

# **WIFO** ■ REPORTS ON AUSTRIA 2/2022

## **The WIFO Radar of Competitiveness for the Austrian Economy 2021**

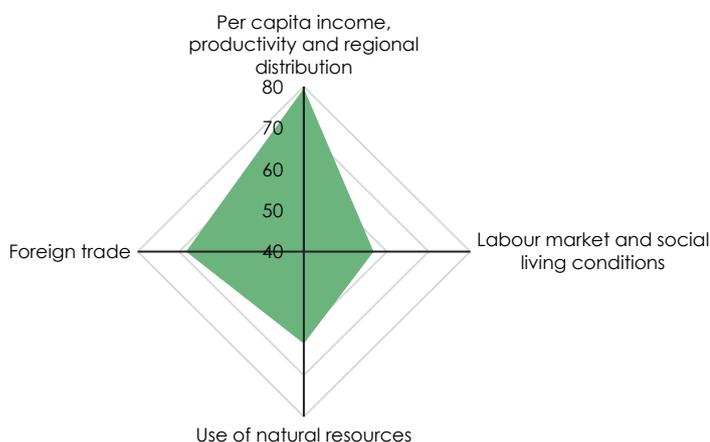
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- On average across all indicators, Austria recently achieved a percentile rank of 66.3. This value shows a slight improvement over the previous year but remains below the comparable value from 10 years ago (70.3).
- With a mean percentile rank of 56.8, Austria is only in the European midrange in the dimension of labour market and social living conditions.
- With regard to the use of natural resources Austria achieves a value of 62.3.
- In terms of foreign trade, Austria ranks in the top third with an average percentile rank of 68.4.
- In the dimension of per capita income and regional distribution, Austria performs best with a mean percentile rank of 79.6.
- The focus in this year's special topic is on the effects of the new weights used for the effective exchange rate index.

## Austria's position in four dimensions of competitiveness



**"For the 24 selected indicators, Austria's mean percentile rank is 66.3. On average, therefore, 33.7 percent of the European countries compared have better scores."**

The percentile rank indicates for each indicator the share of all countries with equal or less favourable values than Austria in the population of the approximately 30 European comparison countries. In the dimension of labour market and social living conditions as well as in the use of natural resources, Austria is only in the European midfield. In foreign trade, Austria is in the top third, and in real income, productivity and regional distribution it is in the top 20 percent (source: WIFO).

# The WIFO Radar of Competitiveness for the Austrian Economy 2021

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The WIFO radar of competitiveness measures the performance of Austria using 24 selected indicators related to economic, social and ecological goals: taking the average across all indicators, Austria has improved somewhat relative to the previous year's ranks and is now directly behind the top third of the European countries compared. Austria achieves high percentile ranks in terms of per capita income, regional distribution and foreign trade. In the dimensions "social living conditions" and "use of natural resources", however, it is only in the European midfield.

**JEL-Codes:** E22, E23, E24, O52 • **Keywords:** Competitiveness, locational quality, productivity, social living conditions, resource efficiency, real effective exchange rate index

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## 1. Introduction

**The competitiveness of an economy should guarantee high real incomes and ensure the improvement of social and ecological living conditions.**

The WIFO thematic platform "Competitiveness"<sup>1</sup> examines the ability of economic systems to generate sustainably high real incomes and to improve social and ecological living conditions under continuous change and ongoing adaptation to and shaping of the framework conditions. The WIFO radar (Peneder et al., 2020) presented in 2020 is an instrument for the regular monitoring of the international competitiveness of the Austrian economy. For this purpose, a selection of macroeconomic target variables is used, which depict four different dimensions of competitiveness: firstly, real income, productivity and regional distribution; secondly, the labour market and social living conditions; thirdly, the use of natural resources and fourthly, foreign trade.

The definitions of the indicators and the data sources are documented in Table 1. The results for the main indicators are shown in Figure 1, those for specific sub-aspects are presented in Figure 2.

In a complementary special section, different aspects of competitiveness are dealt with in more depth each year. This year's focus is on the results of a recent study by WIFO in cooperation with the OeNB on the reweighting of exchange rate indices (Url et al., 2021). Further analyses by WIFO on selected aspects of competitiveness can be found in the list of publications, published at the website of the thematic platform. The most recent works include Bittschi and Reinstaller (2021), Bock-Schappelwein et al. (2021), Feichtinger et al. (2021) and Oberhofer et al. (2021).

<sup>1</sup> [https://www.wifo.ac.at/en/topics/competitiveness/thematic\\_platform\\_competitiveness/](https://www.wifo.ac.at/en/topics/competitiveness/thematic_platform_competitiveness/)

## The WIFO radar of competitiveness

The WIFO radar provides a concise classification of the competitiveness of the Austrian economy in comparison with around 30 European countries, over four time periods and for 24 performance indicators. For the sake of comparability across the different units of measurement, only Austria's relative position is shown for each indicator and normalised to a **percentile rank**<sup>1</sup>. These values, unlike simple ranking figures, are comparable even if observations for the same number of comparison countries are not available for all indicators. In addition, the percentile rank directly indicates the relative position in a distribution<sup>2</sup> and allows the use of mean values for aggregating the results.

The percentile rank indicates for each indicator the share of countries with the same or less favourable values than Austria. For this purpose, all indicators are defined in such a way that the most favourable values in terms of competitiveness are located outside in the radar and correspond to a percentile rank of 100. The lower Austria's percentile, the less favourable the relative ranking. For example, a percentile rank of 60 means that 60 percent of all countries in the comparison group perform equally well or worse and 40 percent perform better than Austria. In addition to this comparison across countries for the latest available year  $t$ , the WIFO radar also shows Austria's percentile rank at the points in time  $t-1$ ,  $t-3$  and  $t-10$ . This enables a short-, medium- and long-term comparison of changes in its relative position.

<sup>1</sup> Figures 1 and 2 show the percentile ranks for 24 indicators, while in the foreign trade dimension another indicator (or a group of related indicators) is shown separately due to the specific measurement method. – <sup>2</sup> Simple rankings, on the other hand, must always be interpreted in the context of the number of countries compared. The more differently defined indicators are included in such a multi-dimensional indicator system, the more advantageous it is therefore to use the percentile rank.

## 2. Indicators and results

### 2.1 Real income, productivity and regional distribution

As a measure of the **economic performance** of the overall economy, real GDP per capita is an indicator of the material well-being of a society. In the last available year 2020, Austria was still in the top third of the distribution, ranking 10th among 31 countries, but lost one rank compared to the previous year. This follows from an above-average impact of the COVID-19 crisis in Austria, not least due to the high importance of tourism. Expressed as a percentile rank, in 2020 real GDP per capita was the same or lower than in Austria in 71.0 percent of all countries compared (Figure 1), whereby Luxembourg, Switzerland and Ireland took the lead.

Austria's position improves if GDP per capita is measured at uniform purchasing power parities indicating real **per capita incomes**. Austria achieved a percentile rank of 77.4 and thus belonged to the top quarter of the 31 European comparison countries (Figure 2). This position has been stable for 6 years. Luxembourg, Switzerland and Norway led the ranking in 2020.

In terms of **labour productivity**, measured as nominal GDP per hours worked, Austria ranked 9th in 2020 with a percentile rank of 72.4. Labour productivity in Austria was about 18 percent above the average of the comparison countries. However, due to the

numerous COVID-19 aid measures affecting companies and the labour market, the productivity figures for 2020 should be interpreted with caution.

**Multifactor productivity** is a measure of technical efficiency and is the residual after subtracting the contribution of all input factors from real value added<sup>2</sup>. Due to production constraints and the decline in demand during the COVID-19 crisis, multifactor productivity declined in almost all European countries in 2020. In Austria, the negative impact of the multifactor productivity to GDP growth was still comparatively weak at –2.3 percentage points. With a percentile rank of 71.0, Austria was therefore in the top third of the European comparison countries.

The regional dispersion of real purchasing power within countries<sup>3</sup> serves as an indicator of **regional cohesion** (Figure 1). Here, Austria was in the top fifth of a ranking led by Finland and Sweden in the last available year 2018 with a percentile rank of 84.6 – unchanged in the short term, but significantly more favourable than 3 years (80.8) and 10 years (73.1) ago. This points to noticeable medium-term convergence processes between the regions in Austria, while at the EU level such processes are in many cases only evident at the country level, and regional disparities within countries have increased. (Mayerhofer et al., 2020).

In terms of real GDP per capita, Austria continues to be in the top third of the European countries compared, with minor differences within the country.

<sup>2</sup> Comparisons based on the level of multifactor productivity are subject to numerous measurement problems and critical assumptions (Peneder & Prettnner, 2021). Therefore, data from the Conference

Board are used here, which are based on a method of growth decomposition with two-year averages.

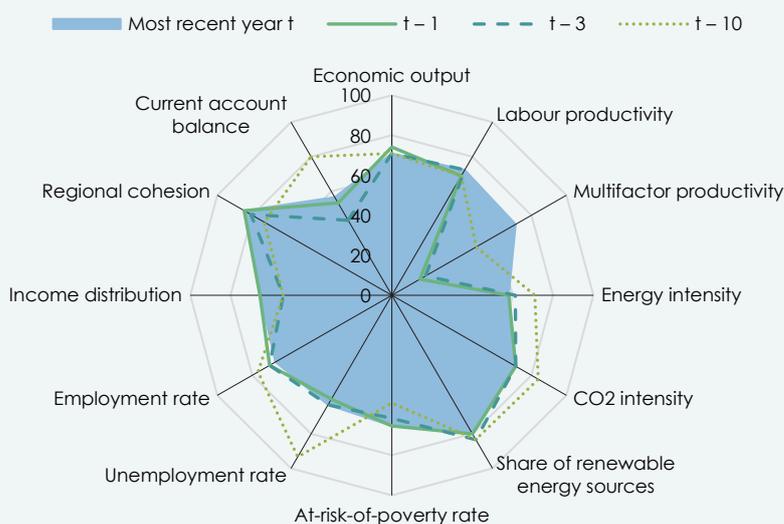
<sup>3</sup> The NUTS-3 level used for measurement distinguishes 1,367 regions throughout the countries compared; in Austria there are 35.

Table 1: Selected key figures of competitiveness

	Definition	Source	Last available year <i>t</i>	Number of countries <sup>1</sup>
<b>Main indicators</b>				
Economic output	Real GDP per capita in €, at 2015 prices	WDS – WIFO Data System, Macrobond	2020	31
Labour productivity	GDP per hours worked, nominal, EU 27 = 100, index 2020 = 100 <sup>2</sup>	Eurostat [nama_10_lp_ulc]	2020	29
Multifactor productivity	Growth contribution in percentage points, two-year average	TED – Total Economy Database, Conference Board	2020	31
Energy intensity	Final energy use per unit of GDP, PJ per billion €, at 2015 prices	IEA World Energy Balances; WDS – WIFO Data System, Macrobond	2019	31
CO <sub>2</sub> intensity	CO <sub>2</sub> emissions per unit of GDP, kt per billion €, at 2015 prices	UNFCCC GHG Data Interface; WDS – WIFO Data System, Macrobond	2019	31
Share of renewable energy	Percentage shares of renewable energy sources in final energy consumption <sup>3</sup>	Eurostat [t2020_31]	2019	30
At-risk-of-poverty rate	Proportion of persons with an income of 60 percent or less of the median equivalised income in percent, by social benefits <sup>4</sup>	Eurostat [ilc_li02]	2020	26
Unemployment rate	Percentage shares of unemployed in the 15 to 64 year old labour force <sup>5</sup>	Eurostat [lfsa_urgan]	2020	30
Employment rate	Share of employees in all 15 to 64 year olds <sup>5</sup>	Eurostat [lfsa_ergan]	2020	30
Income distribution	Ratio of the disposable income of the 20 percent of the population with the highest to the 20 percent with the lowest disposable income <sup>4</sup>	Eurostat [ilc_dil1]	2020	26
Regional cohesion	Coefficient of variation of gross regional product per capita to income standards by NUTS-3 regions <sup>6</sup>	ARDECO – Annual Regional Database of the European Commission	2018	26
Current account balance	Current account balance in percent of GDP <sup>5</sup>	Eurostat [bop_gdp6_q]	2020	30
<b>Complementary indicators</b>				
Per capita income	GDP at income standards per capita (population) in 1,000 \$, at 2020 prices	Conference Board, TED – Total Economy Database	2020	31
GDP per capita metropolitan regions <sup>6</sup>	Gross regional product per capita at income standards for EU metropolitan regions	ARDECO – Annual Regional Database of the European Commission	2018	26
GDP per capita non-metropolitan regions <sup>6</sup>	Gross regional product per capita at income standards for the non-metropolitan regions of the EU	ARDECO – Annual Regional Database of the European Commission	2018	26
Full-time equivalent employment rate	Share of full-time equivalent employees in all 15 to 64 year olds <sup>5</sup>	Eurostat, Labour Force Survey, special evaluation	2020	30
Gender gap employment	Difference in employment rate between men and women (25 to 44 year olds, full-time equivalents) in percentage points <sup>5</sup>	Eurostat, Labour Force Survey, special evaluation	2020	30
NEET rate	Proportion of those not in employment who do not attend formal or non-formal education or training as a percentage of all 18 to 24 year olds <sup>5</sup>	Eurostat [edat_lfse_18]	2020	30
Adult learning	Proportion of persons participating in formal or non-formal education and training as a percentage of all 25 to 64 year olds <sup>5</sup>	Eurostat [trng_lfs_01]	2020	30
Energy dependence	Percentage shares of net energy imports in gross domestic energy consumption <sup>7</sup>	Eurostat [sdg_07_50]; IEA	2019	30
Modal split freight transport	Freight transport by rail in t-km in relation to other freight transport <sup>8</sup>	Eurostat [tran_hv_frmod]	2019	30
Environmental patents	Percentage shares of patent applications on environmental technologies in all patent applications at the European Patent Office (EPO)	OECD	2018	31
Market share goods exports	Market share of worldwide goods exports in percent	WDS – WIFO Data System, Macrobond	2020	31
Market share tourism exports	Market share of worldwide exports of travel services (excluding passenger transport) in percent	Macrobond, WIFO calculations	2020	31

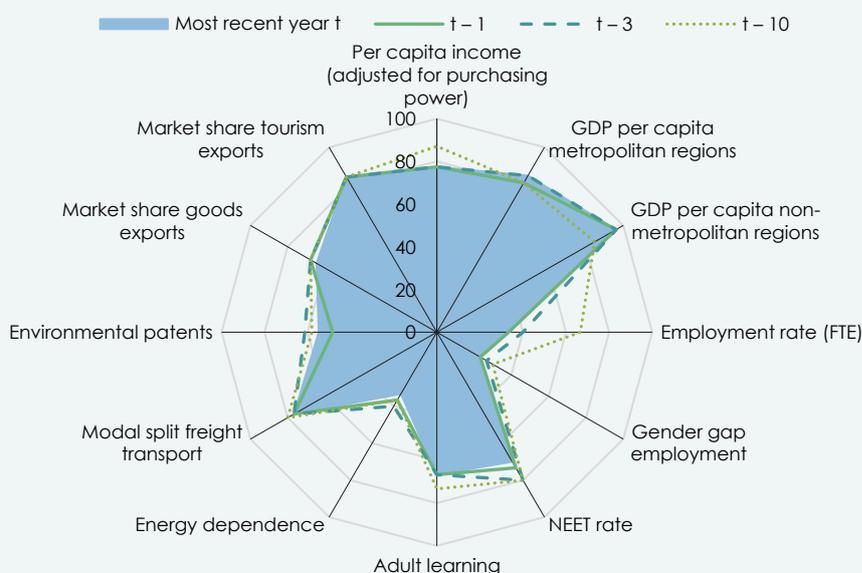
Source: WIFO presentation. – <sup>1</sup> EU 27, Switzerland, Iceland, Norway, the UK. – <sup>2</sup> Excluding Germany, the UK. – <sup>3</sup> Without Switzerland. – <sup>4</sup> Without Ireland, Italy, Iceland, Switzerland, the UK. – <sup>5</sup> Without the UK. – <sup>6</sup> Without Cyprus, Luxembourg, Malta, Iceland, Switzerland. – <sup>7</sup> Without Norway. – <sup>8</sup> Without Iceland.

Figure 1: Austria's competitiveness in a European comparison – percentile rank of the main indicators



Source: WIFO. For the definition of the indicators, see Table 1. All indicators were ranked in such a way that a higher percentile rank corresponds to higher competitiveness.

Figure 2: Austria's competitiveness in a European comparison – percentile rank of the supplementary indicators



Source: WIFO. For the definition of the indicators, see Table 1. All indicators were ranked in such a way that a higher percentile rank corresponds to higher competitiveness.

As a separate examination of the ranking distributions of **gross regional product per capita in metropolitan regions and non-metropolitan regions**<sup>4</sup> in Europe shows (Figure 2), this regional convergence of per capita income in Austria is primarily due to a

catching-up process of the non-metropolitan regions: while Austria's metropolitan regions are stable in the top fifth of the ranking compared to those in the other EU countries in the medium term, (percentile rank in 2018: 84.6, after 80.8 in

<sup>4</sup> Eurostat (2019) defines metropolitan regions as all urban regions with a population of more than 250,000 in the agglomeration area. According to this definition, there are 289 metropolitan regions in the EU 28,

including the 5 Austrian city regions of Vienna, Graz, Linz, Salzburg and Innsbruck. Non-metropolitan regions are all other regions, i.e. industrial regions outside the agglomeration areas as well as rural areas.

2008), the position of the Austrian industrial and rural regions improved significantly (96.2 after 84.6 in 2008). In 2018, the real purchasing power in these non-metropolitan regions was higher than in Austria only in Ireland.

## 2.2 Labour market and social living conditions

The use of the factor labour and the volume of labour determine the level of per capita incomes together with the use of capital and productivity. The development of the labour market is important in a competitiveness analysis, as it provides information on the utilisation of the available labour resources in an economy. In addition, key figures on labour force participation provide information on social participation and the spread of social risks. Although the **unemployment rate**<sup>5</sup> and the **employment rate** in Austria were recently more favourable than the European average, with percentages of 63.3 and 66.7 (2020), respectively, Austria was clearly behind the leading field. The employment rate is depressed above all by the relatively low labour force participation of older people. In the case of the unemployment rate (2020: 5.4 percent), the lag results from the fact that the labour markets of many East-Central European countries are strained due to the rapid ageing of the labour force and the net outflow of workers. Although the unemployment rate in Austria was recently also higher than in Germany (3.9 percent), the Netherlands (3.9 percent) and Switzerland (5.0 percent), at the same time it was lower than in the Scandinavian EU countries Denmark (5.8 percent), Finland (7.9 percent) and Sweden (8.5 percent). In a European comparison, Austria ranked 12th in terms of unemployment rate and 11th in terms of employment rate in 2020. In the short or medium term, Austria's position has hardly changed, but in the long-term comparison a clear deterioration is discernible (2010: rank 3 and rank 8, respectively). This long-term loss of competitiveness is therefore not a consequence of the COVID-19 pandemic.

In addition to the employment and unemployment rates, other indicators provide information on the extent and distribution of labour force participation. For example, measured by the **employment rate in full-time equivalents**<sup>6</sup>, Austria is only in 21st place with a percentile rank of 33.3 (2020) and thus in the lower third of the comparison countries. This low value can be explained by the high part-time rate in Austria. The loss of position over the last 10 years (from 11th to 21st place) resulted from the extensive stagnation of this indicator in Austria (2010:

62.0 percent, 2020: 63.0 percent), with a simultaneous strong increase in the employment rate in the Baltic and East-Central European countries.

The **gender gap** indicator of the **employment rate** of the 25 to 44 year olds (in full-time equivalents) reflects a pronounced difference between the employment behaviour of men and women for Austria (percentile rank 23.3). The employment rate of prime-age women adjusted for working hours was about 20 percentage points lower than that of men in 2020. Germany, the Netherlands, and Switzerland had similar values. In contrast, the gender gap was significantly lower in the Scandinavian countries, but also in Latvia, Lithuania, and Slovenia.

Especially in the long run, social equalisation, protection against poverty and participation in education contribute to an attractive place to live and do business. Both the indicator values and the percentile ranks on poverty risk and income distribution developed relatively stable in Austria. With regard to the **at-risk-of-poverty rate**, which as a relative poverty measure is also related to the inequality of income distribution, Austria's position improved in the last 10 years both in terms of the rate (2010: 14.7 percent, 2020: 13.9 percent) and the percentile rank (2010: 53.8; 2020: 65.4). In 2020, Austria ranked 10th among 26 countries and thus did not make it into the top third. The at-risk-of-poverty rate is particularly low in some Nordic countries (Finland, Norway) and in East-Central Europe (Czech Republic, Slovakia, Slovenia).

The indicator of **income distribution** – as the quotient between the disposable income of the quintile of the population with the highest income and that of the quintile with the lowest income – gives Austria a percentile rank of 65.4 and the 10th place among the comparison countries. Apart from minor fluctuations, this ratio has been constant over the last 10 years. Shifts in Austria's position in the ranking were due to changes in the other countries. In terms of ranking, Austria did not make it into the top third despite a stable development. Thus, both the at-risk-of-poverty rate and the income quintile ratio did not immediately deteriorate significantly as a result of the COVID-19 pandemic. This is at least a rough indicator that the COVID-19 state aid benefitted all income strata relatively evenly.

Education indicators cover an important aspect of social participation and play a decisive role in determining future competitiveness. For example, the **NEET rate**, the share of youth and young adults (15 to 29 years) who were not in employment, education or

Measured by labour market indicators, Austria's relative position within Europe deteriorated over the last 10 years.

The indicators on poverty risk and income distribution paint a stable picture, but Austria did not make it into the top third of the comparison countries.

<sup>5</sup> Since all indicators have been ranked so that a higher percentile rank reflects higher competitiveness, a high employment rate and a low unemployment rate both mean a high percentile rank.

<sup>6</sup> The full-time equivalent is defined by Eurostat on the basis of the average working time of a person in full-time employment. It is therefore not a fixed figure, but can vary depending on the country and time.

training (NEET) at the time of the survey, was above 9 percent in Austria during the financial market and economic crisis and declined to 8.3 percent by 2019. However, the COVID-19 crisis again led to a significant increase to 9.5 percent. Austria's percentile rank (2019: 73.3, 2020: 70.0) and position (2019: 9th, 2020: 10th) nevertheless deteriorated only slightly. This illustrates the strong international impact of the COVID-19 crisis on youth and young adults.

While educational deficits of younger cohorts mainly have an impact in the future, the participation of the adult population (25 to 64 years) in **adult learning** can serve as an indicator of the qualification of the currently employed. Here, too, the COVID-19 crisis and the associated lockdown measures left clear traces. At 11.7 percent, Austria's adult learning rate in 2020 was at its lowest level since 2004. However, this absolute deterioration is not reflected in the country comparison here either, as the comparison countries also had to make pandemic-related cutbacks. Austria's percentile rank and position (66.7 and 11th respectively) therefore remained unchanged in 2020 compared to the previous year. In a long-term comparison, however, there was a slight deterioration (2010: 73.3 or 9th place).

### 2.3 Use of natural resources

Resource productivity and energy efficiency in the production of goods and services are expressed by the key figure of **energy intensity**<sup>7</sup>. The lower the energy intensity, the more productively the respective production factor is used. The energy intensity is determined, among other things, by the economic structure of a country, but is also influenced by climatic conditions in individual years, such as a very cold or mild winter or heat waves in summer. The decline in energy intensity that has already been observed for some time – and thus a relative decoupling of energy use per unit of GDP – continued in all comparison countries in the last available year 2019. However, the large differences in the level of energy intensity between the countries remained: with 8 PJ of energy per unit of GDP, Bulgaria continued to have the highest energy intensity, while Switzerland consumed only 1.1 PJ per unit of GDP.

Austria's percentile rank in 2019 was 58.1, which means it was not among the European leaders. Compared to 2018, there was no change in rank, but compared to 2009 (percentile rank 71.0), Austria lost four places. Switzerland was again the European country with the lowest energy intensity in

2019, while Ireland and Malta remained in second and third place.

A reduction in **CO<sub>2</sub> intensity**, defined as emissions per unit of GDP, shows success in decarbonising the economy and represents a macroeconomic productivity measure. Worldwide, net CO<sub>2</sub> emissions must be reduced to net zero by the middle of the 21st century in order to limit global warming to well below +2°C compared to the pre-industrial era according to the Paris Climate Agreement. The use of fossil fuels is the largest source of CO<sub>2</sub> emissions and a determinant of CO<sub>2</sub> intensity. A reduction can be achieved on the one hand by lowering total energy demand and on the other hand by shifting the energy mix in favour of renewable energy sources. Austria has had a constant percentile ranking of 71.0 since 2016 and accordingly has not improved compared to the peer countries in recent years. As for energy intensity, the long-term development shows a deterioration in the position compared to 2009, when 83.9 percent of all comparison countries had a higher or the same CO<sub>2</sub> intensity as Austria. In terms of ranking, Austria has lost four places since 2009. The still high CO<sub>2</sub> emissions per unit of GDP illustrates that Austria has not yet managed to reverse the trend towards decarbonisation. Other European countries have been more successful in decarbonising their economies. 2019, there were still large differences in CO<sub>2</sub> intensity between European countries: while Bulgaria emitted 804 kt of CO<sub>2</sub> per billion € of GDP, Switzerland emitted 53 kt. In Austria, CO<sub>2</sub> emissions most recently amounted to 182 kt CO<sub>2</sub> per billion €. Compared to Switzerland, the emission intensity in Austria is three times as high. Besides Switzerland, Sweden, Norway, Ireland and Denmark are among the top-ranked countries in 2019. Ireland in particular was able to improve its ranking over time.

Measured by the **share of renewable energy sources** in final energy consumption, Austria ranked 6th out of 30 peer countries in 2009 and belonged to the top fifth of the distribution. Austria benefits from the high share of electricity generation from hydropower and the expansion of electricity generation from wind, photovoltaics and energy from biomass. A further increase in the share of renewable energy sources is essential for achieving the EU's climate and energy policy targets. Accordingly, a continuous increase of renewable energy sources in Austria is essential. However, the share of renewable energy sources in total energy consumption has been stagnating for several years. Despite the successes in the use of renewable energy sources, Austria fell from 6th to 7th place in this indicator over the long

In terms of energy use per unit of GDP, Austria ranks in the upper half of the comparative countries, but has lost competitiveness in the longer term.

<sup>7</sup> An analysis of the current key indicators on climate change and energy economics can be found in Feichtinger et al. (2021).

term, which is not least due to the increase in energy demand. The highest shares of renewable energy sources in 2019 were again recorded by Iceland, Norway, Sweden and Finland. Measured by the percentile rank, 80.0 percent of the peer countries had an equally high or lower share of renewable energy sources in final energy consumption than Austria. As the longer-term change in the percentile rank shows, other countries met the rising energy demand more successful with renewable energy sources than Austria.

A high dependence on energy imports entails increased risks, among other things due to higher exposure to global energy price fluctuations. Austria is heavily dependent on imports of fossil fuels. Austria has also been a net importer of electricity since 2001. The **energy**<sup>8</sup> dependence indicator expresses net energy imports as a share of gross domestic energy consumption. A reduction in energy dependence is sought for reasons of supply security. This can be achieved by reducing energy consumption, i.e. an absolute decoupling between economic performance and energy use, by increasing the use of domestically available energy resources. In Austria, the import dependency of gross domestic energy consumption in 2019 was the same as in 2005 (72 percent). Austria is thus one of the countries with a particularly high dependence on energy imports. Measured by percentile rank, one third of the comparator countries had a higher or equally high energy dependency as Austria in 2019; in the long-term comparison, the figure was 37 percent, i.e. Austria's relative position has worsened.

Greenhouse gas emissions and other externalities of transport, such as air pollution, noise or congestion, are among the critical variables of decarbonisation and mitigation of negative environmental effects. Goods transport largely takes place by rail, road or water, with externalities differing by mode of transport. Rail freight transport performs better here than road freight transport. The **modal split**, i.e. the ratio of rail freight transport to other freight transport (on roads and waterways), is therefore used as an indicator of the country-specific importance of environmentally friendly freight transport. With increasing stringency of climate policy, for example through CO<sub>2</sub> pricing of fossil fuels, the competitive conditions for rail freight transport compared to road freight transport could improve. In 2019, Austria was in the top quarter of the distribution, ranking 8th among 30 countries, and had a stable long-term percentile rank of 80. The Baltic countries Latvia, Lithuania and Estonia remained in the top ranks.

Environmental technologies can contribute to solving environmental problems. To map the position with regard to environmental technologies, the share of **patent applications for environmental technologies** in a country's total patent applications to the European Patent Office is used. For this purpose, in contrast to the WIFO radar of 2020, a new extended OECD definition of environmental patents is used. The additional areas mainly concern patents for climate change adaptation, as well as ICT patents with environmental relevance. Data on environmental patent applications are available up to 2018 and for a selection of 31 countries. In 2018, Austria ranked 15th in environmental patent applications with a percentile rank of just under 55. In 2008, the corresponding percentile rank was 58; in the longer term, Austria's position relative to the other countries has thus deteriorated.

## 2.4 Foreign trade

Austria's **current account balance** was slightly positive in 2020 at 1.9 percent of GDP. In a year-on-year comparison, Austria achieved a slightly higher percentile rank of 56.7 (corresponding to a slight outward movement in Figure 1). Since economic policy basically aims at a balanced foreign trade balance, this does not per se entail a macroeconomic welfare gain. In the COVID-19 crisis year 2020, the Austrian economy once again achieved a surplus in the foreign trade balance despite a strong decline in import and export flows. In addition to the rapid shift from outward bound to domestic destinations by domestic households, the decline in commodity prices starting in the second quarter of 2020 also contributed to this. As a result, nominal expenditures for energy and raw material imports fell significantly. Although Austria's percentile ranking shifted significantly again and again in the past (Figure 1), the stable positive current account balance over many years reflects the comparative advantages of the Austrian economy (2010: 2.9 percent of GDP).

In an international comparison, the development in Ireland was remarkable in 2020, where the current account balance improved from -19.9 percent to -2.7 percent of GDP. Latvia, the Czech Republic and Poland were able to overtake Austria in the ranking, whereas Malta, Iceland, Croatia, Estonia and Spain lost ranks to Austria.

Austria's competitive position in foreign trade can also be measured by the development of its **market share** in global **goods exports** (to about 180 countries). This key figure shifts only slightly in a year-on-year comparison, which means that changes in competitiveness only become visible in the long-

therefore not included as an outlier in the country comparison.

Austria's declining world market share in goods exports contrasted with a stable share in the tourism market in 2020.

<sup>8</sup> As a major exporter of crude oil and natural gas, Norway occupies a special position here and was

term view. In recent years, Austria has been at the lower end of the long-term range, with a world market share of just under 1 percent, and lost one rank in 2020, as Ireland was able to increase its market share by 0.13 percentage points up to 1.03 percent. The development of tourism exports in 2020 was shaped by extensive travel warnings and quarantine regulations for people entering Austria or returning home. Austria's **market share of global tourism exports** (around 160 countries) had been declining until 2019 but jumped to 2.6 percent in 2020 (2010: 2.0 percent). The short distance to neighbouring countries made Austria an attractive destination for travellers; in addition, the successful winter season, which did not end until mid-March 2020, had a positive effect on the total year. The 6th place among 31 European countries remained unchanged as a result.

In the short term, exchange rate fluctuations between the euro and the national currency of trading partners influence the prices of Austrian exports in foreign currency and thus its price competitiveness. An appreciation of the euro tends to raise export prices, while a depreciation tends to lower Austrian export prices abroad. However, the pass-through of exchange rate fluctuations into export prices critically depends on

competitive pressures in the destination market and the price elasticity of foreign demand. In the medium term, the dynamics in the wage and price formation processes of two trading partners dominate short-term bilateral exchange rate effects. The combination of exchange rate fluctuations and relative prices or wage costs are summarised in the **real effective exchange rate indices**. Table 2 shows the development of the overall index deflated by either the harmonised consumer price index or by unit labour costs. Additionally, Table 2 presents the sub-index for industrial goods for Austria (deflated by either consumer or producer prices)<sup>9</sup>.

Compared to the previous year, Austria's price competitiveness deteriorated in 2020, with indices based on the consumer price index indicating a bigger loss in competitiveness than exchange rate indices deflated by unit labour costs or producer prices (Table 2). In the medium and long run, the loss is smaller because bilateral exchange rate fluctuations balanced each other out over time and wage and price inflation in Austria over the past 10 years was about the same as abroad. Also, when taking a long-term view over the last ten years and using producer prices as the deflator, the real exchange rate index remained almost constant.

Compared to the previous year, Austria's price competitiveness deteriorated in 2020.

Table 2: **Real effective exchange rate indices for Austria in comparison**

	2019-20	2017-2020	2010-2020
	Average year-to-year percentage changes		
<b>Overall index</b>			
Deflated with harmonised consumer price indices	+ 1.9	+ 0.8	+ 0.5
Deflated with unit labour costs	+ 1.4	+ 0.3	+ 0.3
<b>Industrial Goods Index</b>			
Deflated with harmonised consumer price indices	+ 1.8	+ 0.8	+ 0.4
Deflated with producer price indices	+ 0.9	+ 0.1	- 0.1

Source: WDS – WIFO Data System, Macrobond.

### 3. Focus topic: impact of new weights on the effective exchange rate index

The WIFO radar of competitiveness of the Austrian Economy presents a focus topic each year. This year's focus describes the impact of new foreign trade data on the development of effective exchange rate indices.

The effective exchange rate indices are based on a weighted aggregate of bilateral exchange rates of Austria's most important trading partners. The overall index consists of a weighted combination of four sub-indices

for first, raw materials; second, food and beverages; third, industrial goods; and fourth, services. The weights used for each of the sub-indices are based on the respective export and import shares of the trading partners. For the calculation of the sub-index for industrial goods, third market effects are also taken into account, since Austrian exporters are not only in competition with local companies on the target market, but also with companies from third countries also offering their goods there. The consideration of third

<sup>9</sup> WIFO calculates real effective exchange rate indices in cooperation with the OeNB. The properties, construction as well as the advantages and disadvantages of these indices, which differ according to the type of trade flows and the price or cost indices

considered, are described in more detail in Url et al. (2021). Due to the specific measurement method, the exchange rate indices are presented separately (Table 2) and not shown as a percentile rank.

The rebalancing in the effective exchange rate index results in a weaker appreciation for the period from 2013.

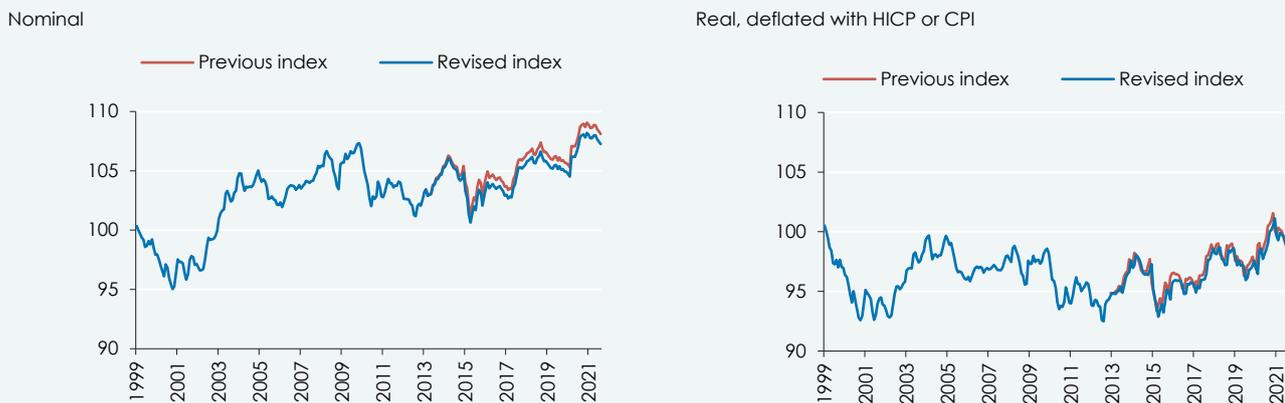
market effects requires data from the input-output tables of all trading partners and can therefore only be done with a considerable delay. The current recalculation of the exchange rate indices is based on the OECD input-output tables from 2013-2015. All monthly and quarterly values from January 2013 onwards have been reweighted using the new weights. The monthly and quarterly values of earlier years were chained with the new index values, i. e. the original weights of the three-year periods remain unchanged in the long-term comparison (chain index).

The years 2013-2015 were characterised by severe turbulence on the European bond

markets and several debt rescheduling negotiations with Greece. As this led to strong exchange rate fluctuations of the euro, the nominal effective exchange rate index fluctuated significantly during this period (Figure 3, left chart). As a comparison of the nominal effective exchange rate index on the basis of the old and new weights shows, these up- and downward movements remain unaffected by a slight shift in foreign trade flows towards China and the USA. At the end of the period under review, however, the revised nominal effective exchange rate index is somewhat lower than the old index, i.e. the nominal appreciation since 2013 is now weaker.

Figure 3: Austria's overall price competitiveness index

Chained, first quarter of 1999 = 100



Source: OeNB, WIFO.

In the short term, the COVID-19 crisis caused a significant nominal appreciation of 3 percent from March 2020.

The real effective exchange rate index deflated by the HICP or CPI (Figure 3, right chart) takes into account, in addition to bilateral exchange rate fluctuations, the change in consumer prices in Austria compared to the respective trading partner. This makes changes in price competitiveness visible. In the long run, the nominal appreciation was offset by lower inflation rates in Austria. Accordingly, the nominal appreciation of 7.3 percent between 1999 and mid-2021 contrasts with a real depreciation of 1.3 percent, i. e. in the long run, the loss of price competitiveness associated with the nominal appreciation was more than compensated by the comparatively lower inflation in Austria. The COVID-19 crisis starting in March 2020 caused a considerable nominal appreciation of 3 percent in the short term, which is not yet compensated by a lower inflation rate in Austria. As with the nominal exchange rate index, the rebalancing also reduced the extent of the appreciation of the real effective exchange rate (Figure 3, right chart).

The analysis of the export-weighted real effective exchange rate index based on

producer prices shows a more favourable picture for the recent past. Accordingly, Austria's price competitiveness has hardly changed since the beginning of 2020 (+0.3 percent). In a long-term comparison with the beginning of 1999, the index based on producer prices shows a stronger depreciation than the index based on the HICP or CPI (-5.8 percent versus -1.4 percent). The price competitiveness of the Austrian industry has therefore improved significantly in the long run.

Due to the European Monetary Union, the real effective exchange rate between the euro countries can only adjust through changes in relative prices, i. e. through differences in inflation rates. As the development of region specific export-weighted real exchange rate indices for industrial goods shows (deflated with the HICP or CPI, Figure 4, right-hand chart), Austria was able to keep its position vis-à-vis the other euro countries almost stable (+2.7 percent compared to 1999). Compared to the EU member countries outside the euro area, Austria has noticeably gained in price competitiveness since 1999. In comparison with the USA,

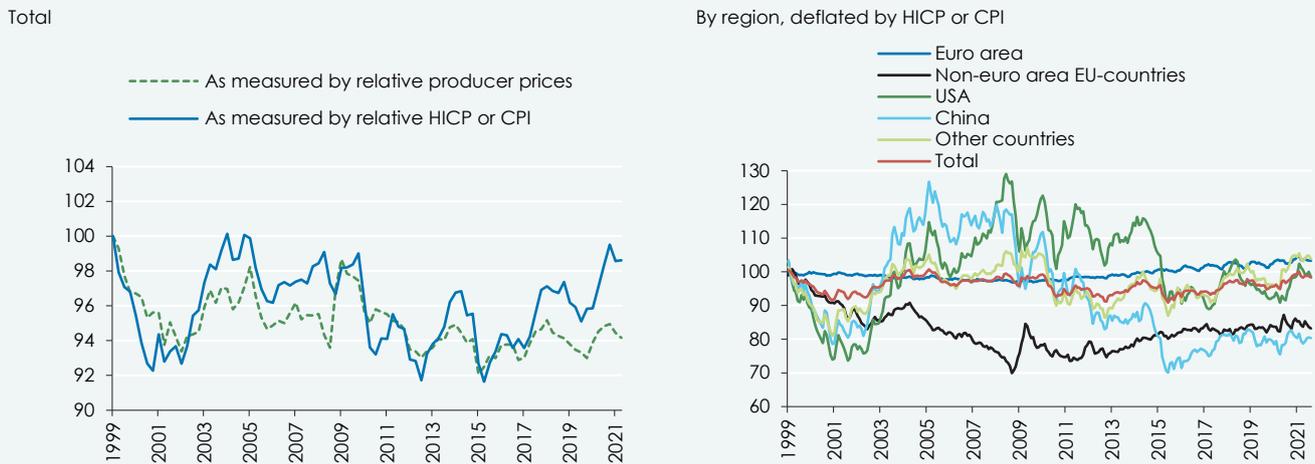
Taking into account the development of relative producer prices at home and abroad, Austria's price competitiveness remained constant.

there are clear long-term fluctuations, which, however, evened out again by the end of the period under review. China stands out due to the appreciation of the

renminbi from 2014 to 2015, which corresponds to a drop in the index in Figure 4 that has only partially receded so far.

Figure 4: Real effective exchange rate indices for industrial goods

Export weighted, first quarter of 1999 = 100



Source: OeNB, WIFO.

To measure the cost competitiveness of Austrian producers, the real-effective exchange rate index is deflated by aggregate unit labour costs. Cost competitiveness declined only slightly in the long run (–1.1 percent in 1999–2020), with much of the loss occurring over the last 10 years (Figure 5). Since the onset of the COVID-19 pandemic, the comparatively intensive use of short-time work schemes in Austria resulted in a strong increase in per capita wages relative to trading partners. While production slumped, the wage bill remained almost stable, causing unit labour costs to rise disproportionately during the COVID-19 crisis. In addition, a structural effect resulting from higher unemployment of low-wage unskilled workers drove up unit labour costs (OECD, 2021). The divergence described above will diminish as short-time work programmes are expected to be scaled back once the COVID-19 pandemic subsides. Nevertheless, at present the sharply reduced volume of work distorts hourly wages relative to trading partners. A serious interpretation of cost competitiveness will therefore only be possible once the COVID-19 pandemic has ended.

Compared to important trading partners in the euro area, the increase in unit labour costs in Austria was noticeably lower for a long time (Figure 5), only Germany shows lower dynamics from 2006 onwards. German unit labour costs started to fall back in 2005, immediately after the last stage of the Hartz IV reform package came into force (1 January 2005). Wage negotiations in the Austrian industry are also oriented towards developments in Germany, so domestic wage

settlements remained closely aligned to their counterparts in the most important destination country for Austrian exports. In the other euro area countries, however, the wage-setting process moved away from the German and Austrian path, worsening their cost competitiveness. This also applies to the Netherlands, another core member of the monetary union that continuously runs current account surpluses. The financial market and government debt crisis eventually forced the other euro countries to adopt a more restrictive wage formation process, bringing unit labour costs in these countries closer to the levels seen in Germany and Austria from 2009 onwards.

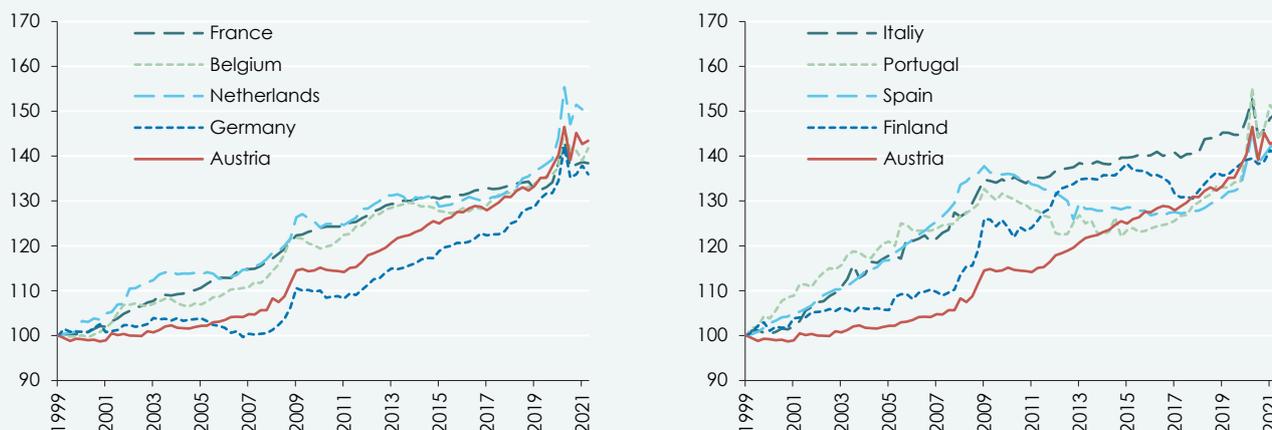
The services sub-index already showed an upward trend in the years before the COVID-19 crisis, indicating a loss of competitiveness for tradable services (especially in tourism). This trend intensified in 2020 and 2021. An economic policy interpretation of this development currently requires increased caution because many prices could only be measured to a limited extent during the lockdown phases. For example, prices for hotels could not be collected, which is why estimates were used (OeNB, 2021). In addition, the Austrian tourism industry underwent a change towards high-quality hotel services in recent years. This structural change met a correspondingly higher demand due to the high-income elasticity of tourism services (Smeral, 2014). However, quality increases may not be fully reflected in price surveys and higher prices then wrongly give the impression of a loss of competitiveness.

**In a long-term comparison, Austria's price competitiveness improved slightly compared to the other euro countries (+2.7 percent). Austria has clearly lost in cost competitiveness over the last 10 years.**

**The real-effective appreciation in the service sector is concentrated on tourism-related services.**

Figure 5: **International comparison of total unit labour costs**

First quarter of 1999 = 100



Source: WDS – WIFO Data System, Macrobond; OECD. Total unit labor costs in local currencies

#### 4. Summary

The WIFO radar of competitiveness summarises selected findings on the strengths and weaknesses of Austria as a business location. On average across all 24 indicators of the radar, 66.5 percent of the European countries compared performed less or equal to Austria in the last available year (mostly 2020 or 2019). Austria is thus positioned just behind the top third of countries. Three years earlier, the mean percentile rank had been lower at 64.9, but ten years earlier it had been significantly higher at 70.1.

With a mean percentile rank of 79.6, Austria performed best in the dimension of **real income, productivity and regional distribution**. This is mainly due to the comparatively high gross regional product per capita in the industrial or rural non-metropolitan regions (percentile rank 96.2) and the relatively small decline in multifactor productivity in the COVID-19 crisis, where Austrian companies benefitted from generous government aid measures.

In the average of the indicators on the **labour market and social living conditions**, Austria only belonged to the midfield of the comparison countries with a percentile rank of 56.8. This value was mainly depressed by the low employment rate in full-time equivalents and the relatively large gender gap in the employment rate. Only in two indicators of the dimension labour market and social

living conditions did Austria belong to the upper third of the European comparison countries: in the share of young adults who are not in education, employment or training (NEET rate) and in adult learning.

The mean percentile rank in the indicators on the **use of natural resources** was 62.3 for Austria. Austria performed relatively poorly in energy intensity and environmental technology patents, but relatively well – as in the previous year – in the share of renewable energy sources and the modal split in goods transport.

In **foreign trade**, Austria belonged to the top third of the sample with an average percentile rank of 68.4. In terms of the current account balance, Austria was able to improve by one rank despite the declining foreign trade surplus. In terms of the market share in tourism exports, Austria's position remained stable with a percentile rank of 83.9. The market share in global goods exports, on the other hand, deteriorated relative to the comparison countries (percentile rank 64.5). The analysis of price competitiveness based on the development of the real effective exchange rate index shows a constant position for Austria in a long-term comparison. However, an appreciation period started in the middle of 2019 which has not yet fully receded.

**On average across all 24 indicators, about one third of the European countries compared showed a better overall performance than Austria.**

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