", OECD Affordable Housing Database, <https://www.oecd.org/els/family/PH6-1-Rental-regulation.pdf> [last accessed 30 September 2021].
- OeNB (2020a), *Financial Stability Report*, No. 39, Oesterreichische Nationalbank.
- OeNB (2020b), *Financial Stability Report*, No. 40, Oesterreichische Nationalbank.
- OeNB (2021a), *Financial Stability Report*, No. 41, Oesterreichische Nationalbank.
- OeNB (2021b), "Unternehmensinsolvenzen: Auswirkungen der Hilfsmaßnahmen im Jahr 2020 und Ausblick für 2021 und 2022", *Konjunktur aktuell – März 2021*, Oesterreichische Nationalbank.
- Peneder, M. and C. Prettner (2021), "Die Produktivität österreichischer Unternehmen von 2008 bis 2018 (Productivity of Austrian companies from 2008 to 2018)", WIFO Research Briefs, 2021.
- Reiter, S., and E. Beckmann (2020), "How financially literate is CESEE? Insights from the OeNB Euro Survey", *Focus on European Economic Integration*, Q3/20, Österreichische Nationalbank.
- Schneider, M. (2014), "Labor Productivity Developments in Austria in an International Perspective", *Monetary Policy & the Economy*, Oesterreichische Nationalbank, Issue Q3/14.

- Schiman, S. (2018), "Labour supply shocks and the Beveridge curve: Empirical evidence from EU Enlargement", WIFO Working Papers 606/2020,
- Simon, H. (2007), *Hidden champions of the Twenty-First Century: The success of Unknown World Market Leaders*, Springer.
- Sorbe, S., P. Gal, G. Nicoletti and C. Timiliotis (2019), "Digital dividend: Policies to harness the productivity potential of digital technologies", *OECD Economic Policy paper*, February 2019, No. 26.
- WKÖ (2019), "Ausländische Direktinvestitionen und Österreich: Alte Schwächen und neue Herausforderungen", *WKEXPERTS*, September 2019.
- ZEW-PWC (2020), *Effective Tax Levels Using The Devereux/Griffith Methodology*, Project for the EU Commission TAXUD/2020/DE/308.