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## The WIFO Radar of Competitiveness for the Austrian Economy 2023

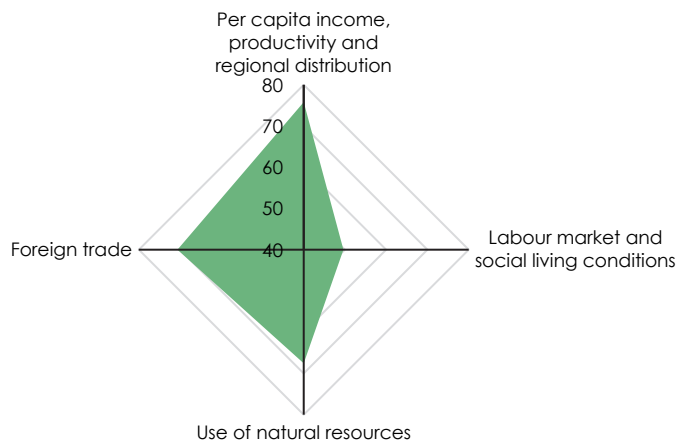
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# The WIFO Radar of Competitiveness for the Austrian Economy 2023

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- Austria recently improved by 1.9 percentage points to a percentile rank of 64.4 in the WIFO Radar of Competitiveness, putting it just behind the top third of the about 30 European countries compared.
- Austria performed best in the dimension of "real income, productivity and regional cohesion" with an average percentile rank of 77.2, which was driven by the strong growth of real GDP in 2022.
- In the dimension of international trade Austria improved by 2.1 points relative to its European peers to a percentile rank of 70.6. The main reason for this was the recovery in tourism. However, the growth in goods exports lagged behind the development on the global market.
- Austria also improved with regard to its use of natural resources (+3.2 points; percentile rank 67.5); primarily in the areas of environmental patents and energy dependency, while it lost ground in terms of CO<sub>2</sub> intensity.
- With an average percentile rank of 49.6, Austria still held only a middle position among European countries in the dimensions "labour market and social living conditions", which again deteriorated compared to the previous year.

## Austria's position in four dimensions of competitiveness



**"Austria is just behind the top third of around 30 European countries in the WIFO Radar of Competitiveness."**

The percentile rank for each key figure indicates the proportion of all countries with equal or less favourable values than Austria in the population of around 30 European comparison countries. Accordingly, Austria performs best in the dimension of real income, productivity and regional cohesion (source: WIFO).

# The WIFO Radar of Competitiveness for the Austrian Economy 2023

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January 2024

## The WIFO Radar of Competitiveness for the Austrian Economy 2023

The WIFO radar of competitiveness tracks Austria's performance as a business location, taking into account economic, social and ecological targets. On average across 24 indicators, Austria has recently caught up with the top third of comparable European countries. The productivity indicators in 2022, the recovery in tourism and an improvement in the ranking for environmental patents have all contributed to this. In the dimension of labour market and social conditions, Austria has again lost ground.

**JEL-Codes:** E22, E23, E24, O52 • **Keywords:** Competitiveness, quality of location, productivity, social living conditions, resource efficiency

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## 1. Introduction

The WIFO Radar of Competitiveness measures Austria's success in securing high real incomes and the ongoing improvement of social and ecological living conditions in a European comparison.

Since 2020, WIFO has published a Radar of Competitiveness, which maps the performance of the Austrian economy in a European comparison along four dimensions (see box "The WIFO Radar of Competitiveness"):

- real income and productivity, including regional distribution,
- labour market and social living conditions,
- use of natural resources, and
- foreign trade.

Table 1 contains a description of the indicators, the data sources, the number of reference countries and the last available year

of the respective data series. Most of the indicators that make up the Radar are already available for 2022, but some are only available for 2020 or 2021. Figure 1 summarises the results for the main indicators, while Figure 2 shows the performance of the Austrian economy with regard to selected supplementary indicators. The homepage of the WIFO thematic platform "Competitiveness" also offers the option of interactive use of the WIFO Radar for targeted queries, e.g., by narrowing down the time period or the comparison countries<sup>1</sup>. The list of publications available online on the thematic platform also refers to numerous current WIFO analyses on selected drivers of competitiveness<sup>2</sup>.

<sup>1</sup> See [https://www.wifo.ac.at/en/research\\_priorities/competitiveness/competitiveness\\_radar](https://www.wifo.ac.at/en/research_priorities/competitiveness/competitiveness_radar).

<sup>2</sup> Recent works include Bachtrögler-Unger et al. (2023), Bärenthaler-Sieber et al. (2023), Bittschi and Meyer (2023), Burton and Ehn-Fragner (2023), Ederer

et al. (2023), Fritz et al. (2023), Glauninger et al. (2021), Hofmann et al. (2023), Kettner et al. (2023), Peneder, Bittschi et al. (2023), Peneder, Pitlik et al. (2023), Piribauer et al. (2023).

Table 1: Selected key figures of competitiveness

	Definition of	Source	Last available year <i>t</i>	Number of countries <sup>1</sup>
<b>Main indicators</b>				
Economic output	GDP per capita, in real terms in € at 2015 prices	WDS – WIFO Data System, Macrobond	2022	31
Labour productivity	GDP per hour worked, value, EU 27 = 100 <sup>2</sup>	Eurostat	2022	30
Multifactor productivity	Growth contribution in percentage points, two-year average	TED – Total Economy Database, Conference Board	2022	30
Energy intensity	Final energy use per unit of GDP, PJ per billion €, at 2015 prices	IEA World Energy Balances; WDS – WIFO Data System, Macrobond	2021	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	2021	31
Share of renewable energy sources	Percentage of renewable energy sources in final energy consumption <sup>3</sup>	Eurostat	2021	29
Risk of poverty	Percentage of persons with 60 percent or less of the median equivalised income, by social benefits <sup>4</sup>	Eurostat	2022	29
Unemployment rate	Percentage of unemployed in the 15 to 64 year old labour force <sup>5</sup>	Eurostat	2022	30
Employment rate	Percentage of employees among all 15 to 64 year olds <sup>5</sup>	Eurostat	2022	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>6</sup>	Eurostat	2022	29
Regional cohesion	Coefficient of variation of gross regional product per capita at purchasing power parity according to NUTS-3 regions <sup>7</sup>	ARDECO – Annual Regional Data base of the European Commission	2021	25
Current account balance	Current account balance as a percentage of GDP <sup>5</sup>	Eurostat	2022	30
<b>Supplementary indicators</b>				
Per capita income (adjusted for purchasing power)	GDP per capita at purchasing power parity, at 2021 prices	Conference Board, TED – Total Economy Database	2022	31
GDP per capita metropolitan regions	Gross regional product per capita at purchasing power parities for the metropolitan regions of the EU <sup>7</sup>	ARDECO – Annual Regional Database of the European Commission	2021	25
GDP per capita non-metropolitan regions	Gross regional product per capita at purchasing power parities for the non-metropolitan regions of the EU <sup>7</sup>	ARDECO – Annual Regional Database of the European Commission	2021	25
Employment rate (full-time equivalents)	Percentage of employees in full-time equivalents, of all 15 to 64 year olds <sup>5</sup>	Eurostat, Labour Force Survey, special evaluation	2022	30
Employment gender gap	Difference in the 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	2022	30
NEET rate	Percentage of inactive persons not participating in education or training out of all 18 to 24 year olds <sup>8</sup>	Eurostat	2022	30
Further training	Percentage of all 25 to 64 year olds taking part in education or training <sup>5</sup>	Eurostat	2022	30
Energy dependency	Percentage of net energy imports in gross domestic energy consumption <sup>9</sup>	Eurostat; IEA	2021	30
Modal split freight transport	Ratio of freight transport by rail in t-km to that by road <sup>10</sup>	Eurostat	2021	29
Environmental patents	Percentage of environmental and climate-related patent applications in relation to all patent applications at the European Patent Office (EPO; average of the last 3 years)	Patstat, OECD definition	2020	31
Market share of goods exports	Percentage market share of global goods exports	WDS – WIFO Data System, Macrobond	2022	31
Market share of tourism exports	Percentage market share of global exports of travel services (excluding passenger transport)	Macrobond, WIFO calculations	2022	31

Source: WIFO presentation. – <sup>1</sup> EU 27, Switzerland, Iceland, Norway, the UK. – <sup>2</sup> Without the UK; Switzerland: latest figure for 2020. – <sup>3</sup> Without Switzerland, the UK. – <sup>4</sup> Without Iceland, the UK; Switzerland: latest figure for 2021. – <sup>5</sup> Without the UK. – <sup>6</sup> Without Iceland, the UK; Switzerland: latest figure for 2021. – <sup>7</sup> Without Cyprus, Malta, Luxembourg, Iceland, the UK. – <sup>8</sup> Without the UK; Switzerland: most recent figure for 2020. – <sup>9</sup> Without Norway. – <sup>10</sup> Without Iceland, the UK.

In addition to the ongoing monitoring of selected key figures, the annual monthly reports are each devoted to a key topic, in recent years e.g., the volume of effective exchange rates or regional disparities in the

level of economic development. This year's special topic (Chapter 3) deals with the current international literature on the connection between populism and economic development.

The percentile rank is the proportion of all countries with equal or less favourable values than Austria.

## The WIFO radar of competitiveness

The WIFO Radar provides a brief comparison of the competitiveness of the Austrian economy with around 30 European countries, over four time periods and for 24 performance indicators (Peneder et al., 2020). In order to make the indicators measured in different units comparable, only Austria's relative position is shown for each indicator and standardised to a **percentile rank**<sup>1</sup>. Unlike simple ranking figures, these values are comparable even if observations are not available for the same number of countries for all indicators. In addition, the percentile rank directly indicates the relative position in a distribution and allows the simple formation of mean values to aggregate the results.

For each indicator, the percentile rank indicates the proportion of countries with the same or less favourable values than Austria in the population of comparison countries. All indicators are defined in such a way that the most favourable values in terms of competitiveness are on the outside of the graph and correspond to a percentile rank of 100. The lower Austria's percentile rank, the less favourable its relative position. 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 better than Austria. In addition to this comparison across the countries for the last available year  $t$ , the WIFO Radar also shows Austria's relative position at the points in time  $t - 1$ ,  $t - 3$  and  $t - 10$ . This enables a short-, medium- and long-term comparison.

<sup>1</sup> Figures 1 and 2 show the percentile ranks for 24 key figures, while in the foreign trade dimension another indicator (or a group of related key figures) is shown separately due to the specific measurement method.

## 2. Indicators and results

### 2.1 Real income, productivity and regional distribution

The real GDP per capita measures the **economic output** or (material) prosperity of a society as an average of the total population. After losing a few percentile ranks in the past decade, Austria's position remained unchanged in 2022 compared to the previous year: Per capita GDP in real terms continued to be the same or lower than in Austria in 67.7 percent of the 31 countries compared (Figure 1).

Average purchasing power assessed in terms of real **per capita income** (using purchasing power parities) also stagnated in relative terms in 2022. However, with a percentile rank of 74.2, Austria performs slightly better here and is just behind the top quarter of the comparison countries (Figure 2).

Austria has improved in terms of **labour productivity**, measured as the value of GDP per hour worked. With a percentile rank of 70.0, Austria caught up by 6.7 percentage points and was in the top third of the distribution in 2022. This improvement is in line with the high growth of real GDP in Austria of around 4.8 percent in 2022 (Schiman-Vukan & Ederer, 2023).

The favourable business cycle had the greatest influence on the development of **multifactor productivity**. It is a measure of the technical efficiency of economies and is calculated as a residual number after deducting the contributions of all input factors from the volume of value added. The

indicator is therefore volatile and frequently affected by data revisions. During the COVID-19 crisis, Austria fell significantly behind in terms of multifactor productivity and was only in the bottom quarter of comparable countries in 2021. In 2022, however, Austria was able to catch up with the top third with a percentile rank of 66.7.

The distribution of per capita income (purchasing power parity) is one of the most important indicators for measuring **regional cohesion** (Figure 1). Regional cohesion describes the stable social and economic cohesion of a geographical region, characterised by shared values, social integration and balanced economic development. According to the latest data (2021), Austria once again occupies fifth place in a European comparison with a percentile rank of 84.0, the same position as in 2017-2019<sup>3</sup>. Austria's percentile rank improved slightly to 88.0 in the 2020 COVID-19 pandemic year. The ranking has been led by Finland and Sweden since 2010. Until 2010, Austria showed strong position gains and has improved by 8 ranks in the last 20 years. In a European comparison, this was the biggest improvement alongside Norway. This means that in the long term, Austria has achieved a better regional cohesion compared to the European average.

Figure 2 shows supplementary indicators of Austria's competitiveness. A clear divergence can be seen in the development of **per capita income in metropolitan regions and non-metropolitan regions**<sup>4</sup>. In Austria's

there are 254 metropolitan regions in the European countries analysed, including the 5 Austrian city regions of Vienna, Graz, Linz, Salzburg and Innsbruck. The non-metropolitan regions include all other regions,

<sup>3</sup> Following the UK's withdrawal from the EU, the analysis is based on data on 1,188 NUTS-3 regions in 25 countries. In Austria, a distinction is made between 35 NUTS-3 regions.

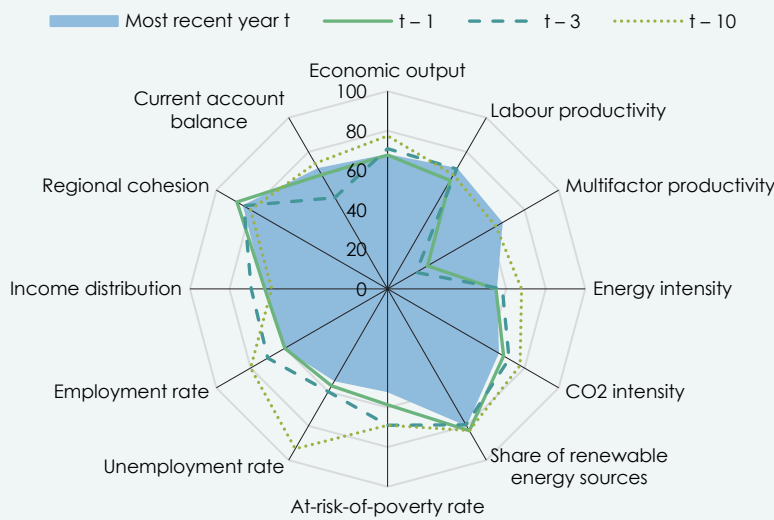
<sup>4</sup> Eurostat defines metropolitan regions as all urban regions with a population of more than 250,000 in the agglomeration area. According to this definition,

**The strong growth of real GDP contributed to a significant improvement in multifactor productivity in 2022.**

metropolitan regions, the gross regional product (GRP) per capita, adjusted for purchasing power, has deteriorated significantly in the last two years compared to the urban areas of the European reference countries. After 88.0 in 2019, Austrian metropolitan regions only achieved a percentile rank of 76.0 in 2020 and 2021 (7th place).

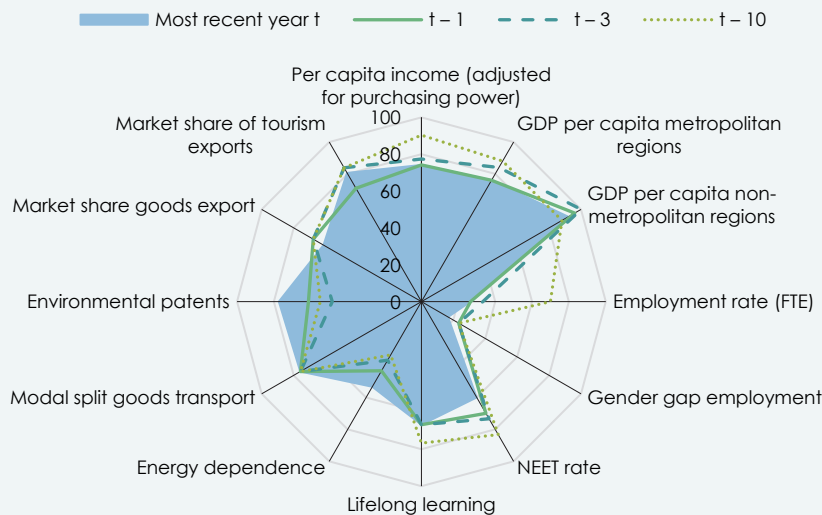
Although Austrian non-metropolitan regions have also fallen slightly behind comparable European regions since 2019, they are still among the top 3 (percentile rank 2020: 96.0, 2021: 92.0). Per capita income in non-metropolitan regions was only higher in Denmark in 2020 and only in Norway in 2021 than in Austria.

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.

i.e. industrially characterised regions outside the agglomeration areas as well as rural areas (see

<https://ec.europa.eu/eurostat/de/web/metropolitan-regions/background>).

## 2.2 Labour market and social living conditions

The use of labour and the volume of work, together with the use of capital and productivity, determine the level of per capita income. The development of the labour market is important in a competitiveness analysis, as it shows how well the available labour resources in an economy are being utilised. In addition, labour market participation figures provide information on social participation and the spread of social risks. With percentile ranks of 53.3 and 60.0 (2022) for the **unemployment rate**<sup>5</sup> and the **employment rate**, Austria is only in the European midfield and well behind the leaders. In terms of the unemployment rate (2022: 4.8 percent), Austria is behind many Central and Eastern European countries, where the rate is significantly lower – partly due to a rapidly ageing labour force and the emigration of workers. However, Western European countries such as Denmark and Switzerland also have lower rates. With total unemployment rates low, even small differences between countries determine their positioning, and cyclical fluctuations in the unemployment rate are reflected more strongly in the ranking. In this respect, an additional look at other indicators is required. For example, if we look at the proportion of long-term unemployed as a percentage of the total unemployed, Austria performs better than the EU average.

The employment rate in Austria rose slightly to 74.0 percent in 2022 compared to the previous year. If the level of labour force participation reflects the preferences of employees, higher employment rates do not automatically lead to improvements in welfare. However, as the other indicators also show, there is a correlation between employment, social participation and the risk of poverty. In this respect, a high employment rate facilitates improvements in other social indicators. In a European comparison, Austria ranked 15th in terms of unemployment rate and 13th in terms of employment rate in 2022. In both cases, this means stagnation compared to the previous year. In a long-term comparison, however, Austria has fallen back significantly (2012: 3rd and 7th place respectively).

In addition to the employment and unemployment rates, other indicators provide information on the extent and distribution of labour market participation. Measured by the **employment rate in full-time equivalents**<sup>6</sup>, Austria is only in 23rd place among the 30 comparison countries with a percentile rank of 26.7 (2022). This poor performance can be explained by the high part-time employment rate in Austria. Over the

last 20 years, the employment rate in full-time equivalents has barely increased in Austria (2000: 62.6 percent, 2022: 63.9 percent), while full-time employment has risen steadily in most other European countries. This resulted in a significant loss of position (from 10th to 23rd place in the last 10 years). Although the rates also stagnated in some Scandinavian countries (Denmark, Iceland, Norway), this was at a significantly higher level than in Austria. Only Belgium, Greece and Romania also have low employment rates in full-time equivalents and have not been able to increase these significantly in the last 20 years.

The **gender gap indicator for the employment rate** of 25 to 44 year olds (in full-time equivalents) reflects a pronounced difference between the employment behaviour of men and women in Austria (percentile rank 16.7, 26th place among 30 comparison countries). In 2022, the working time-adjusted employment rate of women of prime working age was 20.3 percentage points lower than that of men. The difference was only greater in the Czech Republic, Italy, Greece and Switzerland. By contrast, the gender gap was significantly lower in the Scandinavian countries, but also in most countries in Eastern Central Europe.

Especially in the longer term, social equalisation, protection against poverty and, in particular, participation in education contribute to an efficient business and living environment. However, Austria has lost significant ground in terms of the risk of poverty and income distribution in recent years. The **at-risk-of-poverty rate**, which as a relative measure of poverty is also linked to the inequality of income distribution, deteriorated again in 2022 compared to the previous year and reached 14.8 percent (after 14.7 percent in 2021), the highest level since the turn of the millennium. In terms of percentile rank (2022: 51.7), there was also a significant deterioration in the medium and long term (2012: 69.0, 2019: 69.0). In an international comparison, Austria ranked 15th out of 29 countries in 2022. The at-risk-of-poverty rate is particularly low in some Nordic countries (Finland, Denmark) and in Eastern Central Europe (Czech Republic, Slovakia, Slovenia).

The ratio between the disposable income of the quintile of the population with the highest income and that of the quintile with the lowest income serves as an indicator of **income distribution**. This gives Austria a percentile rank of 62.1 and 12th place among 29 comparable countries. Apart from minor fluctuations, this figure has stagnated for 10 years; Austria's position has hardly changed. The comparatively solid positioning is due to

The labour market indicators show a continuous deterioration in Austria's relative position over the last ten years.

Austria is still in the European midfield for the at-risk-of-poverty indicator, but deteriorated again in 2022 compared to the previous year.

<sup>5</sup> Since all indicators were ranked in such a way that a higher percentile rank corresponds to higher competitiveness, a high employment rate and a low unemployment rate each mean a high percentile rank.

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



the fact that many southern European and central and eastern European countries are ranked lower than Austria. Frequently used comparative countries ("peers") in Scandinavia, Belgium and the Netherlands tend to perform better than Austria in terms of income distribution.

Education indicators cover an important aspect of social participation and play a key role in determining future competitiveness. The **NEET rate** is the proportion of adolescents and young adults (aged 15 to 29) who are not in employment, education or training (NEET). In Austria, it was over 9 percent during the financial market and economic crisis and fell to 8.3 percent in 2019. However, the COVID-19 crisis led to a significant increase to 9.5 percent in 2020. In 2021, the NEET rate remained at a similar level (9.4 percent) before falling slightly to 9.1 percent in 2022. For 2022, this results in a percentile rank of 60.0 and 13th place among 30 comparative countries. In an international comparison, this means a deterioration in the short, medium and long term (2012: 10th place, 2019: 9th place, 2021: 6th place).

While educational deficits in younger cohorts will primarily have an impact in the future, the participation of the adult population (aged 25 to 64) in education and **training** can serve as an indicator of the qualifications of those currently in employment. Participation in further education and training has increased significantly in Austria since 2020 and the COVID-19-related lockdowns, reaching 15.8 percent in 2022, the highest level since 2017. As many comparable countries recorded similar increases, Austria did not manage to gain any position. Austria's percentile rank and position (66.7 and 11th place respectively) remained unchanged in 2022 compared to both the previous year and 2019. A slight deterioration can be seen in a long-term comparison (2012: percentile rank 76.7 or 8th place).

### 2.3 Use of natural resources

**Energy intensity** measures how productively energy is used in an economy. It is also determined by climate and weather conditions. Both very hot summers and particularly cold winters increase energy demand. A reduction in energy intensity was achieved in 2021 by 13 of the 31 countries compared. In 12 countries, including Austria, energy intensity remained the same. A minority of 6 countries recorded a year-on-year increase in energy input per unit of GDP. The differences in levels between the countries remain very large. Despite a slight improvement in the level, Bulgaria remains in last place, with 8.2 PJ per billion €. More than seven times the amount of energy is needed for the production of a unit of GDP than in Switzerland (2021: 1.1 PJ per billion €).

As in the previous year, Austria ranked 15th in 2021 with 3.2 PJ per billion € and thus remained in the lower midfield of the comparison countries, which means a loss of position in a ten-year comparison (percentile rank 2011: 67.7, 2021: 54.8). Switzerland remained the frontrunner, ahead of Ireland and Malta.

The **CO<sub>2</sub> intensity** is measured in terms of emissions per unit of GDP. It is determined by absolute energy consumption and the proportion of fossil fuels in the energy mix. Austria achieved a percentile rank of 64.5 in 2021, a deterioration compared to the previous year. In a ten-year comparison, it fell significantly behind its peer countries. In 2011, Austria was ranked 8th out of 31 countries, in 2021 it only ranked 12th. 77.4 percent of the comparative countries emitted more or the same amount of CO<sub>2</sub> per unit of GDP as Austria in 2011, compared to 64.5 percent in 2021. At 181.8 t of CO<sub>2</sub> per unit of GDP (2021), the amount of emissions increased compared to 2020 (178.3 t). The urgent need for action to reduce emissions thus remains. The ranking of the leading countries remained unchanged in 2021. Switzerland continued to have the lowest CO<sub>2</sub> intensity, ahead of Sweden and Ireland. There were no changes in the last ranks either: Bulgaria was once again in last place in 2021, behind Poland and the Czech Republic. The difference between the first and last-placed countries was even more pronounced in 2021 than in 2020. While Switzerland emitted around 51.5 t of CO<sub>2</sub> per unit of GDP, Bulgaria emitted 789.3 t (Poland 613.5 t, Czech Republic 508.1 t).

Renewable energy sources are used to provide heat and generate electricity. Due to its topography, Austria traditionally has a high share of hydropower. Photovoltaics, wind energy and biomass are also renewable energy sources for electricity generation. In 2021, the **share of renewable energy sources** in total final energy consumption in Austria (electricity and heat generation) was 36.4 percent. This puts Austria in the top quarter of 29 countries, with only a slight deterioration compared to 2020. Measured by percentile ranking 79.3 percent of countries had an equal or lower share of renewable energy sources than Austria. In a comparison over a longer period, Austria has lost competitiveness. As in previous years, Iceland showed the highest share of renewable energy sources in final energy consumption in 2021, not least due to its strong use of geothermal energy. Norway remained in second place in 2021 and covered three quarters of its energy consumption from renewable sources. Sweden was in third place. Luxembourg, Malta and Ireland lagged far behind with shares of renewable energy sources in final energy consumption of 12 to 13 percent.

Austria has lost competitiveness in the indicators for energy and CO<sub>2</sub> intensity (measured by GDP) over the longer term and lost further ground in 2021.



The still high proportion of fossil fuels in the Austrian energy mix implies a considerable dependence on fossil fuel imports. Austria has also been a net importer of electricity since 2001. The **energy dependency** indicator<sup>7</sup>, which expresses net energy imports as share of gross domestic consumption, measures the level of import dependency in the energy sector. Among the 30 countries compared, Austria was one of the countries with a relatively high import dependency in 2021, although its position has improved in recent years. While around 43 percent of the countries compared were equally or even more dependent on energy imports than Austria in 2020, this figure was around 53 percent in 2021. The ten-year comparison shows a significant improvement in position (percentile rank 2011: 33.3).

Freight transport, especially road freight transport, causes external costs such as greenhouse gas emissions, air pollution, noise and congestion. The external costs of transporting goods vary by transport mode i.e., rail, road and water have different environmental impacts. Rail freight transport performs better here than road freight transport<sup>8</sup>. Nevertheless, the majority of goods are transported by lorry. The WIFO Radar uses the **modal split by land transport**, i.e., the ratio of rail freight transport to road freight transport, as an indicator of the country-specific importance of environmentally friendly freight transport.

In the long term, Austria remained in this indicator in the same position among 29 comparative countries (percentile rank 75.9). Lithuania had displaced Latvia from first place in 2020 and performed best for the second year in a row in 2021. Estonia remained in third place. Countries without railway infrastructure, such as Malta and Cyprus, were naturally at the bottom of the ranking. Ireland and Greece also have no significant rail freight transport.

How active a country is in the development of environmental technologies is measured by the indicator "share of **patent applications for environmental technologies** in a country's total patent applications at the European Patent Office". The delimitation of environmental patents follows the new OECD definition: in addition to technologies for reducing emissions, those for adapting to climate change are also taken into account as well as ICT patents with environmental relevance. A three-year average is used in order to smooth out the strong fluctuations in this indicator, particularly for small countries. Austria improved significantly at the current margin and was recently in the top third of 31 comparative countries (percentile rank 2020: 77.4, 2010: 45.2). Denmark continued

<sup>7</sup> Norway has a special position here as a major exporter of crude oil and natural gas. As an outlier it is therefore not included in the country comparison.

to lead the field in terms of patent applications for environmental technologies.

## 2.4 Foreign trade

The Russian attack on Ukraine in the first quarter of 2022 had a significant impact on foreign trade flows of all members of the European single market. Rising energy prices had already led to a deterioration in the terms of trade in 2021, but the shortage of natural gas after the start of the war led to dramatic price increases for energy commodities. This was associated with higher expenditures on energy imports, which pushed the **current account balance** into negative territory in most European countries. Austria was faced with a current account deficit of 0.3 percent of GDP in 2022, corresponding to a deterioration by 1.9 percentage points compared to the previous year. This put Austria in the 10th place in the international comparison and improved slightly its relative position compared to 2021 (Figure 1). With a percentile rank of 70.0, Austria exceeded the previous year's value and was only a few percentage points below the long-term benchmark from 2012. The comparatively favourable current account balance was primarily due to the normalisation of tourism exports, which almost offset the net import of fossil energy commodities.

In the second year after the outbreak of the COVID-19 pandemic, nominal imports and exports exceeded the previous year's figures by more than a fifth. Foreign trade recovered from border closures and supply chain disruptions in 2022 and exceeded the level from the pre-crisis year 2019. As energy prices rose sharply, the terms of trade deteriorated by 5 percent in 2022 compared to 2021.

The high dependency on fossil fuels, combined with an import structure centred on Russia, puts Austrian companies at a competitive disadvantage in the medium term – despite their position in this year's WIFO Radar. This is particularly true in energy-intensive production areas.

Within Europe, the shift in relative prices in favour of natural gas and oil was particularly beneficial for Norway, whose current account balance rose from 13.6 percent (2021) to 30.2 percent (2022). Apart from Norway, only Denmark was able to significantly improve its current account balance in 2022 (from 9.1 to 13.4 percent of GDP). In Lithuania, on the other hand, the negative development in the previous year continued (from 1.1 to –5.5 percent of GDP) and Slovenia, Malta and Hungary also saw their balances deteriorate sharply (by around

<sup>8</sup> Road freight transport accounted for 43 percent of total transportation emissions in 2021.

4 percent of GDP in each case). Austria overtook Slovenia and Italy in the 2022 ranking.

**Austria's market share** in global **goods exports** (to around 180 countries) continued to decline in 2022 after a marginal reduction in the previous year (-0.1 percentage point compared to 2021). Accordingly, Austria slipped by two ranks (Figure 2). Austria's **market share** of global **tourism exports** (to around 170 countries), which had slumped during the COVID-19 pandemic (2021 -0.9 percentage points), recovered somewhat in 2022 (+0.2 percentage points to just under 2 percent). The lively demand in the 2022 summer season had a particularly positive impact on tourism exports (Fritz & Burton, 2022; Burton & Ehn-Fragner, 2023). With the 7th place and a percentile rank of 81.0 among 31 comparable European countries, Austria almost reached the percentile rank of 84.0 that it held from 2000 to 2020.

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

pressure on the foreign market and the price elasticity of foreign demand. In the medium term, the dynamics in the income and price formation processes of both trading partners correct the appreciation or depreciation of the bilateral exchange rate. **Real-effective exchange rate indices** supplement the information on bilateral exchange rate changes with relative price and wage fluctuations. Table 2 shows the development of the overall index deflated by the harmonised consumer price index or unit labour costs and the sub-index for industrial goods (deflated by consumer or producer prices) for Austria<sup>9</sup>.

Austria's price competitiveness improved significantly in 2022. This was partly due to the depreciation of the euro against the currencies of important trading partners (USA, Russia, Switzerland and China); on the other hand, inflation in Austria remained comparatively low during 2022. Particularly throughout the countries in Central, Eastern and South-Eastern Europe the energy price shock had a much greater impact on consumer prices, producer prices and unit labour costs than in Austria. In a three-year comparison, all of the effective exchange rate indices listed in Table 2 remained stable in real terms; the extent of the appreciation was minimal in a long-term comparison (2012-2022). Measured in terms of producer prices, Austria was even able to slightly improve its price competitiveness.

Austria's market share of global goods exports fell sharply in 2022. The share of the global tourism market recovered slightly.

Austria's price competitiveness improved significantly in 2022.

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

	2021-22	2019-2022	2012-2022
	Average year-to-year percentage changes		
<b>Overall index</b>			
Deflated with harmonised consumer price indices	- 2.0	- 0.0	+ 0.3
Deflated with unit labour costs	- 2.5	+ 0.2	+ 0.3
<b>Industrial Goods Index</b>			
Deflated with harmonised consumer price indices	- 1.7	+ 0.1	+ 0.3
Deflated with producer price indices	- 3.6	- 0.9	- 0.3

Source: WDS – WIFO Data System, Macrobond.

### 3. Focus topic: Populism and economic development

The term populism refers to political movements that emphasise the contrast between "ordinary" persons, whose true representatives populists see themselves as, and an "elite" or the "establishment" (Guriev & Papaiannou, 2022) and often exaggerate this using (rhetorical) dramatisation<sup>10</sup>. International

research on the economic effects of populism has observed a noticeable increase in the significance of populism in recent decades, which is no longer only gaining ground in developing or emerging countries, but also increasingly in industrialised nations (Funke et al., 2023).

<sup>9</sup> WIFO calculates real effective exchange rate indices in cooperation with the OeNB. The properties, construction, advantages and disadvantages of these indices, which differ according to the type of trade flows and the price and cost indices analysed, are described in more detail in Url et al. (2023). Due to

the specific measurement method, the exchange rate indices are presented separately (Table 2) and not shown as a percentile rank.

<sup>10</sup> See e.g., <https://www.duden.de/recht-schreibung/Populismus>.

The international literature shows that the global rise in populism is having a negative impact on the competitiveness of the countries concerned.

With the significant increase in populism, especially since the 2008-09 financial market and economic crisis, the scientific debate on this topic has also increased. Studies show that populist governments have a negative impact on the economic development of the respective countries. Populism also jeopardises international competitiveness and long-term prosperity. The following overview of selected studies briefly summarises the most important findings from the literature.

Economic analyses of populist politics go back a long way: Sachs (1989) and Dornbusch and Edwards (1991) focus on Latin American populism in the 1960s. A typical pattern is that populists initially spark an economic boom based on expansive fiscal policy, but this is short-lived due to unsustainable policies and ultimately leads to political and economic crises. Until a few decades ago, such cycles were mainly observed in developing and emerging countries, but since the late 1990s, populism has also become much stronger in industrialised countries. Important explanations for the rise in populism include pronounced globalisation and the effects of trade and automation on labour markets and employment in industry (see Bekhtiar, 2023 for Austria and Dijkstra et al., 2020 for the EU), as well as the economic crises of recent decades (Guiso et al., 2019).

Funke et al. (2023) have presented a comprehensive quantitative assessment of the economic consequences of populism. The analysis covers 60 major economies that together account for more than 95 percent of global GDP (both in 1955 and 2015) and is analysed over a period of around 100 years. The authors show that the number of populists in government has peaked since the early 2000s and that right-wing populism has now overtaken left-wing populism.

Essentially, Funke et al. (2023) confirm the finding that populist governments cause severe economic damage: over a 15-year period, GDP and consumption shrink by more than 10 percent compared to a

counterfactual scenario without populists in government offices. Contrary to the "anti-establishment rhetoric", no improvements in income distribution can be observed. Other results of populist policies include the economic disintegration of international trade and financial markets, unsustainable macroeconomic policies and the erosion of existing institutions. In addition, an increase in national debt and inflation as well as a weakening of democratic control mechanisms, the independence of the judiciary and freedom of the press can be observed. This suggests that populism is undermining the economic benefits of democratic institutions. The main findings of Funke et al. (2023) are very robust and apply regardless of time period and world region.

Populism often goes hand in hand with protectionism and economic nationalism. Brexit is seen as a good example of this because the referendum (with 51.9 percent in favour of leaving) was very close and can therefore be seen as quasi-random. There are now a large number of economic studies that demonstrate the negative effects of Brexit on production, productivity, foreign direct investment and inflation. Born et al. (2019) show that the Brexit vote in the UK caused a decline in production of 1.7 to 2.5 percent by the end of 2018. By contrast, Dhingra et al. (2017) estimate the long-term impact of Brexit (effect after ten years) at -6.3 to -9.4 percent of GDP. Bloom et al. (2019) also show that the anticipation of Brexit gradually reduced investment by around 10 percent; the UK's productivity fell by around 2 to 5 percent over the three years following the referendum.

Overall, the literature shows clear negative effects of populist policies, which severely impair competitiveness through economic disintegration and reduced trade and lead to pronounced economic losses in the long term, which are comparable to intense economic crises in terms of their extent. In addition, the erosion of democratic institutions is accompanied by a loss of trust, which also has a negative impact on forward-looking economic decisions, such as investments.

#### 4. Summary

Austria recently achieved an average percentile rank of 64.4 for all indicators of the WIFO Radar, which means that Austria still lags behind the top third of comparable European countries. Ten years earlier, the average percentile rank was still significantly higher at 71.9.

With an average percentile rank of 75.8, Austria recently performed best in terms of real **income, productivity and regional distribution**. One of the main reasons for this was the very strong growth of real GDP of

4.8 percent in 2022, even by international standards. As a result, Austria was able to improve significantly, particularly in terms of multifactor productivity and productivity per hour worked.

With an average percentile rank of 49.6 in the indicators on the **labour market and social living conditions**, Austria was only in the middle of the comparison countries. The low employment rate (in full-time equivalents) and the high gender gap in labour market participation continue to have a

On average across all 24 indicators, Austria's competitiveness has recently improved slightly.

dampening effect. Compared to the previous year, Austria was once again unable to achieve an improvement in any indicator in this dimension and also slipped towards the lower midfield in the areas of unemployment rate and risk of poverty.

In terms of the **use of natural resources**, Austria improved by 3.2 percentage points compared to the previous year with an average percentile rank of 67.5. This is primarily due to higher percentile ranks for environmental patents and energy dependency. In terms of energy intensity, however, past losses in position have been consolidated and Austria fell slightly behind the previous year in terms of CO<sub>2</sub> intensity.

Austria's current account balance deteriorated recently due to high expenditures on energy. Nevertheless, Austria improved its ranking in the comparison of **foreign trade** flows by one position (percentile rank 70.0). Tourism exports recovered from the COVID-19-related losses in 2021 with the successful

summer season, bringing Austria's global market share (percentile rank 80.6) closer its long-term average. Despite high export growth, the momentum of domestic goods exports lagged behind the development on the global market. With a global market share of just under 0.9 percent, Austria only achieved a percentile rank of 61.3. The depreciation of the euro against the currencies of important trading partners and the comparatively mild reaction of prices and unit labour costs to the energy price shock enabled Austria to significantly improve its price competitiveness in 2022.

As the literature on the **economic effects of populism** shows, it can impair the competitiveness of national economies through economic disintegration and reduced trade and lead to enormous losses in value creation in the long term. The erosion of democratic institutions is also accompanied by a loss of trust, which also has a significant negative impact on economic decisions, such as investments.

## 5. References

- Bachtrögler-Unger, J., Dolls, M., Krolage, C., Schüle, P., Taubenböck, H., & Weigand, M. (2023). EU Cohesion Policy on the Ground: Analyzing Small-Scale Effects Using Satellite Data. *Regional Science and Urban Economics*, 103. <https://www.sciencedirect.com/science/article/pii/S0166046223000893?via%3Dihub>.
- Bärenthaler-Sieber, S., Bilek-Steindl, S., Bock-Schappelwein, J., Charos, A., & Peneder, M. (2023). Nutzung digitaler Plattformen in Österreich. Hauptergebnisse einer WIFO-Unternehmensbefragung. *WIFO-Monatsberichte*, 96(5), 345-354. <https://www.wifo.ac.at/www/pubid/70781>.
- Bekhtiar, K. (2023). The Decline of Manufacturing Employment and the Rise of the Far-Right in Austria. *IHS Working Paper Series*, 50. <https://irihs.ihs.ac.at/id/eprint/6649/>.
- Bitschi, B., & Meyer, B. (2023). Improvement in Relative Unit Labour Costs in 2022. *WIFO Reports on Austria*, (14). <http://reportsonaustria.wifo.ac.at/71176>.
- Bloom, N., Bunn, P., Chen, S., Mizen, P., Smietanka, P., & Thwaites, G. (2019). The Impact of Brexit on UK Firms. *NBER Working Paper*, (26218).
- Born, B., Müller, G. J., Schularick, M., & Sedláček, P. (2019). The costs of economic nationalism: evidence from the Brexit experiment. *The Economic Journal*, 129(623), 2722-2744.
- Burton, A., & Ehn-Fragner, S. (2023). Tourism Regains Strength Despite Persistent Inflation. *WIFO Reports on Austria*, (17). <https://reportsonaustria.wifo.ac.at/71263>.
- Dhingra, S., Huang, H., Ottaviano, G., Paulo Pessoa, J., Sampson, T., & Van Reenen, J. (2017). The costs and benefits of leaving the EU: trade effects. *Economic Policy*, 32(92), 651-705.
- Dijkstra, L., Poelman, H., & Rodríguez-Pose, A. (2020). The geography of EU discontent. *Regional Studies*, 54(6), 737-753.
- Dornbusch, R., & Edwards, S. (1991). The Macroeconomics of Populism in Latin America. In Dornbusch, R., & Edwards, S. (Hrsg.), *The Macroeconomics of Populism in Latin America* (S. 1-4). University of Chicago Press.
- Ederer, S., Köppl, A., & Schratzenstaller, M. (2023). Europäische Wirtschafts- und Fiskalpolitik 2022/23. Große Herausforderungen durch Inflation und Energiekrise. *WIFO-Monatsberichte*, 96(3), 153-165. <https://www.wifo.ac.at/www/pubid/70699>.
- Fritz, O., & Burton, A. (2022). Tourismusanalyse: Sommernachfrage 2022 beinahe auf Vorkrisenniveau, gute Buchungslage zu Winterbeginn. *WIFO Research Briefs*, (26). <http://www.wifo.ac.at/www/pubid/70470>.
- Fritz, O., Burton, A., Ehn-Fragner, S., Streicher, G., Laimer, P., Pfeifer, T., Ostertag-Sydler, J., & Weiß, J. (2023). Auswirkungen von COVID-19 auf die österreichische Tourismus- und Freizeitwirtschaft im Jahr 2022. WIFO, Statistics Austria. <https://www.wifo.ac.at/www/pubid/70736>.
- Funke, M., Schularick, M., & Trebesch, C. (2023). Populist leaders and the economy. *American Economic Review*, 113(12), 3249-3288.
- Guiso, L., Herrera, H., Morelli, M., & Sonno, T. (2019). Global crises and populism: the role of Euro-zone institutions. *Economic Policy*, 34(97), 95-139.
- Guriev, S., & Papaioannou, E. (2022). The Political Economy of Populism. *Journal of Economic Literature*, 60(3), 753-832. <https://doi.org/10.1257/jel.20201595>.

- Hofmann, K., Janger, J., & Unterlass, F. (2023). *Technologische Souveränität. Empirische Bestimmung und FTI-politische Implikationen*. WIFO. <https://www.wifo.ac.at/wwa/pubid/70753>.
- Kettner, C., Falkner, K., Kletzan-Slamanig, D., Köppl, A., Meyer, I., Naqvi, A., Renhart, A., Sinabell, F., Sommer, M., & van Dyck, C. (2023). Key Indicators of Climate Change and the Energy Sector in 2023. Special Topic: the European Commission's "Fit for 55" Package. WIFO Reports on Austria, (13). <https://reportsaustria.wifo.ac.at/71169>.
- Peneder, M., Köppl, A., Leoni, T., Mayerhofer, P., & Url, T. (2020). A WIFO Radar of Competitiveness for the Austrian Economy. WIFO Reports on Austria, (3). <http://reportsaustria.wifo.ac.at/66849>.
- Peneder, M., Bittschi, B., Köppl, A., Mayerhofer, P., Url, T., Bärenthaler-Sieber, S., & Böheim, M. (2023). *Wettbewerbsfähigkeit und nachhaltige Entwicklung der österreichischen Wirtschaft*. WIFO. <http://www.wifo.ac.at/wwa/pubid/69778>.
- Peneder, M., Pitlik, H., & Charos, A. (2023). Standortqualität und Vertrauen in öffentliche Institutionen. Executive Opinion Survey 2022. WIFO-Monatsberichte, 96(3), 167-175. <https://www.wifo.ac.at/wwa/pubid/70700>.
- Piribauer, P., Burton, A., Ehn-Fragner, S., Fritz, O., Huber, P., Klien, M., Mayerhofer, P., Sebbesen, A., & Streicher, G. (2023). Regionale Konjunktur zwischen Erholung und Energiekrise. Die Wirtschaft in den Bundesländern 2022. WIFO-Monatsberichte, 96(6), 389-406. <https://www.wifo.ac.at/wwa/pubid/70834>.
- Sachs, J. D. (1989). Social conflict and populist policies in Latin America. *NBER Working Paper*, (2897).
- Schiman-Vukan, S., & Ederer, S. (2023). Kaufkraft steigt nach milder Rezession. Prognose für 2023 und 2024. WIFO-Konjunkturprognose, (3). <https://www.wifo.ac.at/wwa/pubid/71123>.
- Url, T., Vondra, K., & Glauning, U. (2023). Energy price shock poses additional challenge to Austria's price competitiveness. *Monetary Policy & the Economy*, (Q2-3/23), 67-97.