COMPETITIVENESS REPORT

2023

'To see what everybody else has seen and to think what nobody else has thought.'

Albert Szent-Györgyi

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2023

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The goal of the Competitiveness Report is to provide a comprehensive, objective picture of the aspects of Hungary's competitiveness that are less in the focus of the central bank's traditional macroeconomic analyses, although they are determinants in terms of economic developments. In 2016, the Magyar Nemzeti Bank published the book entitled 'Competitiveness and Growth' to analyse Hungary's competitiveness and explore options for moving forward. Subsequently, the Competitiveness Programme, which was published in early 2019, also made specific proposals in the key areas of intervention to achieve the turnaround in competitiveness, in addition to providing a detailed analysis of the status quo. The Competitiveness Report examines and evaluates Hungary's competitiveness position in accordance with the principles of the book and with the identified structural areas and proposals laid down in the Competitiveness Programme.

For the MNB, competitiveness means the level of all factors that determine the long-term performance of the economy, including, inter alia, productivity, the quantity and quality of human resources, technological progress, the regulatory environment, entrepreneurial attitude, financing possibilities, and social and environmental sustainability. Similarly to surveys that analyse competitiveness in international comparisons, this report examines various dimensions, but – in addition to numerical results – it also analyses and assesses these dimensions (along with comparisons over time and on an international scale).

The Competitiveness Report was prepared under the general guidance of Zsolt Kuti, Executive Director for Monetary Policy, Financial and Competitiveness Analysis. The Competitiveness Report was prepared by the staff of the Competitiveness and Structural Analysis Department, the Directorate Monetary Policy and Financial Market Analysis, the Directorate Fiscal Analysis, the Directorate Economic Forecast and Analysis, the Directorate Financial System Analysis, the Digitalisation Directorate, the Directorate Lending Incentives, the Insurance and Pension Funds Supervision Directorate, the Financial Infrastructures and Payments Directorate, the Directorate Structured Finance Strategy, the Directorate for Social Relations and the Budapest Stock Exchange. The Report was approved for publication by Barnabás Virág, Deputy Governor for Monetary Policy, Financial Stability and International Relations.

The Competitiveness Report is based on data available up to December 2023.

Contents

1 Executive summary

The Competitiveness Report of the Magyar Nemzeti Bank (MNB) aims to provide a comprehensive and objective picture of Hungary's competitiveness. Competitiveness analysis is a key issue for the MNB, as competitiveness is a fundamental determinant of the economy's long-term growth potential and also influences current economic trends. In the approach adopted by the MNB, a national economy may be considered competitive if it optimises the use of its resources in order to achieve the highest level of welfare that is still sustainable. A competitive economy needs solid foundations such as a stable macroeconomy and financial sector, an efficiently operating public sector, adequate infrastructure, competitive energy management, support for the green and digital transitions, a strong and productive domestic corporate sector, favourable demographic trends, a flexible labour market and the sustained availability of high-quality human capital. In the Competitiveness Report, the MNB uses 160 indicators, 95 per cent of which are objective, to present Hungary's current competitiveness position and its opportunities for breakthrough, in comparisons with its regional and EU-wide peers. This publication is based on figures from 2022 or the last available data prior to that year.

Based on the MNB's Competitiveness Index 2023, Hungary ranked 19th in terms of competitiveness out of the 27 countries of the European Union, falling two positions compared to the previous year. Hungary scored 46.6 points, 4.8 points lower than the EU average (51.4 points). In 2023, 12 EU countries improved on their results and 15 countries saw their outcomes worsen. Compared to the previous year, Hungary was overtaken by Italy and Poland in the 2023 rankings. Hungary's relative competitiveness position has fallen to slightly below the average of the Visegrád countries. Hungary remains below the EU average and comes in significantly lower than the average of the five northern EU Member States with the most sustainable growth paths.

Hungary's performance deteriorated in 9 of the 14 competitiveness areas examined, including areas that are crucial in the 21st century, such as the quality of human capital and digitalisation. Hungary's scores dropped significantly in the areas *Activation of household savings* (-8.0 points) and *Foreign trade and economic structure* (-6.7 points), but also declined in areas such as *Green economy* and *Competitive energy use*. Hungary improved its score in 5 areas, most notably in *SME strategy* (+8.3 points) and *Modern infrastructure* (+2.0 points). However, there is still a significant gap to the averages of the EU as a whole and to Hungary's immediate regional peers in the areas *Healthy society* and *Knowledge-based society*, which influence the quality of human capital, including digital skills, even though the latter are key to meeting the challenges of the 21st century.

Although Hungary transitioned to a balanced convergence path in the 2010s, the waves of crises in the 2020s and decelerating competitiveness reforms have led to a loss of balance. The fiscal turnaround after 2010 and the monetary policy turnaround from 2013 onwards put Hungary on a path of balanced convergence, which helped the economy grow by an average of 2 percentage points above the EU average between 2013 and 2019. The decade of the 2010s was thus the most economically successful period of the last century, creating solid foundations and with successful crisis management, as a result of which the economic development of Hungary continued to converge with the EU average even during the Covid-19 pandemic, rising to 76.1 per cent of the EU average by 2022.

The slowdown and protraction of reforms has led to a deterioration in Hungary's competitiveness and a destabilisation of its economic balance. A lack of competitiveness reforms, the pandemic and the energy crisis have led to stagnation in the country's relative development position and a deterioration in the balance and competitiveness positions. Despite narrowing the gap to the European Union average, Hungary has been ranked 21st in terms of GDP per capita since 2020, and the deterioration of competitiveness is also notable in international rankings. In the IMD global rankings, which offers the most comprehensive competitiveness comparisons, Hungary dropped 7 places in 2023. By contrast, Hungary's regional peer Poland improved its performance to the same degree, once more overtaking Hungary.

In addition to global factors, Hungary's competitive weaknesses (low productivity, weak competition and high energy dependence) have been major factors contributing to the recent high inflation at a rate substantially diverging from

the regional average, and also to the stalling of the country's economic growth. Food prices accounted for nearly two thirds of excess inflation in Hungary measured against the Visegrád countries, in which the structural weaknesses of the Hungarian food industry and the excessive profit growth in the sector played a significant role. The Hungarian food industry has the 2nd lowest labour productivity among EU countries, making this sector more vulnerable to external cost shocks. In 2022, Hungarian food industry profits grew more than 18 times faster than on average in the preceding years, and 2.5 times faster in agriculture, which had a significant impact on food retail prices in Hungary. This was compounded by the competitiveness gaps in energy use and management. Hungary's energy dependency is somewhat above the EU average, but significantly above the regional average, mainly due to the high energy intensity of the economy and the low share of renewable energy use. A substantial reduction in Hungary's energy dependence is necessary, in terms of energy technology, inflation and competitiveness.

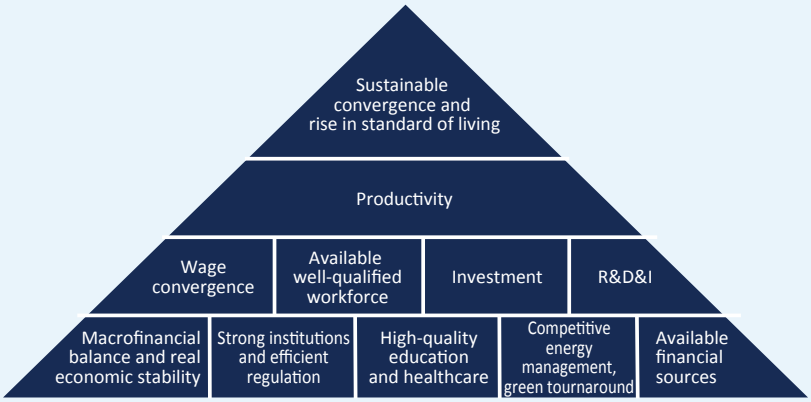
In order to continue the sustainable convergence of the last decade and reach the average development levels measured in the European Union, a rapid rebalancing and a full competitiveness turnaround are needed. For a competitiveness turnaround and sustainable convergence, the Hungarian economy needs to shift from a quantitative to a qualitative growth model, which requires comprehensive structural reforms. Hungary's positive performance in the 2010s was based mainly on quantitative indicators, which improved as a large majority of targeted reforms were introduced at the beginning of the decade. However, qualitative indicators fell behind as the reforms gradually slowed down. A more efficient use of existing resources and a more dynamic increase in productivity are essential for the transition to a model of growth based on quality. This requires a healthy and skilled workforce of sufficient size, strengthening the capacity of companies to innovate, digitalise and export, easy and fast access to finance, a further reduction of government bureaucracy, and the creation of an energy-efficient, green economy.

2 Framework for the Competitiveness Report

2.1 PURPOSE OF THE COMPETITIVENESS REPORT

In the approach adopted by the MNB, a national economy can be considered competitive if it optimises the use of its resources in order to achieve the highest level of welfare that is still sustainable. Just as there is no universal recipe for successful economic convergence, there is no universally agreed and precise definition of competitiveness. There is however consensus regarding the necessary and beneficial nature of some of the key factors (Chart 2.1). A competitive economy needs solid foundations such as a stable macroeconomy and financial sector, an efficiently operating public sector, adequate infrastructure, support for competitive energy management and the green new deal, favourable demographic trends, a strong domestic corporate sector, a flexible labour market and high-quality education and healthcare. These can serve as the foundations for creating a well-functioning, reliable business environment that encourages investment and innovation and can lead to productivity growth and sustainable economic convergence in which skilled labour is highly valued.

Chart 2.1
Stylised structure, foundations and objectives of competitiveness



Source: MNB

Since 2013, the MNB has conducted its work with a broader horizon and focus, as its statutory mandate now also includes the analysis of competitiveness. In addition to its primary mandate of achieving and maintaining price stability and ensuring financial stability, the central bank also has the statutory role of supporting the government in its economic and environmental sustainability policies with the instruments at its disposal. Hungary transitioned to a successful convergence path in the 2010s, and its convergence with the EU continued even during the crisis period of the Covid-19 pandemic. Since the growth turnaround in 2013, the Hungarian economy has expanded, on average, 1.7 percentage points faster per year than the EU average. In 2022, Hungary's level of development stood at 76.1 per cent of the EU average. During the multiple crises of the 2020s, however, Hungary was among the countries that lost their macroeconomic balance, which must be restored promptly as a precondition for lasting convergence.

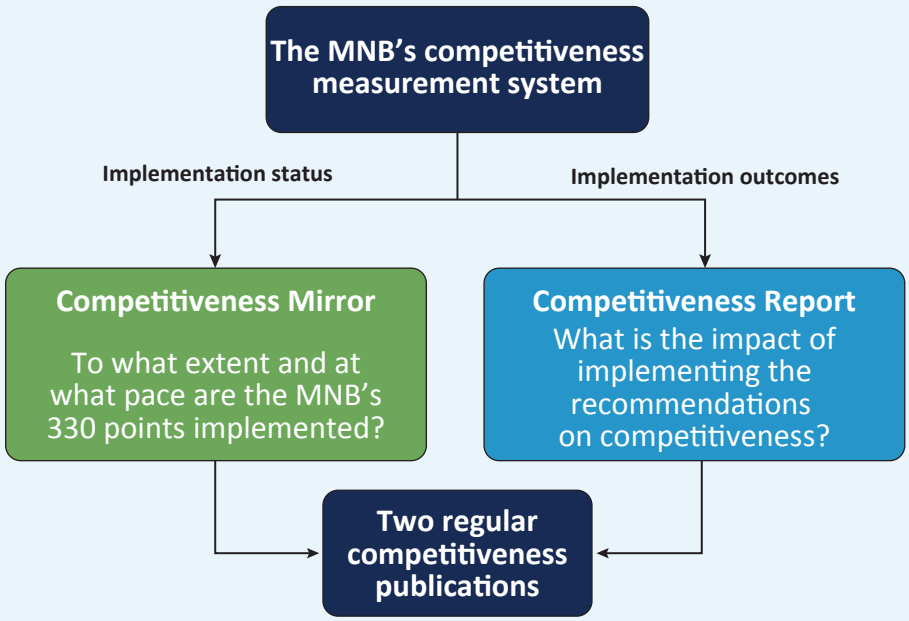
The MNB's analysis shows that full implementation of the competitiveness turnaround remains a key precondition for Hungary's sustainable convergence. In several of its past publications, the MNB formulated recommendations for measures to further improve the country's competitiveness. Its work entitled *Competitiveness and Growth*, which was published in 2016, contained 50 recommendations. Subsequently, the MNB presented a new workshop document to the Competitiveness Council in the summer of 2018, in which it set out a total of 180 recommendations. As a next step in its work on competitiveness, it published the 330 points of its *Competitiveness Programme* in February 2019, in which it drew on the results of previous publications and formulated recommendations in 12 areas. In the spring of 2022, the MNB presented a new set of 144 proposals for sustainable and balanced convergence.

The MNB's competitiveness measurement system assesses the progress of the competitiveness turnaround in two regular publications[1] (Chart 2.2):

- The ***Competitiveness Mirror*** examines and evaluates the actions taken in response to the 330 competitiveness recommendations formulated by the MNB in the *Competitiveness Programme*. The descriptive chapters of the publication summarise the actions taken on each recommendation, while the analytical chapter quantifies the progress in implementation. The *Competitiveness Mirror* has been published four times so far, in the autumn of 2019 and of 2020, in early 2022 and in the summer of 2023.

- The ***Competitiveness Report*** presents the most important competitiveness indicators in an objective way. The aim of the report is to present the factors and indicators that have helped Hungary improve its competitiveness in recent years, and to identify the major challenges and opportunities for growth in a comparison to its regional and EU peers. The report was first published in 2017 and initially covered more than 100 structural indicators; since 2020, it has been published annually and uses around 160 indicators, most of them objective ones. Every year since 2020, the publication has also included a composite indicator called the Competitiveness Index to capture the competitiveness of Hungary by international standards. This publication, the fifth Competitiveness Report, contains 160 indicators, 95 per cent of which are objective.

Chart 2.2
Elements of the MNB's competitiveness measurement system

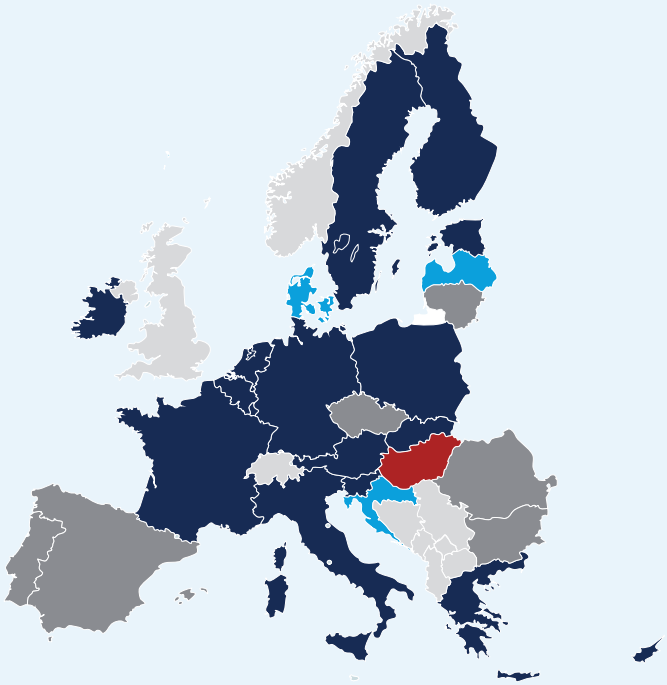


Source: MNB

[1] A detailed description of the MNB's competitiveness measurement system is available in the 2019 publication entitled *Versenyképesség mérésének módszertana* (Methodology for Measuring Competitiveness). https://www.mnb.hu/letoltes/a-versenykepesseg-meresenek-modszertana.pdf

The MNB's competitiveness publications are wide-ranging and complex even by international standards, as they go beyond macroeconomic aspects and include detailed analyses. Currently, 19 countries in the European Union, including Hungary, produce national competitiveness reports in some form, and another three countries have issued competitiveness publications in recent years (Chart 2.3). International competitiveness reports tend to focus on macroeconomic indicators and limit themselves mainly to indicators rather than analysis. Some international organisations (e.g. the OECD, the IMF, the European Commission) both analyse the prevailing situation and make recommendations for the countries concerned; in certain cases, they may also follow up on their recommendations.

Chart 2.3
EU Member States preparing competitiveness reports



Note: Countries that have published competitiveness reports in the last three years are highlighted in dark blue, whereas countries that have published a competitiveness report at any point in the past are shown in light blue. Dark grey indicates countries that do not publish competitiveness reports.

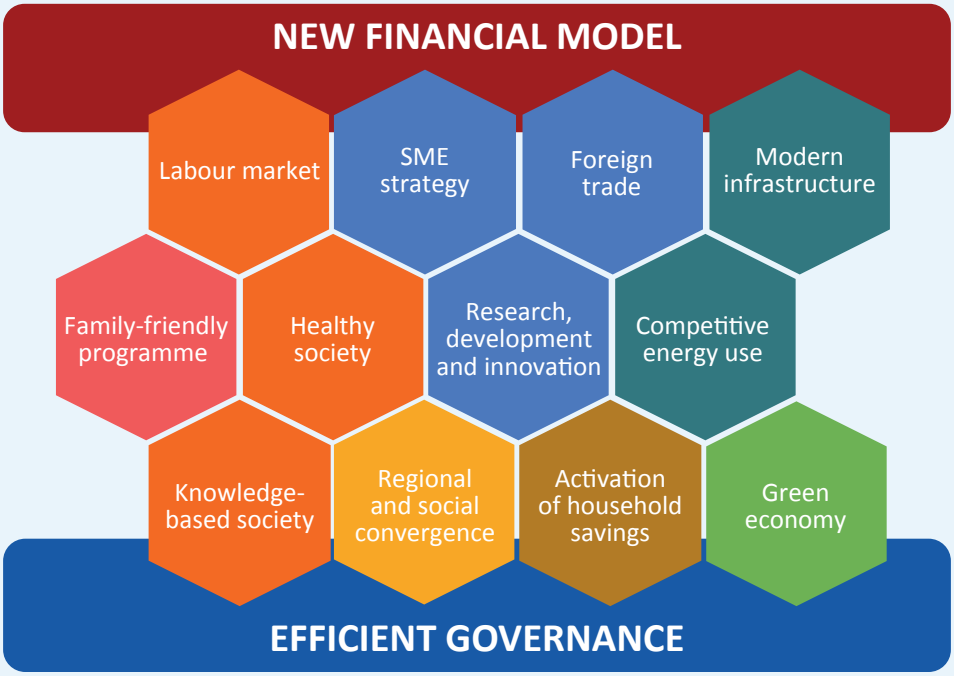
Source: MNB collection

The MNB's Competitiveness Report aims to provide a comprehensive and objective picture of Hungary's competitiveness. The publication examines in detail certain dimensions that are not normally in the focus of the MNB's traditional macroeconomic analyses, in spite of their crucial role in economic development, especially the longer trends. These areas and factors, which are fundamentally structural in nature, affect the consumption, savings and investment decisions of economic agents, the financial balance, the potential growth of the economy and, through all of the above, expected returns, the price levels and inflation.

The Competitiveness Report examines Hungary's competitiveness position in 14 areas in an international comparison (Chart 2.4). The report includes analyses of, among other things, the financial system, the state, human capital, the corporate sector, innovation, environmental sustainability and infrastructure, and also contains a chapter summarising the macroeconomic trends as well as the key international competitiveness rankings. The focus of the publication is on Hungary, which is compared to the countries of the European Union, with particular emphasis on the Visegrád peers and also the most sustainable EU countries in the North (the Northern TOP5: Denmark, Estonia, Finland, the Netherlands and Sweden). The EU, V3 and Northern TOP5 averages are shown in this analysis mainly as unweighted arithmetic means.

Although this analysis is based on 2022 figures, 2022 data were not yet available in several indicators, for which we therefore used the latest available figures.

Chart 2.4
Areas covered in the Competitiveness Report



Source: MNB

2.2 BRIEF SUMMARY OF HUNGARY'S COMPETITIVENESS POSITION AND THE NECESSARY DIRECTIONS OF PROGRESS

Although the macroeconomic conditions for a turnaround in competitiveness were successfully established in Hungary in the 2010s, sustainable convergence requires the correction of the imbalances caused by the waves of crisis in the 2020s as well a complete turnaround in competitiveness. Up until the early 2020s, the fiscal turnaround after 2010 and monetary policy realignment after 2013 put Hungary on a path of balanced convergence. The Hungarian economy continued to outperform the EU average even during the crisis triggered by the Covid-19 pandemic thanks to the stable fundamentals established in the previous decade and the crisis measures adopted. As a result, Hungary continued to converge with the EU average in 2020–2022, albeit at a slower pace than before. Between 2013 and 2022, Hungary's economic growth exceeded the EU average by 1.7 percentage points. However, Poland and the Baltic countries, which had similar or somewhat lower levels of development in 2010, achieved more dynamic convergence than Hungary. Moreover, the multiple crises in the early 2020s have led to larger macrofinancial imbalances in Hungary, mainly due to the country's high energy exposure. Sustainable convergence requires a return to consistent stabilisation of the weakened balance indicators and full implementation of the competitiveness turnaround. The Hungarian growth model needs to be rapidly transformed into a knowledge- and technology-driven growth model that meets the challenges of the green and digital transitions. This requires a healthy, qualified workforce in sufficient numbers, strengthening the capacity of companies to innovate, digitalise and export, easy and fast access to finance, a reduction of government bureaucracy and the creation of an energy-efficient and green economy.

Although the stability of the Hungarian financial system has been reinforced and digitalisation has started in recent years, there is still room for growth in areas such as the prudent deepening of credit penetration, the reduction of the cost-to-assets ratio, capital market diversification and financial digitalisation. After having started to rise in the preceding years, inflation reached high levels in 2022 H2 following the outbreak of the Russia-Ukraine war, while the decline in domestic demand and mounting economic uncertainties also contributed to a slowdown in corporate credit growth in Hungary, similar to the trends observed across the European Union. At the end of 2022, private sector debt stood at 32 per cent of GDP, a level substantially lower than the euro area average, leaving significant room for prudent expansion in lending. In 2022, the Hungarian banking system ranked among the best in the EU in terms of profitability, but a high cost-to-assets ratio was a constraint on profitability and the pricing of banking products. In terms of the pricing of corporate loans, Hungary ranks in the middle of the EU, while housing loan spreads started rising in 2023 after bottoming out in 2022, in line with the interest rate environment. In the longer term, price competition, lower operating costs and the deepening of the digital infrastructure would help to reduce margins. In recent years, several measures and programmes (FGS programmes, MFL products) have improved the predictability of repayment schedules and, as a result of these schemes, the share of fixed-rate HUF-denominated SME loans exceeded 70 per cent of new issuances by early 2022, while variable-rate household loans were virtually eliminated from the market. In the medium to long term, the best way to improve the efficiency of the banking sector is to consolidate the fragmented market, deepen financial penetration and further digitalise operational processes. In an encouraging development, financial institutions now often provide as standard the digital solutions they introduced temporarily during the pandemic. In parallel to the digital transformation of financial institutions, the development of a mature FinTech ecosystem and the institutional and regulatory environment underpinning it is also a priority. Since 2019, the MNB's Bond Funding for Growth Scheme has successfully contributed to increasing diversification in corporate borrowing, with the result that the size of the Hungarian corporate bond market now exceeds the Visegrád average. There are still shortcomings in the financial intermediation sector in Hungary, however, such as the limited role of alternative financing channels (stock exchange, bond market) and the low financial inclusion of certain social groups, which represent a reserve for competitiveness for Hungary.

While the share of public debt held by non-residents has fallen significantly in recent years, further involvement of households in the financing of public debt may reduce the financial vulnerability and support the long-term financing of sustainable convergence. With the budget deficit and public debt rising in the wake of the Covid-19 pandemic and the external environment becoming more uncertain in the shadow of the Russia-Ukraine war and rising inflation, high household savings and the financing of public debt from domestic sources are particularly important. The stock of government bonds held by the public has increased nearly 14-fold since 2011, with the introduction of the MÁP+ product in June 2019 contributing significantly. As inflation rose in 2022, that year became defined by the gradual switch from MÁP+ to the inflation-indexed PMÁP and also by a rise in household demand for the reintroduced MÁP and institutional papers (discount treasury bills, government bonds). The diverse range of retail government bonds encourages households to increase their savings, which supports sustainable economic growth and financial and macroeconomic stability by stabilising the balance of payments.

Although the productivity of Hungarian SMEs has increased substantially in recent years, there is still opportunity for breakthroughs in the Hungarian economy by reducing corporate duality, increasing the share of digital business solutions and exporter SMEs and strengthening the efficiency of R&D expenditures. Although the relative productivity of Hungarian SMEs converged by more than 7 percentage points with that of large domestic firms between 2010 and 2021, the productivity of the SME sector remains at only 54 per cent of that of large firms, which thus continues to indicate strong duality. A higher real investment rate would support the convergence process. While the nominal investment rate in 2021 was the 5th highest in the EU, at 16.2 per cent for the overall business sector, domestic capital formation slowed in real terms. The digital and green transitions are also essential enablers of the productivity convergence of SMEs. More and more SMEs have made progress recently in digital technologies and environmental sustainability, but there is still considerable room for improvement in both areas. For SMEs, export market activity can also be an important launchpad. Exports are still concentrated in Hungary: only 5.2 per cent of Hungarian SMEs export, compared to an EU average of 7.4 per cent and 10.2 per cent in the most sustainable Northern countries. In Hungary, the 20 largest companies account for 30 per cent of exports, while in Poland exports are concentrated at only about half of that rate. One important consideration for

Hungary's competitiveness is the structure of exports and increasing their domestic value added, which can be achieved by using more knowledge-intensive services and creating knowledge-intensive jobs. In addition to increases in digitalisation, sustainability and exports, strengthening the innovation performance of SMEs is an untapped potential of the domestic economy. In spite of progress in terms of the share of businesses active in product innovation and in cooperations with innovation objectives, Hungary remains in the bottom third of the EU rankings. Innovation and improved R&D efficiency throughout the national economy would support productivity growth and thus sustainable convergence. The number of new patents registered each year is significantly below the EU and Visegrád averages, which, alongside rising R&D expenditures, partly reflects inefficiencies in the spending of the resources invested.

Employment is at historically high levels in Hungary. Looking ahead, however, it is crucial to increase labour market activity among vulnerable groups and return to raising real wages, which contracted in 2023, in line with productivity improvements. In Hungary, steady improvements on the labour market in the 2010s were temporarily interrupted by the Covid-19 crisis in 2020, but employment has been at historically high levels since then. As the economy reopened, the labour market started to recover, helped by the measures of the central bank and the government. The employment rate in the 15–64 age group rose to 74.4 per cent in 2022, the highest level measured in Hungary since it became a market economy. The Hungarian indicator is above the average of both the EU and the Visegrád competitors. As employment has risen, the unemployment rate has also improved in the post-Covid period, falling to 3.6 per cent in 2022, which is better than the EU average. Tightness on the labour market increased further in 2022, but there are still significant reserves in the more vulnerable labour market groups, notably young people, persons approaching retirement and low-skilled people. Labour shortages affect a wide range of sectors in Hungary, in particular manufacturing and IT. In 2022, average wages in Hungary grew at the fastest rate in the EU in nominal terms (based on national accounts data). However, higher inflation meant that the increase only amounted to around 2 per cent in real terms, and in 2023 the real value of earnings fell. While the Hungarian average wage remains one of the lowest in the EU, the wage level measured at purchasing power parity is in line with Hungarian labour productivity, which is around 70 per cent of the EU average. For competitiveness and sustainable convergence, it is important that wage convergence in the long term go hand in hand with the productivity growth that underpins it. There are still significant regional disparities within Hungary, which are also reflected in labour market indicators. The more developed counties (located mainly in West Hungary) and the capital city have above-average labour market and income indicators. In terms of income and wealth inequalities, Hungary has traditionally been among the countries with lower inequality in both global and EU-wide comparisons, and even the Covid-19 crisis did not have a significant impact on inequality.

Demographic trends have been improving over the past decade in Hungary, but raising the fertility rate to 2.1 and increasing life expectancy at birth remain the only way to create a sustainable social foundation for convergence, and this requires an impactful family policy that encourages childbearing. The fertility rate rose significantly, from a historic low of 1.23 in 2011 to 1.61 in 2021, which is higher than the EU and regional averages. The favourable economic environment and generous family policy measures after 2010 contributed to the increase in the rate. However, HCSO figures show that the decade-long upward trend in the indicator ended in 2022, when it started to decline. The fertility rate remains below the 2.1 needed for the population to reproduce. Another key determinant of population trends is life expectancy at birth, which fell by 2.2 years, to 2009 levels, as a result of the Covid-19 pandemic. Hungarian women currently live 3.9 years less than the EU average, while men live 5.3 years less. Ageing is also an increasing challenge in terms of demographic trends. The share of the population aged 65 and over was 20.5 per cent in 2022, which is somewhat lower than the EU average but above the average of the Visegrád countries. In the long run, economic growth is significantly influenced by the size of the working-age population, which can be increased by raising fertility rates and life expectancy at birth. Public spending on family support as a percentage of GDP is high in Hungary by international standards, but incentives to help create a work-life balance would be just as important. In 2022, only 6 per cent of Hungarian women worked part-time, which is significantly below the EU average of 28.4 per cent.

Healthy life expectancy has increased in recent years in Hungary, but there is still considerable scope for improving the health of the population, which can be best achieved by intensifying the financing of the relevant institutions and widely promoting the importance of health consciousness and prevention. Healthy life expectancy in Hungary in 2021 for both sexes (63.5 years for women and 61.6 years for men) was above the average of the other Visegrád countries, but lower than the EU average. The Hungarian population is not yet invested sufficiently in the pursuit of a healthy lifestyle, as is confirmed by the morbidity and mortality indicators. Hungary has the second highest rates of obesity (24 per cent) and of deaths attributable to behavioural risks (47 per cent) in the European Union, while Hungary's standardised mortality rate from malignant tumours is the highest. This shows that with prevention and a healthy lifestyle a significant proportion of diseases in Hungarian society could be prevented, which represents a substantial opportunity for convergence. By contrast, the Hungarian system of vaccinations for children is of a high standard, even in a global comparison. Hungary's health expenditure as a percentage of GDP has risen by 1.1 percentage point in 2 years (to 7.4 per cent), but was still the 6th lowest in the European Union in 2021. One of the problems of the Hungarian healthcare system is that private health spending is not channelled into institutionalised forms, but retirement savings, health funds and health insurance products could be helpful by making it easier to plan for health expenditures. Hungary is also below the EU average in terms of the availability of human resources in the health sector, as the number of practicing medical and especially paramedical staff as a share of the population is below the EU and regional averages. The Hungarian healthcare system has several efficiency opportunities that could be exploited to improve the sustainability of the system without increasing expenditure. The average hospital stay in Hungary is 2 days longer than the EU average, mainly due to a lack of cooperation between the social and healthcare systems.

A knowledge- and innovation-driven economic model is based on a well-educated workforce, which in turn necessitates intensifying the development of modern skills in general education and, at the same time, increasing the capacity and quality of higher education. International tests measuring the effectiveness of the educational system show that Hungarian students learn the expected curriculum, but have a weaker ability to apply theory in practice. The performance of Hungarian students in the latest PISA 2022 tests on the real-life application of the curriculum showed a deterioration in mathematics and reading comprehension, while in science it has improved since the 2018 tests. The EU and Visegrád averages were worse than the Hungarian figures in all three areas, bringing Hungary closer to the international averages than in the last survey. The socio-economic-cultural background of Hungarian students continues to play a crucial role in their results. In 2020, Hungary spent 3.7 per cent of GDP on education, significantly less than the 4.5-per cent average in both the other Visegrád countries and the European Union. Teaching in Hungary is less well paid than other professions requiring tertiary qualifications: the average salary of teachers in general education is only 55–62 per cent of that of graduates overall, which is the lowest figure among countries that are members of both the OECD and the EU. The Hungarian rate of early school leavers who do not earn a qualification (12.4 per cent) is more than twice the average of the other Visegrád countries, while the share of persons with tertiary qualifications, and therein STEM qualifications, is among the lowest in the European Union. 8 per cent of the adult population of Hungary participated in lifelong learning in 2022, lower than the regional and EU averages. Hungarian universities do not rank among the world leaders in international comparisons of higher education institutions, although the proportion of foreign students studying in Hungarian higher education is high compared to other EU countries. In essence, there is potential for improvement in two areas of the education system: developing modern skills and increasing the proportion of graduates. There are also areas for improvement when it comes to the competences of the older age groups, in areas such as digital skills, financial literacy and foreign languages.

Significant progress has been achieved in recent years in the digitalisation of public administration processes and the enhancement of traditional and modern infrastructures; nevertheless, there are reserves for competitiveness in these areas, in terms of strengthening productivity in public administration and the economy. One important means to improve productivity is a rolling out of e-government, in which there is duality in Hungary: while in some subdomains its performance is outstanding within the EU, there remains significant room for improvement when measured by complex indicators. For example, whereas a high percentage of the population uses online public administration, the gap in digital skills and service offerings has resulted in the country scoring the 3rd lowest in the UN's E-Government Development Index. As a result of the introduction of measures to reduce the shadow economy – such as the online cash register system, the Electronic Public Road Trade Control System (EKÁER) and online invoicing – the share of unpaid VAT (VAT gap) in Hungary contracted by the 4th highest rate in the European Union between 2010 and 2021. In 2021, the Hungarian VAT gap was 4.4 per cent, while the EU average was more than one and a half times higher. Further progress may be achieved with the introduction of draft VAT returns in early 2024, as it may further reduce the burden on economic operators. There has been significant progress in infrastructure development, although further action is needed. The density of the Hungarian rail and road network is satisfactory, but there is room for quality improvements in several respects. The rail network of Hungary was the 5th densest in the EU in 2021, but the share of high-speed, electrified and double-track lines is low. Within the road network, the density of express roads matches the EU average, but almost half of all Hungarian roads are in poor condition. Hungary leads the EU in terms of internet infrastructure speed and fixed-line internet penetration, but there is still opportunity for improving competitiveness in terms of 5G technology and mobile internet subscriptions.

Achieving carbon neutrality in Hungary is possible by ensuring a green, domestically produced and affordable energy mix on the one hand, and by creating a circular economy on the other; both are areas in which Hungary lags behind significantly. The net energy import, which captures energy dependence, had been rising in recent years in Hungary, but fell somewhat in 2022 due to the energy crisis triggered by the Russia-Ukraine war. Hungary imports energy at a rate similar to the EU average but more than the Visegrád and Northern TOP5 averages. Cutting the share of energy imports could reduce Hungary's energy dependence, improve its balance of payments and, if imports are replaced by green energy, increase its environmental sustainability. The share of renewable energy sources declined between 2014 and 2018, which stopped in 2019 and started to increase slowly from 2020 onwards as solar generation assets were installed. 87 per cent of the solar PV capacity to be installed by 2030 had been built by September 2023. However, beyond the further expansion of solar PV installation, there is significant scope for further deployment of other types of clean energy, as the domestic renewable energy rate is the 6th lowest in the EU. The government has set a target of 29 per cent for renewable energy by 2030, well below the EU's 42.5 per cent commitment. In addition to expanding capacities, addressing storage issues and developing the network infrastructure is essential to meet these targets. Although decreasing, energy intensity (energy demand per unit of output) in the Hungarian economy is still 1.7 times higher than the EU average. Hungary's per capita CO_2 emissions are lower and carbon emissions per unit of output are similar to the EU average, but air pollution is the 9th highest in the EU. In Hungary, environmental tax revenues and expenditures as a share of GDP have declined in recent years and both indicators are currently lower than the averages of the EU and the Visegrád competitors, leaving room for improvement. However, the share of green government bonds in total government bond issuance reached 3.5 per cent in 2023 H1, making Hungary one of the frontrunners in Europe. The MNB's green commitment is demonstrated by the fact that, from August 2021, a green mandate was added to its activities. Thus the MNB promotes the transitioning of the Hungarian financial system, and thus the economy, to a climate-friendly trajectory.

Table 1
Developments in selected competitiveness indicators

Indicator	2010	2019	2021	2022
Macroeconomy				
Annual GDP growth rate (per cent)	1.1	4.9	7.1	4.6
Investment rate (percentage of GDP)	20.1	27.0	27.2	28.2
Gross public debt (percentage of GDP)	80.0	65.3	76.7	73.9
Holdings of government securities by households (HUF billion)	709	7,984	9,960	10,058
Net external debt (percentage of GDP)	52.9	6.9	7.5	9.4
GNI-GDP gap (percentage of GDP)	–4.7	–2.6	–3.2	–3.1
Net financial wealth of households (percentage of GDP)	69.9	106.3	116.7	104.6
Gross savings rate (percentage of GDP)	20.8	27.5	26.8	25.9
Financial system				
Return on equity in the banking sector (per cent)	0.1	14.7	13.4	12.7
Spread based on the APR of housing loans extended in domestic currency (percentage points)	–1.1	3.1	0.9	0.2
Percentage of electronic payments for purchases (per cent)	10.1	32.1	40.8	43.5
Percentage of people using internet banking (per cent)*	34.9	54.1	63.2	68.5
Corporate sector				
Relative labour productivity of SMEs compared to large corporates (per cent)	46.6	57.7	54.1	–
Corporate investment rate (percentage of GDP)	12.5	16.4	16.2	–
R&D expenditure in the total economy (percentage of GDP)	1.1	1.5	1.7	1.3
SMEs active in product innovation (per cent)*	9.6	13.4	19.5	19.9
Corporate sector credit dynamics (per cent)	–2.5	14.2	10.7	13.8
Human capital				
Fertility rate (number of children per woman)**	1.25	1.55	1.61	1.52
Employment rate in the 15–64 age group (per cent)	57.0	72.2	73.1	74.4
Unemployment rate in the 15–74 age group (per cent)	10.8	3.3	4.1	3.6
Average gross monthly earnings of full-time employees (HUF thousand)***	203	356	426	500
Average tax wedge of a family with two children and average income (per cent)	41.7	37.3	36.9	35.6
Healthy life expectancy (total population, years)	57.5	61.7	62.5	–
Percentage of cataract surgeries performed in same-day and outpatient care (per cent)****	28.4	61.5	68.9	–
Percentage of people with STEM education (per cent)*	11.2	12.3	13.5	–
Participation in lifelong learning (per cent)	3.0	5.8	5.9	7.9
Population at risk of poverty or social exclusion (per cent)*	30.6	20.0	19.4	18.4
Environment, infrastructure, public administration				
Uncollected VAT (per cent)	22.3	10.4	4.4	–
Public administration transacted online (per cent)	17.4	39.0	66.3	–
Municipal waste recycling (per cent)	19.6	35.9	34.9	–
Rail network density (km per thousand km^2)****	98.7	121.9	124.5	–
5G mobile internet penetration (per cent)	–	7.5	60.3	60.3
Share of renewable energy sources (per cent)	12.7	12.6	14.1	–
Gas price for households (PPS/kWh)	0.091	0.052	0.047	0.054
Energy intensity of the economy (kg per EUR 1,000)	266.5	205.4	205.8	185.5
Carbon dioxide emissions per unit of output (tonnes per USD 1,000)	0.22	0.16	0.15	–

*Note: *Data from the next available year instead of 2010. **Data from HCSO for 2022 and Eurostat for other years. ***Data before 2019 include only businesses with 5 or more employees. **** 2020 figure instead of 2021.*

Source: Bloomberg, DIW-ECON, ECB, European Commission, Eurostat, HCSO, MNB, OECD, World Bank

2.3 MNB COMPETITIVENESS INDEX 2023

2.3.1 Methodology of the MNB's Competitiveness Index

The MNB's Competitiveness Report also uses a composite index to assess Hungary's competitiveness position by international standards. The Competitiveness Report provides an objective, comprehensive view of Hungary's performance in 160 charts, along with detailed textual analysis, while summaries of each subject area offer an exploration of the interrelationships between the specific indicators and their relevance. In order to rank countries by their performance, a composite index needs to be created from the indicators used in the analysis. The MNB Competitiveness Index allows for the presentation of a comprehensive picture based almost entirely (95 per cent) on objective indicators, giving equal weight to the results of all 14 competitiveness areas, which makes interpreting the results much easier. It is important to note, however, that the composite index complements, and is not a substitute for, the detailed data analysis.

The MNB used its own methodology to create the Competitiveness Index. In the scoring process, the performance indicators of each country are placed on a scale of 0 to 100, where the best performing country is given 100 points and the scores of the other countries depend on their standard deviation from the top performer. A country within one standard deviation of the best score is awarded 75 points, and thus countries that are 4 or more standard deviations from the best score are awarded 0 points. The advantage of this methodology is that it does not demand a normal distribution of the data and allows for different values to be considered optimal for each indicator, i.e. for the individual indicators, it is possible to choose whether their optimum should be their minimum, maximum or even average values, for instance. In calculating the Index, all of the internationally comparable charts in Chapter 4 were given equal weight; as a result, if a chart contains more than one indicator, these indicators will have been given proportionally lower weights in the calculation. The scores for each subject area are the arithmetic mean of the scores for the indicators in that subject area, while the aggregate score for the Competitiveness Index is the arithmetic mean of the equally weighted scores for the 14 subject areas. Developed by Asztalos et al. (2017),[2] the methodology is clear and reproduceable, although the results obtained obviously depend on the range of factors considered and the quality of the indicators used.

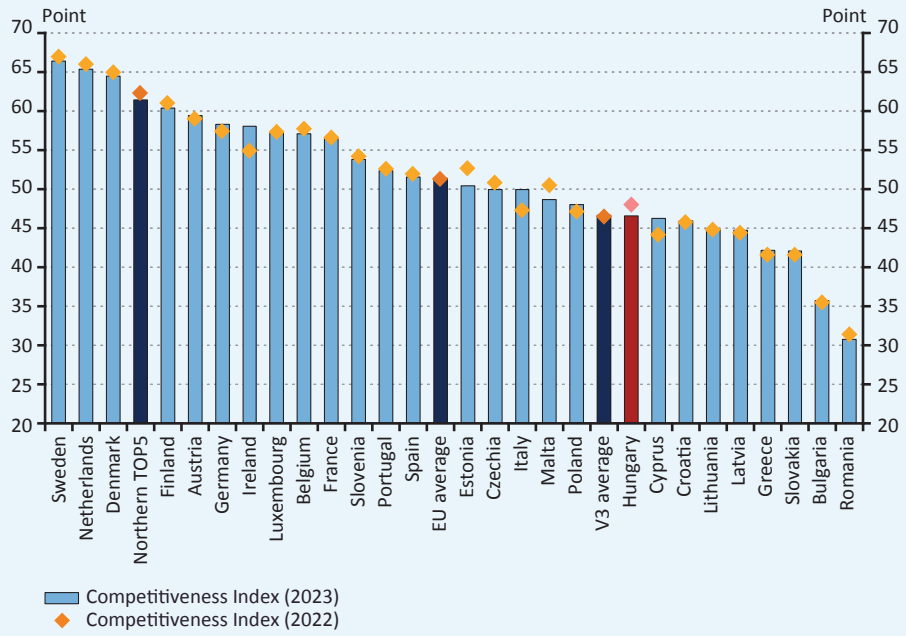
In 2023, the methodology underwent minor adjustments compared to the Competitiveness Index results published in 2022. This involved replacing some indicators, although 95 per cent of the 2022 indicators are still present in the 2023 version. There are somewhat more substantial changes in the chapters *SME strategy* and *Research, development and innovation*, mainly due to the fact that the World Bank's Doing Business publication was discontinued. In addition, the treatment of outliers has undergone some methodological fine-tuning.

2.3.2 MNB Competitiveness Index 2023 – the results

In the MNB's competitiveness ranking, Hungary finished in 19th place within the European Union in 2023, down 2 places compared to 2022 (Chart 2.5). Hungary scored 46.6 points: in contrast to previous years this is somewhat lower than the average for the other Visegrád countries (46.7) and 4.8 points below the EU average (51.4). The average score of the most developed Northern countries (61.4 points) is 14.8 points higher than Hungary's score. As in the previous three occasions, Sweden came out on top, while the Netherlands and Denmark were once again the runners-up. At the bottom of the list are Romania, Bulgaria and Slovakia. The developed Western and Northern European countries are found in the top half of the Competitiveness Index, while the Mediterranean countries tend to cluster around the middle. In Central and Eastern Europe, Slovenia (53.8 points) achieved the highest score, while the other countries in the region scored below the EU average. Sweden, the best performer, scored 66.4 out of a possible 100 points, showing that there is room for all countries to strengthen their competitiveness.

[2] P. Asztalos, G. Horváth, Š. Krakovský and T. Tóth (2017): Ellentétek feloldása a bankrendszerek versenyképességének mérésében – az MNB bankrendszeri versenyképességi indexe. (Resolving Conflicts in Measuring Banking Sector Competitiveness – The MNB's Banking Sector Competitiveness Index) *Hitelintézeti Szemle*, Vol. 16 Issue 3

Chart 2.5
Aggregated results of the MNB Competitiveness Index



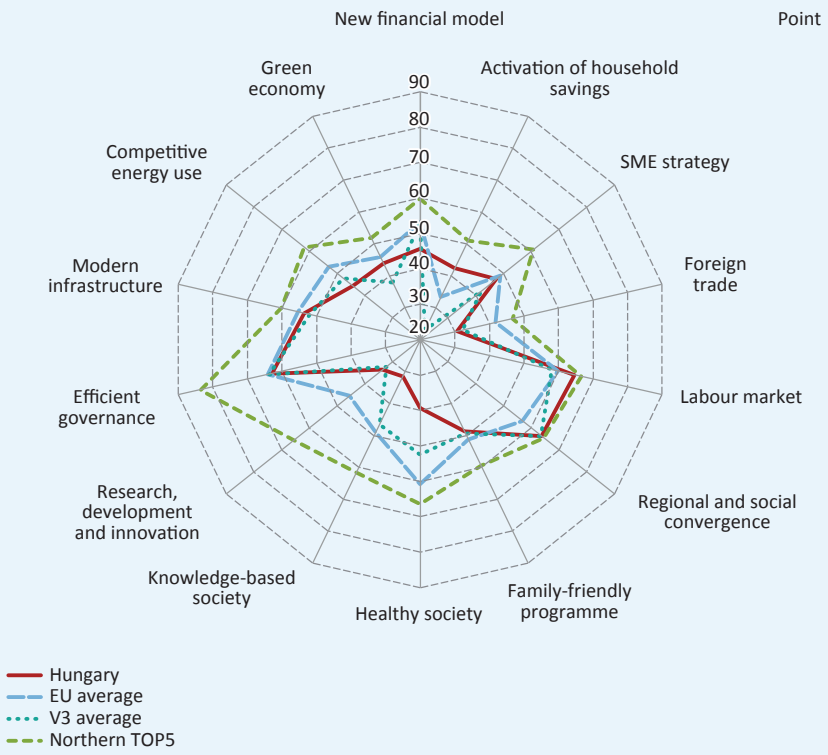
Source: MNB

Hungary scored higher than the EU and other Visegrád countries in the following areas *Activation of household savings, Regional and social convergence* and *Labour market* (Chart 2.6). Hungary achieved a score above the average of the other Visegrád countries in 4 additional chapters and below the average in 7 chapters. Hungary outperforms the region mainly in the chapters *Activation of household savings*, *Labour market* and *Green economy*, and lags behind in the chapters *Knowledge-based society*, *Healthy society* and *New financial model*. When interpreting the results of each subject area, it is worth remembering that higher average scores indicate that the countries in question are relatively close to the best-performing country, while lower scores indicate greater divergence in the area. For example, the EU average for the indicators considered in the chapter *Efficient governance* is 64.1 points, meaning that the countries are, on average, within one and a half standard deviations of the best performing country. By contrast, the EU average for the chapter *Activation of household savings* is only 33.4 points, meaning that the gap between the best performing countries and the rest is much wider.

Overall, Hungary's combined Competitiveness Index score fell by 1.3 points in 2023 compared to the previous year, reflecting the 3rd largest decline among EU countries. Hungary's score improved in 5 of the chapters, most notably in *SME strategy* (+8.3 points) and *Modern infrastructure* (+2.0 points). By contrast, its score fell in 9 chapters. Relatively significant declines were recorded in the chapters *Activation of household savings* (-8.0 points) and *Foreign trade and economic structure* (-6.7 points). The EU-wide average remained unchanged compared to the previous year, although 12 out of 27 EU countries improved and 15 countries worsened. Compared to the previous year, Hungary was overtaken by Italy and Poland. Ireland (+3.1 points), Italy (+2.7 points) and Cyprus (+2.1 points) made significant gains, while Estonia (-2.3 points), Malta (-1.8 points) and Hungary (-1.3 points) were the countries registering the largest declines in their scores. All 5 of the Northern TOP5 countries saw their scores decrease, while, of the Visegrád countries, Poland and Slovakia improved their results and Hungary and the Czech Republic recorded lower scores.

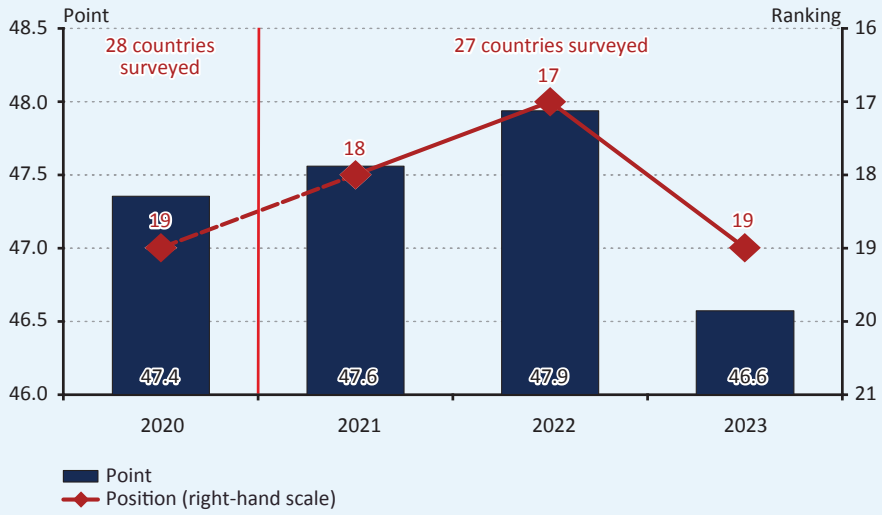
In 2023, the Competitiveness Index was calculated for the fourth time, and this was the first time that Hungary's score decreased (Chart 2.7). While Hungary improved both its score and its position within the competitiveness ranking in the previous two years, in 2023 it performed worse in both respects. 2023 is also the first year when Hungary's score is lower than the average of the other Visegrád countries. The weakening of Hungary's competitiveness position occurred in parallel with the slowdown in the implementation of competitiveness reforms; more detail on this is available in the MNB's 2023 Competitiveness Mirror.

Chart 2.6
MNB Competitiveness Index results by subject area (2023)



Source: MNB

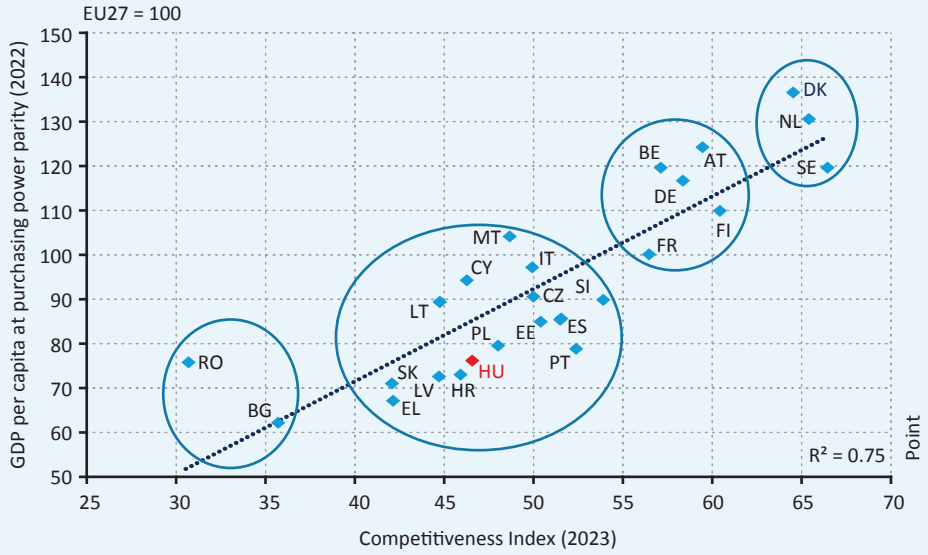
Chart 2.7
Results of the MNB's Competitiveness Index for Hungary (time series)



Note: The 2020 Competitiveness Index still included the United Kingdom.
Source: MNB

There is strong correlation between a country's ranking in the MNB Competitiveness Index and the level of its economic development (Chart 2.8). EU countries can be divided into four relatively distinct groups based on their competitiveness and GDP per capita measured at purchasing power parity. There are three countries that stand out as by far the best performers in terms of competitiveness (Sweden, the Netherlands and Denmark), and all of them are among the top performers in terms of GDP per capita as well. They are followed by mature Western European economies (Finland, Austria, Germany, Belgium and France), which lag behind the top performers in terms of competitiveness and economic development, but still score well in both those dimensions. Based on their competitive position, this group also includes Luxembourg and Ireland, which are excluded from this analysis due to their extremely high GDP. The economic development and competitiveness position of the countries belonging to the third group, which forms a relatively dense middle field, do not differ significantly. While Malta, Italy, Cyprus and Lithuania rank higher in GDP per capita than in competitiveness, other countries, including Hungary, show competitiveness that would allow them to achieve higher GDP per capita. The two countries in the last group (Bulgaria and Romania) would need to adopt significant competitiveness measures to reach the group of better-performing regional countries.

Chart 2.8
Relationship between the MNB's Competitiveness Index and economic development in the European Union



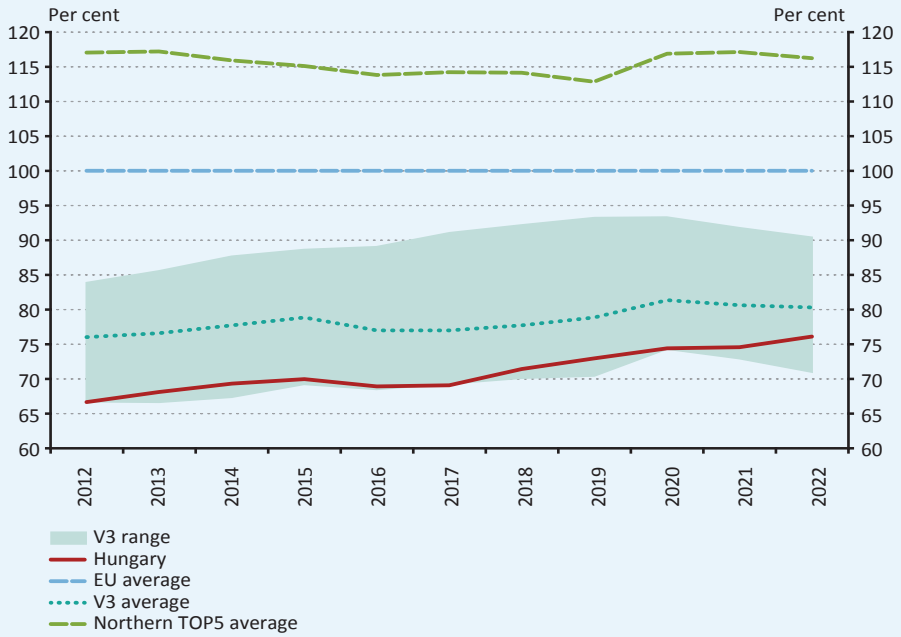
Note: The GDP per capita values for Ireland and Luxembourg are outliers and are thus not shown in the chart.
Source: Eurostat, MNB

3 Macroeconomic situation and results of the competitiveness rankings

3.1 HUNGARY'S MACROECONOMIC ENVIRONMENT

The convergence of the Hungarian economy has continued in recent years (Chart 3.1). Fiscal and economic stabilisation after 2010 enabled dynamic economic growth and a return to macrofinancial balance from 2013 onwards. Thanks to the turnaround in growth, convergence restarted in Hungary, which again overtook Slovakia in development terms in 2018. The Hungarian economy featured strong fundamentals before the pandemic, which – in conjunction with targeted crisis management measures by the government and the central bank – resulted in a less severe economic downturn in Hungary than the EU average in 2020. Convergence with the average level of development in the European Union has continued in recent years. According to Eurostat data, GDP per capita at current prices and purchasing power parity in 2022 was 76.1 per cent of the EU average in Hungary, 71.1 per cent in Slovakia, 79.5 per cent in Poland and 90.4 per cent in the Czech Republic. The development level of the TOP5 Northern countries was 116.3 per cent of the EU average in 2022.

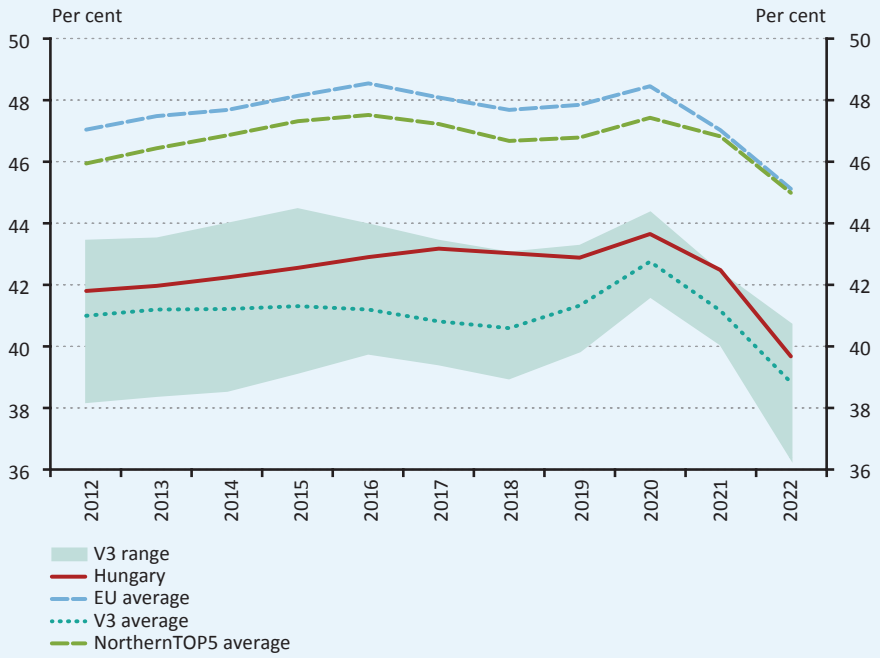
Chart 3.1
GDP per capita compared to the EU average



Note: Calculated at current prices and purchasing power parity (PPS).
Source: Eurostat

The capacity of the Hungarian economy to add value compares favourably within the region, but is significantly below the EU average (Chart 3.2). One important indicator of the capacity of economies to add value is the ratio of value added created to total output. In Hungary, value added per unit of output showed a moderate upward trend from 2011 to 2020, reaching 43.7 per cent in 2020. By 2022, the indicator had fallen to 39.7 per cent, which was still the second highest ratio in the region after Poland (40.7 per cent). In terms of this indicator, Hungary remains below the average of the European Union and the TOP5 Northern countries. Higher value added is generated at the beginning and end of the production chain, while the production process itself is typically low value added. In the past, foreign direct investments in the countries of the CEE region usually meant outsourcing manufacturing to this region and retaining most operations with higher added value in the home country. Consequently, the production structure of the countries in the region has been less based on high value-added activities in recent decades.

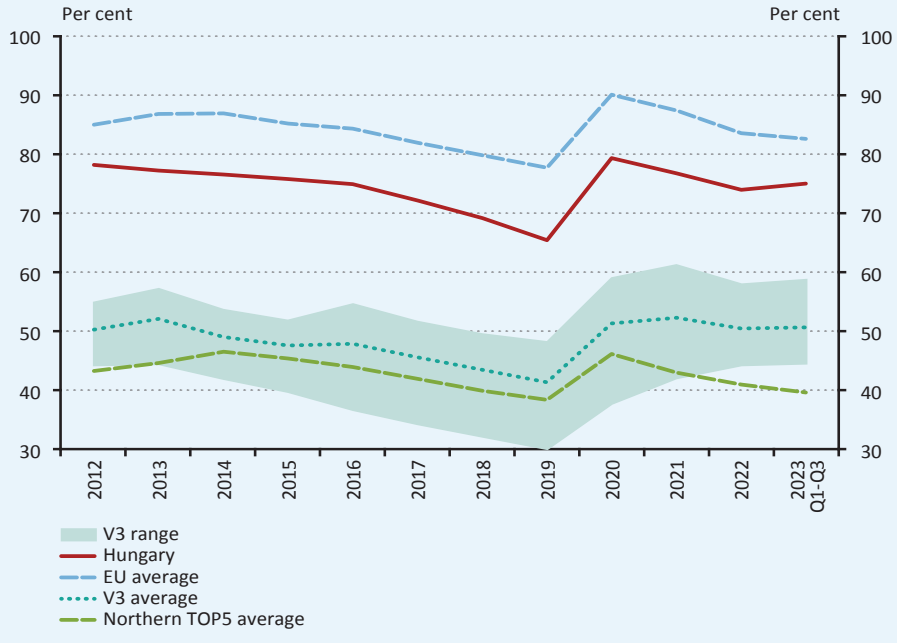
Chart 3.2
Value added as a proportion of output



Note: For the year 2022, the Northern TOP5 average excludes Denmark.
Source: Eurostat

In most EU Member States, gross public debt as a percentage of GDP declined in 2022 and continued to fall in 2023 Q1–Q3 (Chart 3.3). **Hungary's public debt ratio, which had fallen by 2.8 percentage points to 73.9 per cent at the end of 2022, stood at 75 per cent in 2023 Q3.** However, lower net output at the end of the year may have resulted in a lower debt ratio by the end of 2023 compared to the end of 2022. Hungary's debt ratio is lower than the average debt level of other EU countries, but higher than the values observed in the Visegrád and Northern regions. Besides its level, the structure of public debt is also an important factor determining financial vulnerability. Thanks to a deliberate debt strategy after

Chart 3.3
Gross public debt-to-GDP ratio

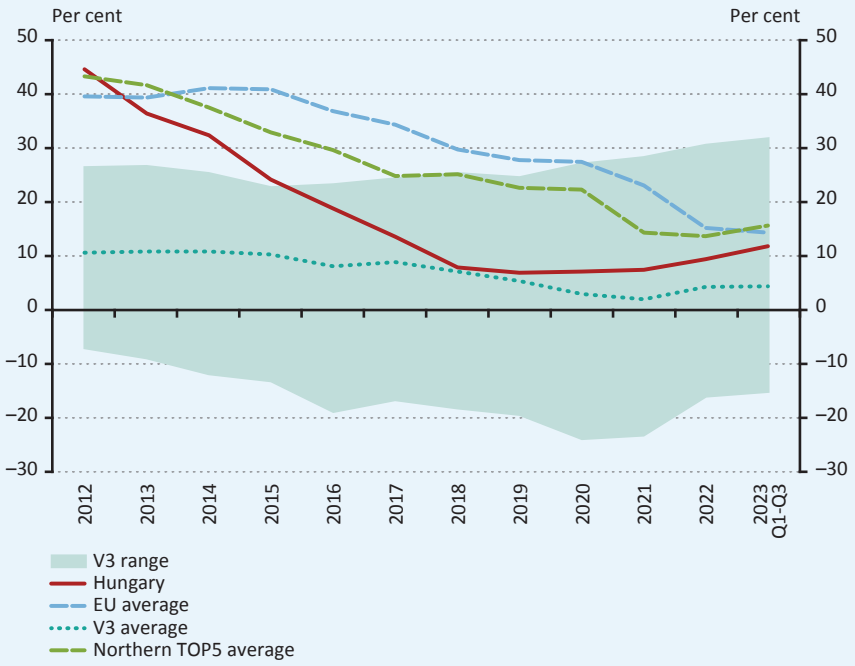


Source: Eurostat

2010 aimed at increasing the domestic investor base, there was no substantial increase in the share of foreign ownership of public debt, which rose during the Covid-19 crisis: about one third of public debt was held by foreign investors at the end of 2022 and 36 per cent in 2023 Q3. In the wake of foreign currency bond issuances, the foreign currency ratio of central government debt rose from 20.6 per cent to 25 per cent in 2022 and to 27 per cent in 2023 Q3. Gross public interest expenditure, i.e. the cost of financing public debt, rose to 2.8 per cent of GDP in 2022. The increase in interest expenditure is mainly due to inflation and the rise in interest rates linked to inflation expectations; in 2023, government interest expenditure is likely to have risen further due to high inflation.

In terms of external debt indicators, Hungary achieved a significant improvement in the 2010s, but after 2018 its net external debt stabilised at a higher rate with a temporary increase in the net borrowing of the economy, and it has increased somewhat since 2021 (Chart 3.4). At the onset of the global financial crisis in 2008, Hungary's net external debt, and hence its external financial vulnerability, was extreme. A process of adjustment in the domestic sectors between 2010 and 2018 led to a surplus in the current account balance, while high net lending allowed for a steady and significant reduction in net external debt. After a significant decline since the crisis, the debt indicator remained stable at a low level of around 7–8 per cent of GDP between 2018 and 2021, before rising somewhat in 2022, with a temporary increase in the economy's net borrowing. This increase is in line with developments elsewhere in the region, and the net external debt ratio of the region (including Hungary) remains below the EU average. The external debt indicator thus captures the fact that, owing to the progress made in the previous decade, external vulnerabilities have remained low in spite of the crises characterising the 2020s.

Chart 3.4
Net external debt-to-GDP ratio

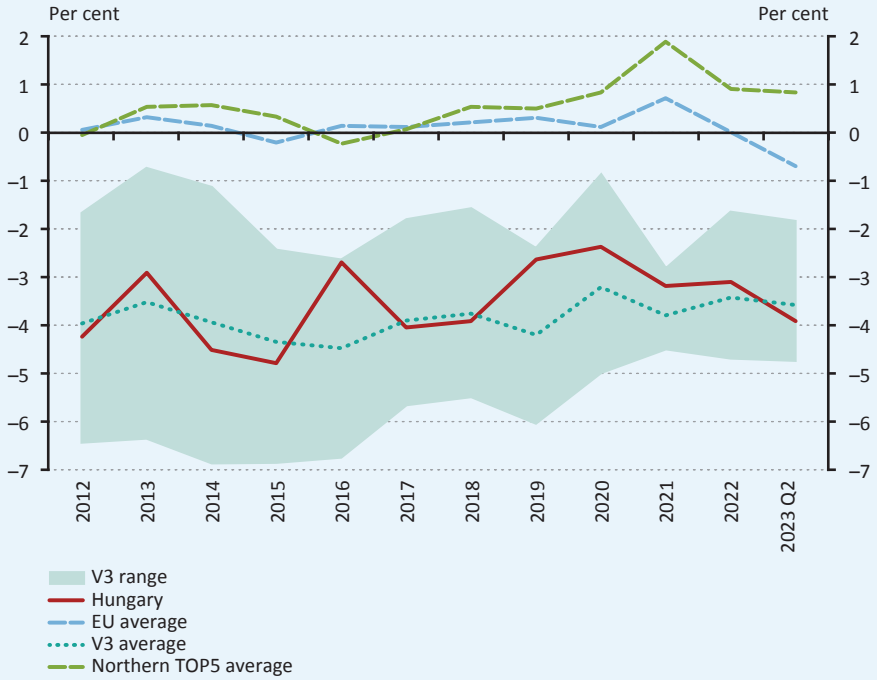


Note: The EU average excludes Luxembourg, Malta and Ireland.
Source: Eurostat, MNB

Hungary's GNI-GDP gap has narrowed considerably over the past decade and is approximately equal to the regional average, but remains higher than the EU figure. Recently, however, the indicator has started to rise again (Chart 3.5). Foreign capital inflows are a characteristic feature of the convergence process of a country, and the resulting profit and interest payments to investors result in a gap between the disposable income (GNI) of domestic agents and the GDP figure. Prior to the global financial crisis, this gap was very wide in Hungary even in a regional comparison (amounting to nearly 7 per cent), driven by high FDI inflows and significant external indebtedness. After the financial crisis, the decline in the profits of foreign companies, the rise in the incomes of Hungarian workers abroad and the reduction in external debt led to a narrowing of the GNI-GDP gap. The decline in external debt in the 2010s reduced the gap between GDP and GNI through lower interest payments to foreign entities. The gap between GNI and GDP widened somewhat in 2021, reflecting the fall

in foreign earned income triggered by the pandemic and rising corporate profits after the recovery. In 2023, the Hungarian indicator rose moderately further, in line with the EU average, as interest expenditures increased. The GNI-to-GDP gap in the regional countries remains substantially above the EU average, mainly due to differences in development.

Chart 3.5
GNI-GDP gap as a percentage of GDP

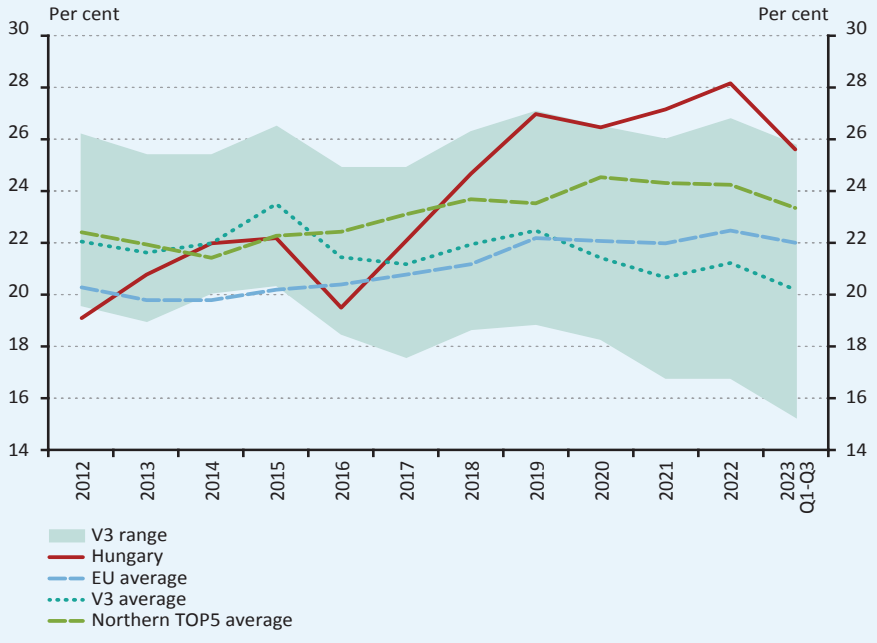


Note: For the Czech Republic, 2023 Q1 data are used.

Source: Eurostat

Hungary's investment ratio rose to a historic peak in 2022 and was the highest among EU Member States; however, its average measured in 2023 Q1–Q3 showed a decline (Chart 3.6). A high investment rate is a pillar of sustainable growth and essential for the transition to capital-intensive and ultimately technology-intensive growth. Empirical experience suggests

Chart 3.6
Investment rate as a percentage of GDP

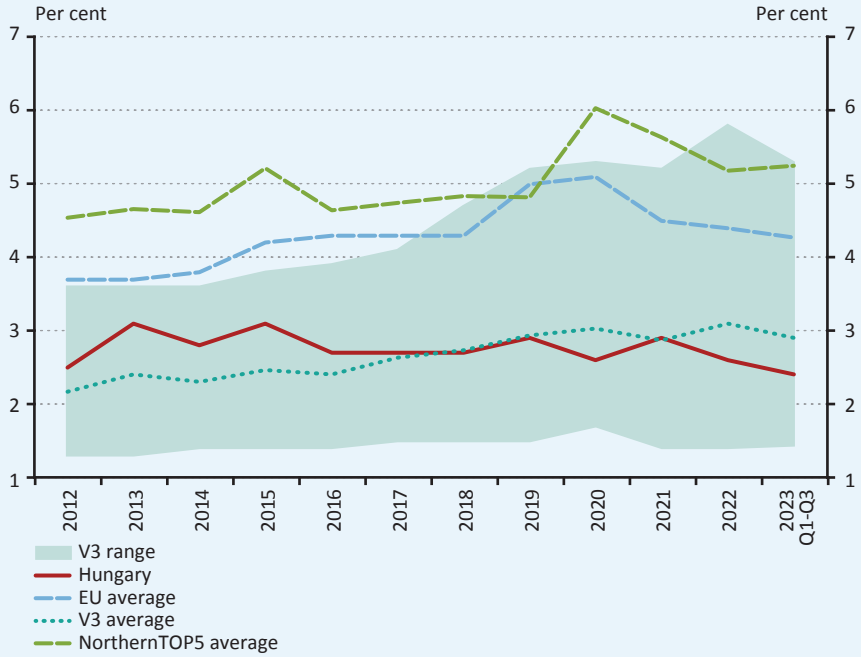


Source: Eurostat

that successfully converging countries all had high investment rates (25 per cent or more). Also, the high nominal rate of investment in Hungary is largely due to the recent increase in the cost of capital expenditures. In 2022, the investment rate in Hungary was at a historic high of 28.2 per cent, compared to 26.8 per cent in the Czech Republic, 20.1 per cent in Slovakia and 16.8 per cent in Poland. The average rate was 22.5 per cent across the EU and 24.3 per cent in the Northern TOP5 countries in 2022. In 2023 Q1–Q3, the average domestic investment rate in Hungary fell to 25.7 per cent, but it still exceeds the averages of the EU (22.0 per cent), the Northern TOP5 (23.4 per cent) and the V3 (20.2 per cent).

Despite the historically high investment rate, Hungary lags behind both the European and the regional averages in terms of smart investments, which are of key importance for future competitiveness (Chart 3.7). In 2022, the share of intellectual property products (smart) investments decreased to 2.6 per cent in Hungary even as it rose to 3.1 per cent on average in the Visegrád region. As the best performing country in the region, the Czech Republic has outperformed even the EU average in terms smart investment rates since 2018. Crucial for sustainable development, smart investments accounted for 4.4 per cent of GDP at the EU average and 5.2 per cent in the Northern TOP5 countries in 2022. In 2023 Q1–Q3, the average weight of smart investments decreased in Hungary, the European Union and the V3 countries, but increased in the Northern TOP5 countries.

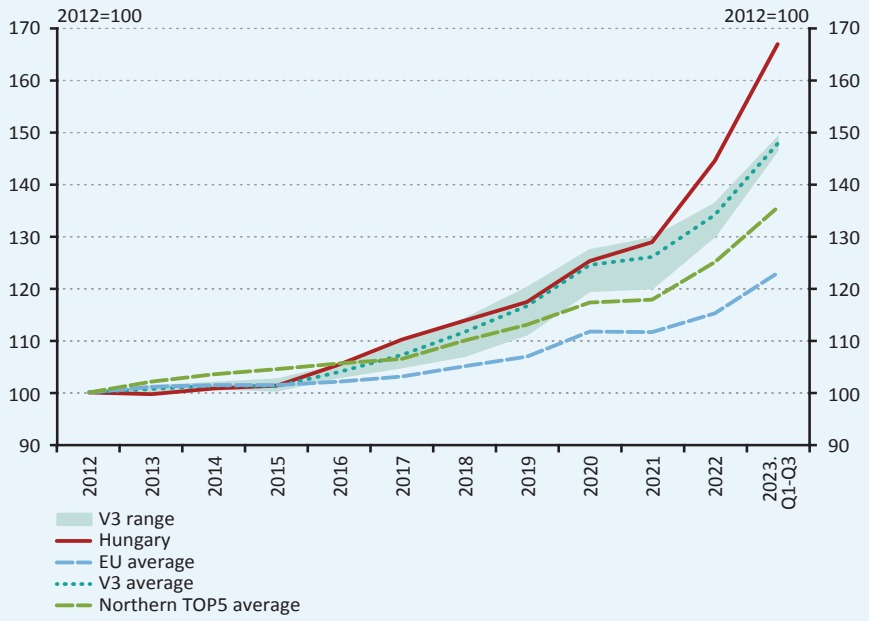
Chart 3.7
Smart investments as a percentage of GDP



Source: Eurostat

Since the mid-2010s, there has been substantial wage convergence in Hungary (Chart 3.8). Hungary's wage dynamics have been supported by government measures, the framework for which was formalised in the six-year wage agreement concluded in 2016 between the government and the employer and employee advocacy groups. The main items in the wage agreement included significant increases in the statutory minimum wage and the guaranteed wage minimum, a reduction in the corporate tax rate and a gradual decrease in the social contribution tax over several years. Wage increases in the public sector have also been an important factor for convergence. The rise in wages in Hungary has been intensified by a tight labour market, which has been increasingly evident since 2016. This strong wage growth was not interrupted even by the Covid-19 pandemic, and, thanks to government and central bank schemes (wage subsidies, loan programmes, credit moratoriums, etc.), the domestic labour market has remained stable. Even with a slowdown in economic output from 2022 H2, employment has continued to rise and nominal wage growth remained strong. Nominal unit labour costs increased by 67 per cent in Hungary between 2012 and 2023 Q1–Q3. The indicator registered a significant increase starting in 2016; nominal wage costs then increased significantly further in the period of high inflation from 2022 onwards, as a result of labour market tightness, and even exceeded the dynamic measured in other countries across the region.

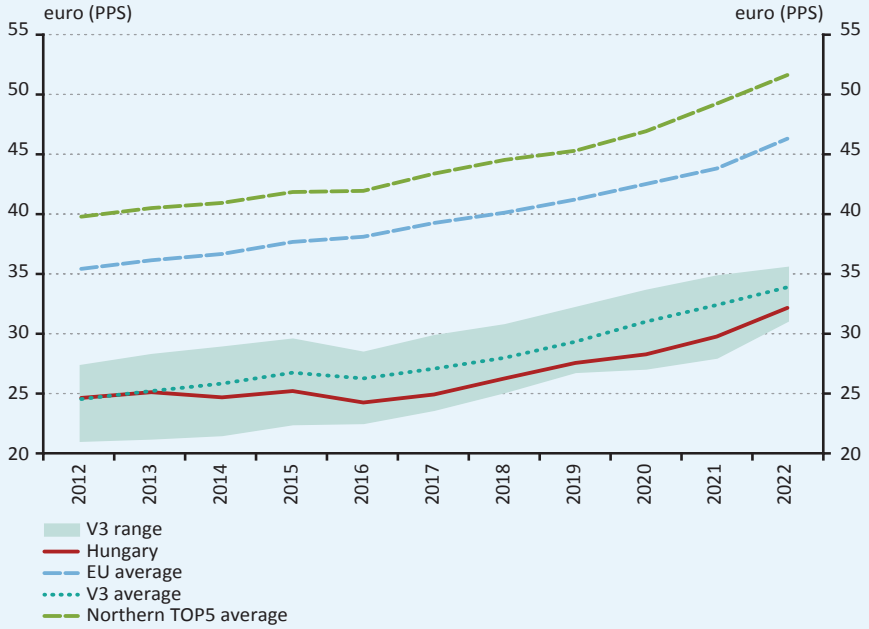
Chart 3.8
Nominal unit labour costs



Source: Eurostat

Both labour productivity and employment have improved over the past decade in Hungary, but productivity levels remain below the regional average (Chart 3.9). Thanks to the labour market measures introduced since the beginning of the decade, the number of people in employment and the active population has increased significantly. As the reforms were also aimed at increasing the participation of disadvantaged groups in the labour market, often with lower educational attainment, new entrants to the labour market were less productive, which, through the composition effect, held back domestic productivity growth. Although Hungary has ascended to the top third of the European Union rankings in terms of employment over the past decade, registering the second highest rate of increase, the labour productivity of the Hungarian economy has not followed the regional trend and has lagged behind the Visegrád average. Improvements may be observed from 2017 onwards, when the labour-intensive nature of economic growth changed, as the labour market tightened and increasingly capital-intensive growth had a positive impact on productivity. However, the productivity of the Hungarian labour force remains significantly below the EU average.

Chart 3.9
Labour productivity (GDP per hours worked)



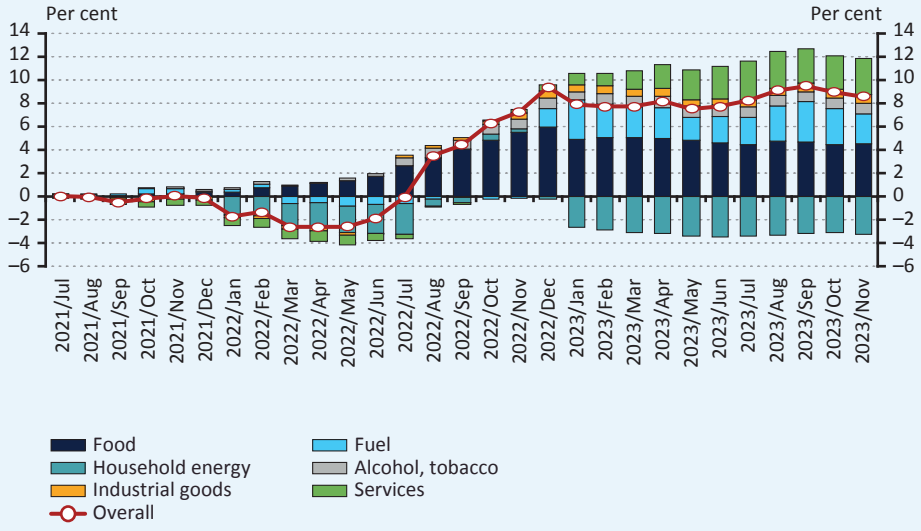
Source: Eurostat

Box
Competitive weaknesses also contributed to high inflation in Hungary

Between November 2022 and October 2023, Hungary registered the highest rate of inflation in the European Union, reflecting both global effects and country-specific factors such as the country's competitiveness weaknesses, for example. As in other countries, the initial causes of the rise in Hungarian inflation were global in origin, but their impact was amplified by various factors specific to Central and Eastern Europe and to Hungary in particular. The outbreak of the Russia-Ukraine war and the rise in energy prices had a more severe impact on the countries that are geographically closer to the belligerents and import a large part of the energy they need. Hungary is characterised by both of the above.

The competitive weaknesses observed in energy use and management have played a significant role in driving up prices. Hungary's net energy imports (59 per cent) are higher than the regional average, creating a major point of vulnerability in terms of energy, inflation and competitiveness. Hungary's energy dependence is exacerbated by the fact that in recent years around 70 per cent of Hungary's energy imports have come from a single source, Russia. The country's high energy exposure is due to two factors. On the one hand, the energy intensity of the Hungarian economy was the 7th highest in 2022. Although the country's energy demand per unit of output has declined over the past decade, in line with regional and EU trends, the indicator remains high in Hungary and stands at 1.7 times the EU average. Hungary is one of only three EU countries (along with Bulgaria and Spain) where energy intensity in manufacturing has increased since 2014; it has decreased in all other Member States. On the other hand, Hungary's renewable energy use rate is the 6th lowest (14 per cent of total energy usage) in the EU. By developing a domestically produced green energy mix and improving energy efficiency, Hungary's energy dependence could be reduced, which would facilitate the emergence of a carbon-neutral green economy and also improve the balance of payments of Hungary in the long term.

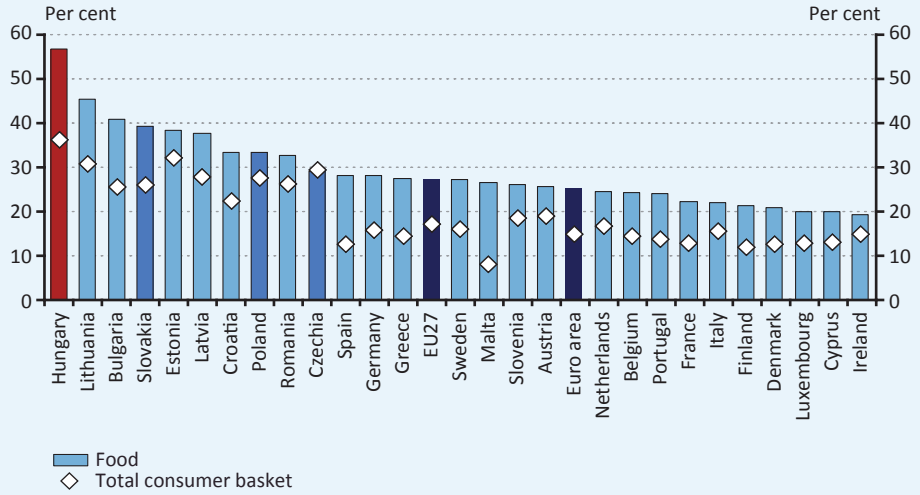
Chart 1
Decomposition of Hungary's price increase surplus compared to the Visegrád countries relative to June 2021



Note: Based on HICP data.
Source: Eurostat

Food prices accounted for almost two thirds of the inflation differential versus the Visegrád countries since June 2021 (Chart 1). Between mid-2021 and November 2023, food retail prices increased by a total of 56.7 per cent in Hungary, more than one and a half times the average food price increase in the other three Visegrád countries (33.8 per cent) and about twice the average food price increase in the European Union (27.3 per cent) (Chart 2).

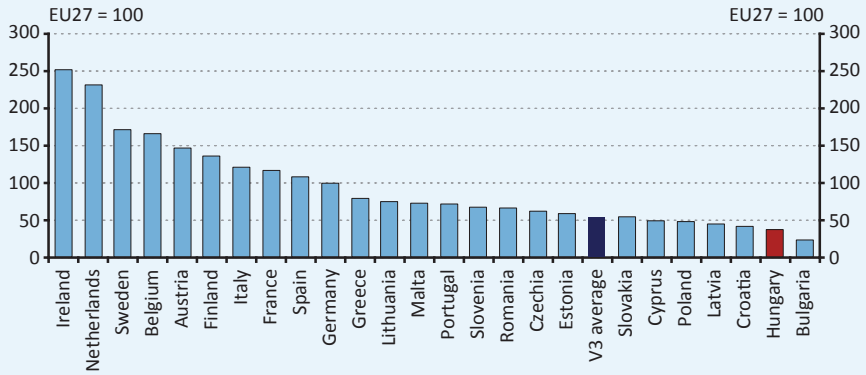
Chart 2
Cumulative price change since June 2021 in European Union countries (November 2023)



Note: Based on HICP data.
Source: Eurostat

The structural weaknesses of the domestic food industry and its low productivity, even by regional standards, are significant contributing factors to the higher rate of food inflation. The Hungarian food industry has the 2nd lowest labour productivity in the EU, with value added per worker coming in ahead of only the Bulgarian food industry (Chart 3). Low productivity makes the sector more vulnerable to cost shocks, with increases in the cost of inputs. Rises in the price of energy and other operational inputs are typically recovered only through higher price increases, given the lower productivity levels. The higher cost sensitivity of food industry companies is also evidenced by historical data. Experience from more than the two past decades has shown that – compared to the EU average – Hungarian food producer and consumer prices are more than twice as sensitive to international cost shocks affecting the whole of Europe. Increased cost sensitivity in both producer and consumer prices is a signal of widespread competitive weaknesses throughout the Hungarian food industry supply chain.

Chart 3
Labour productivity in the food industry (2021)



Note: Gross value added per employee calculated on the basis of national accounts data.
Source: Eurostat

Insufficient competition between companies in the food industry has contributed to inflation that was profit-driven inflation and is high by EU standards. Food industry annual reports for 2022 indicate a year-on-year rise of 55 per cent in nominal profits, which is more than 18 times the average annual profit growth recorded in the period from 2013 to 2019. The sectors supplying the food industry have also played a significant role in the profit-driven inflation of food prices. Considered the largest supplier to the food manufacturing sector, the agricultural sector reported a year-on-year profit increase of 47 per cent in 2022, 2.5 times the average for 2013–2019. Profits also rose significantly in the paper manufacturing sector (packaging suppliers), which is also a major supplier to the food industry, and in the logistics sector. The combined effect of the profit gains realised by suppliers and food producers has had a significant impact on the consumer price of food products in Hungary.

Retrospective repricing, mainly in the services sector, also pushed up domestic inflation. Since early 2023, companies providing telecommunication services to households have revamped their previous pricing practices, resulting in significantly higher prices for services and introducing automatic inflation-indexation in their pricing. A similar mechanism has been in place for banking services for some time. A consequence of retrospective repricing is that the prices of the services concerned also incorporate factors that are less relevant to the sector's operating costs, such as food price increases. The automatic increase in price thus does not reflect the actual cost increases of the firms and weakens the possibility of price competition between them, thereby disadvantaging consumers and prolonging the disinflationary process.

Economic growth has also stalled as inflation soared, in part due to competitive weaknesses. As a result of surging inflation, real wages contracted between September 2022 and August 2023 in year-on-year terms, and the net real value of household financial assets fell to the level from three years earlier. In line with deteriorating income trends, consumer confidence reached a low point by the end of 2022: it then gradually improved as inflation started to rapidly ease, but remains at a low level. Falling real incomes and more cautious consumer behaviour have resulted in shrinking retail trade and consumer spending, while high business uncertainty has led to a significant contraction in investment. High inflation may have triggered a decline in overall GDP in 2023 through a fall in consumption and investment. Improving competitiveness is crucial, which will also help keep inflation low and underpin economic growth by increasing productivity and adaptability.

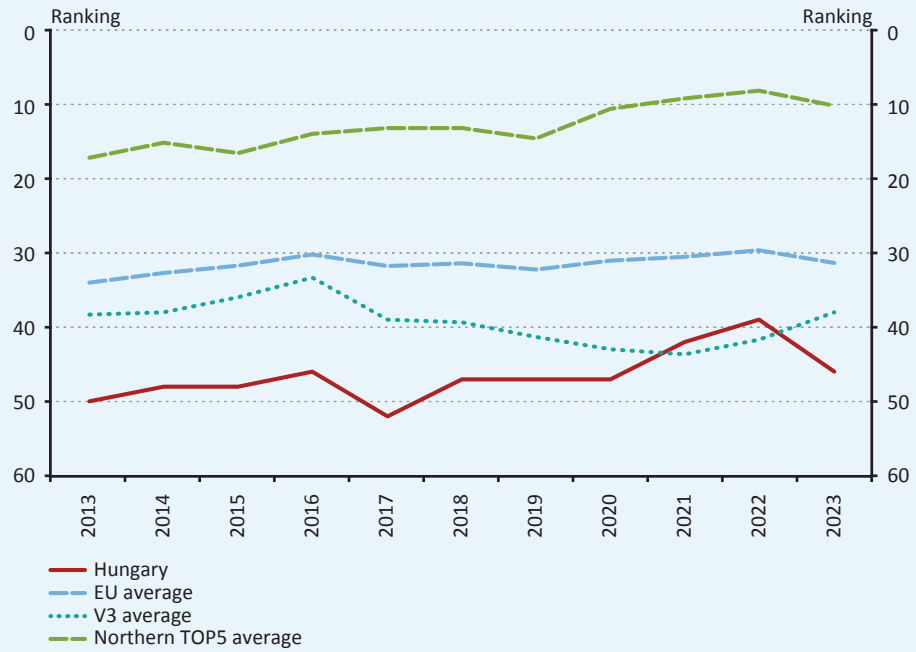
3.2 RESULTS OF INTERNATIONAL COMPETITIVENESS RANKINGS

The Covid-19 pandemic brought about a fundamental change in the main international competitiveness rankings. Of the three major rankings (WEF, World Bank Doing Business, IMD), only the Swiss IMD was able to maintain continuity. For this reason, the chapter on competitiveness rankings presents, in addition to the IMD, the Solability and Harvard University rankings, which, with minor methodological changes, have ensured continuity.

IMD's Competitiveness Ranking results for 2023

In IMD's 2023 Global Competitiveness Ranking, Hungary dropped 7 places, falling from 39th to 46th. To rank the countries, IMD uses 256 indicators, almost two thirds of which are objective. The indicators are grouped around four key areas: economy, government, private sector and infrastructure. The ranking typically ranks developed countries and put Hungary at 46th place out of 64 countries in 2023. Of the regional competitors, both the Czech Republic and Poland ranked higher than Hungary. Czechia improved 8 places in a single year and moved up to 18th place, while Poland was ranked 43rd, rising by 7 positions. With the latter performance, these countries overtook Hungary again, which last happened in 2020. Of the countries surveyed, Indonesia showed the strongest improvement, moving up 10 positions to 34th place.

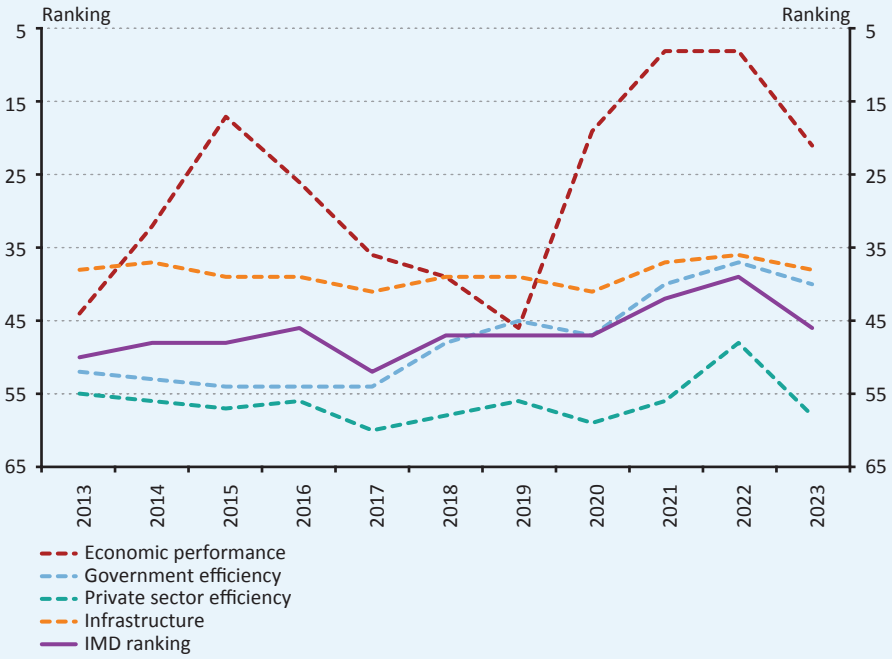
Chart 3.10
Time-series of Hungary's international competitiveness position in the IMD Competitiveness Ranking



Note: No data available for Malta. Data for Latvia are available since 2013 and for Cyprus since 2017.
Source: IMD

Hungary lagged behind its competitors in all four pillars of IMD's competitiveness ranking. Of the main areas of the international competitiveness rankings, Hungary achieved the highest (21st) place in the economy pillar, in which the analysts identified the biggest drop, of 13 positions, in 2023. The decline in performance in 2023 also meant that Hungary lost its previous TOP10 ranking. Contributing factors to the decline included low scores for FDI, gross fixed capital formation, GDP per capita, and resilience of the economy. The country moved down 10 positions to 58th place in terms of productivity in the private sector. There was less movement in Hungary's ranking in the other two areas. In government efficiency, Hungary dropped from 37th to 40th place. In infrastructure, it ranked 38th, two places below its performance in 2022.

Chart 3.11
Hungary's position in IMD's aggregate rankings and in the four main pillars between 2013 and 2023

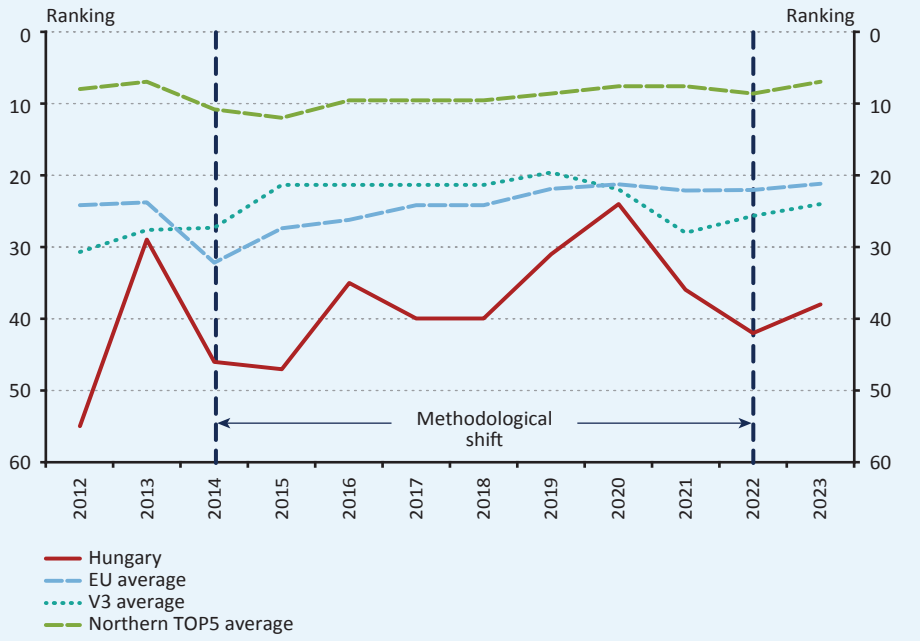


Source: IMD

2023 results in Solability's Global Sustainable Competitiveness Ranking

Hungary moved up four positions, to 38th place, in Solability's Global Sustainable Competitiveness Ranking of 184 countries in 2023, putting the country at only 24th place among EU countries. Solability's methodology remained essentially unchanged compared to 2022, with only the number of indicators increasing from 188 to 190 and the number of countries ranked rising from 180 to 184. The six areas examined include natural capital, human capital, intellectual capital, efficient governance, resource efficiency and economic sustainability. The Swiss-Korean company reports that Hungary moved up from 42nd to 38th place in the global ranking in 2023. The other Visegrád countries all ranked higher than Hungary, with the Czech Republic in 17th, Slovakia in 26th, and Poland in 29th place. Narrowing the scope of the countries surveyed and only considering the European Union, Hungary advanced from 25th to 24th place, making it the fourth worst performing country among the 27 Member States.

Chart 3.12
Time-series evolution of Hungary's competitiveness ranking in an international comparison according to the Solability Global Sustainable Competitiveness Ranking of 184 countries



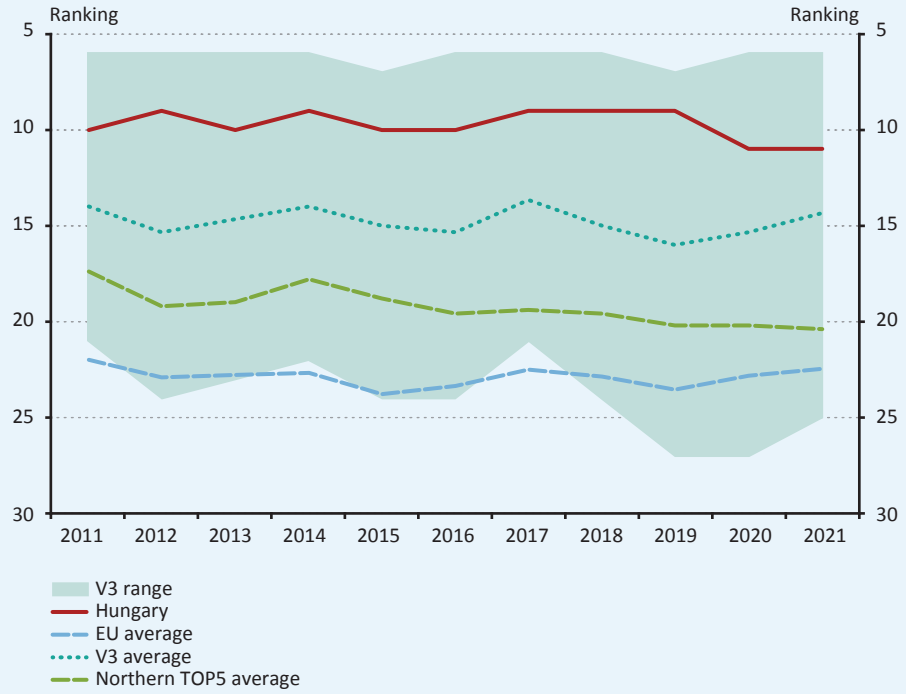
Note: Several changes were made to the methodology in the period 2012–2023. The index initially consisted of four pillars, then five since 2014 and six since 2022.

Source: Solability

Results of the Economic Complexity Index for 2021

Hungary was ranked 11th out of 133 countries in the Economic Complexity Index in 2021, but maintaining its favourable position will require a complete turnaround in terms of competitiveness. The Economic Complexity Index provides an estimate of a country's knowledge capital by examining the structure and volume of its exports. The assessment of each country takes into account both the diversity of the country's export basket and the degree of uniqueness of the manufacturing of exported products in a comparison with other countries. Countries that have more specialised skills are thus able to create more complex products and perform better in the index. Hungary's position is very stable, fluctuating at around 10th place since 2007. In the 2010s, the country reached 9th place several times, while in both 2021 and 2022 it finished 11th according to the revised data. Looking at the overall rankings, the top two positions are unchanged from 2020, with Japan and Switzerland ranking 1st and 2nd, while South Korea has moved up to 3rd place. Among the EU Member States, only Germany, the Czech Republic, Austria, Slovenia and Sweden are ahead of Hungary. Among the Visegrád countries, the Czech Republic ranked 6th, Slovakia 12th and Poland 25th. The economic complexity of Hungary is outstanding, but to maintain its favourable position Hungary must broaden the range of activities that rely on state-of-the-art technologies and this requires more domestic innovation and strengthening Hungarian competitiveness.

Chart 3.13
Rankings of Hungary, the V3, the European Union and the Northern TOP5 in the Economic Complexity Index (2011–2021)



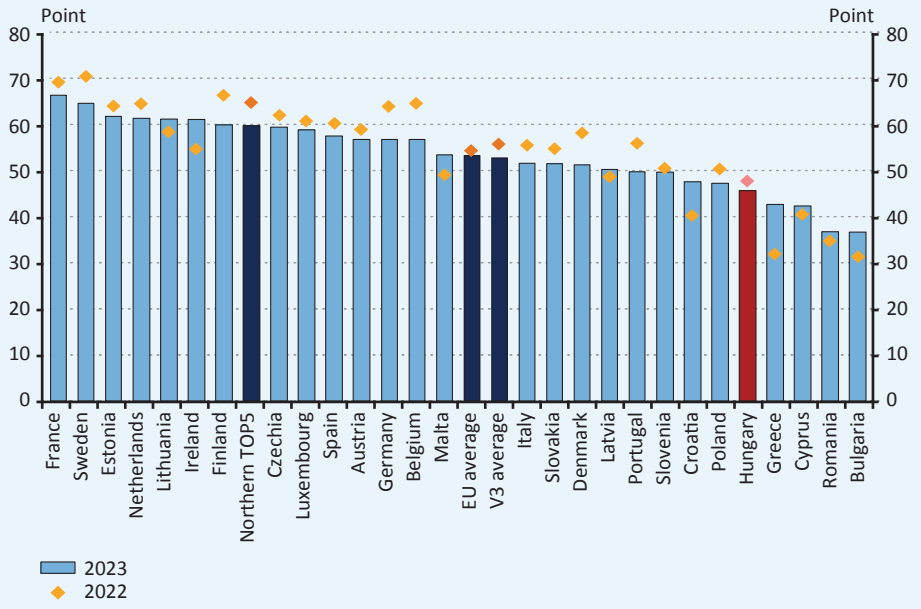
Source: Harvard University

4 Competitiveness indicators

4.1 NEW FINANCIAL MODEL

Ensuring the availability of efficient, stable bank financing is essential in order to maintain domestic economic convergence. The loan schemes introduced by the central bank and the government in 2020 to cushion the impacts of Covid-19 were largely phased out by 2022, and the new subsidised lending programmes launched by the government to mitigate the negative effects of the energy crisis from 2022 onwards were limited to mitigating the slowdown in lending; overall, they provided only minor support to lending compared to 2021. In addition, the high inflationary environment following the outbreak of the Russia-Ukraine war, falling domestic demand and increasing economic uncertainties also contributed to the slowdown in lending. As a result, the debt-to-GDP ratio started to decline again from the beginning of 2022, approaching its earlier, historically low level. Although the debt-to-GDP ratio already showed a moderate increase in 2022 Q4, the figure of 32 per cent measured in Hungary is still well below the average both in the region and across all European countries, i.e. there is substantial room for further prudent growth in lending. In 2023, Hungary ranked 23rd out of the 27 EU Member States in the area *New financial model*, with 45.6 points. Compared to 2022, Hungary's score decreased by 2.1 points and is still lower than the average of the Northern TOP5 (59.7 points), the EU (53.2 points) and the V3 (52.7 points). The decline in Hungary's score was mainly driven by a deterioration in return on equity figures and a shrinking corporate bond portfolio.

Chart 4.1
Results of MNB Competitiveness Index at the area of New Financial Model in the Member States of the EU



Source: MNB

In terms of the proportion of SMEs facing financing constraints, Hungary remains above the average in the Visegrád countries, while productive corporate resource allocation could be improved by diversifying channels, improving digitalisation and increasing the efficiency of the institutional guarantee system. While the Hungarian banking system ranks in the middle of the EU-wide pricing scale in the corporate segment, housing loan spreads fell to a historic low by mid-2022, below the averages of the euro area and also the other Visegrád countries. The delayed repricing of loan interest rates also played a role in that decrease. However, with the changes in, and the spill-over effect of, the interest rate environment, spreads were already rising in 2023 and may have reached higher levels than in 2022. In the longer term, price competition, lower operating costs and increased depth in digital infrastructure may pave the way for a sustained reduction in spreads, which could be further underpinned by facilitating product comparability and refinancing.

The predictability of repayments should be an objective in all segments and loan products. As a result of the FGS Fixed product launched in 2019, the share of HUF-denominated SME loans with interest rates for longer than three years again exceeded 50 per cent, while the FGS Go product, available from April 2020, as well as the government's crisis loan programmes boosted the proportion of fixed rate loans to above 70 per cent of all new issuances by the end of 2022 Q1. Within household disbursements, variable-rate loans, which accounted for more than 40 per cent of household disbursements in early 2016, have now been virtually eliminated from the market, driven by the rise of MFL products and the differentiation of the legal limit on the payment-to-income ratio (PTI) by interest period. The shift in the structure of new mortgage loans towards longer interest rate periods is also notable by international standards, and the interest rate risk in the previously accumulated stock is gradually declining due to the favourable structure of these loans and due to amortisation, which has significantly reduced the increase in the repayment burden from rising interest rates and the potential financial stability risk that this would pose.

Besides interest rate risk, the level and concentration of indebtedness are also important considerations. In terms of debt-to-income ratios, there are no signs of stability risks in a regional comparison, and the debt brake rules prevent excessive concentration. However, financing constraints that result in the exclusion of certain social groups from the financial system may become a problem. Based on international data, there is a noticeable lag in the proportion of people with bank accounts for the entire population, with shortfalls especially large in certain vulnerable groups. The prioritisation of electronic channels and the elimination of cash can help financial inclusion on the one hand. On the other hand, the rationalisation and de-cashing of branch networks, as well as the prioritisation of banking with digital solutions, can only lead to the goal by taking into account the banking and payment preferences and attitudes of individual regions and social groups.

In order to enable the banking sector to maintain its long-term support to the economy, it is essential that it has the ability to raise and attract capital and avoid the build-up of systemic stability risks. Following the easing of the pandemic stresses and during the period of the Russia-Ukraine war, Hungarian credit institutions registered high RoE by international standards, exceeding both the European and the regional averages, ranking in the top of the EU leaderboard with 12.7 per cent RoE based on consolidated data for 2022. In an EU-wide comparison, however, the high cost-to-assets ratio was a constraint on profitability and the pricing of banking products. In the medium to long term, the best way to improve the efficiency of the sector is to consolidate the still-fragmented market, deepen financial penetration and digitalise operational processes.

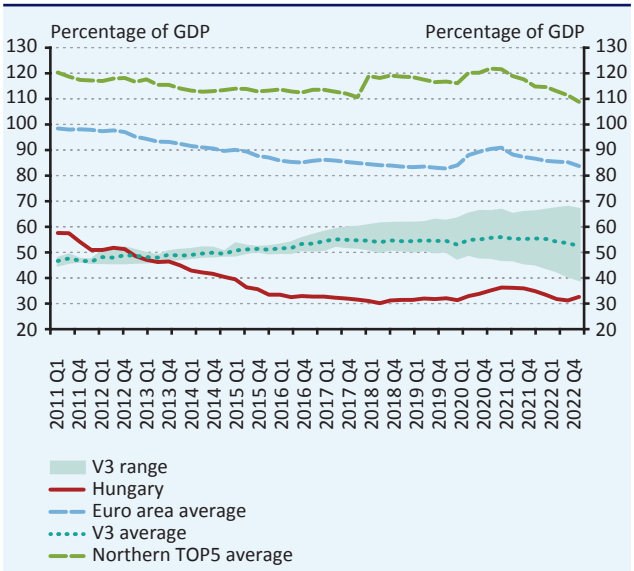
As financial processes become increasingly digitalised, a comprehensive digital transformation approach is needed, covering the operations of all institutions. To meet the rapidly changing needs of consumers in an individualised way and remain competitive with newly emerging, innovative firms, it has become essential to constantly invest in the proactive digitalisation of banking, in which high level user experience is key. In recent years, Hungarian banks have made significant progress in this respect. Meeting digital demand and ensuring end-to-end digital product availability must be increasingly underpinned by digital development and an automation of internal procedures in the banking sector. This could also improve productivity across the entire sector. It calls for a comprehensive approach aimed at driving forward the digital transformation process, a lack of which could undermine competitiveness already in the medium term.

Customers continue to demand digital solutions from their financial institutions even after the pandemic. Innovative technological solutions and the use of the digital space and channels in the operations of the financial sector remain a priority in order to respond to evolving consumer demand. In the wake of the pandemic, digital solutions intended as temporary or additional options have often become core services or primary solutions, even as in-person service remains key to brand and trust building, all of which contributes to a transformation of the functions of bank branches.

In parallel with the digital transformation of existing financial institutions, the presence and development of a mature FinTech ecosystem and the institutional and regulatory environment supporting such is also a priority. The FinTech market and the uptake of alternative financing solutions in Hungary falls short of the EU and V3 averages, which is an obstacle to attracting innovation. The creation of a regional innovation hub may be highly conducive to supporting the competitiveness of a country or region, and closer cooperation with the European FinTech ecosystem also helps attract more capital. FinTech solutions typically offer improvements that not only provide cost-effective operations for both traditional and start-up institutions, but can also contribute to the emergence of better, more accessible and more

competitive digital financial services for customers. In view of the international trends, it is important that Hungarian regulation actively support the spread of FinTech-based solutions through innovative frameworks, while at the same time introducing or proposing changes to the legislative conditions that take into account consumer protection, financial stability and competitive neutrality considerations.

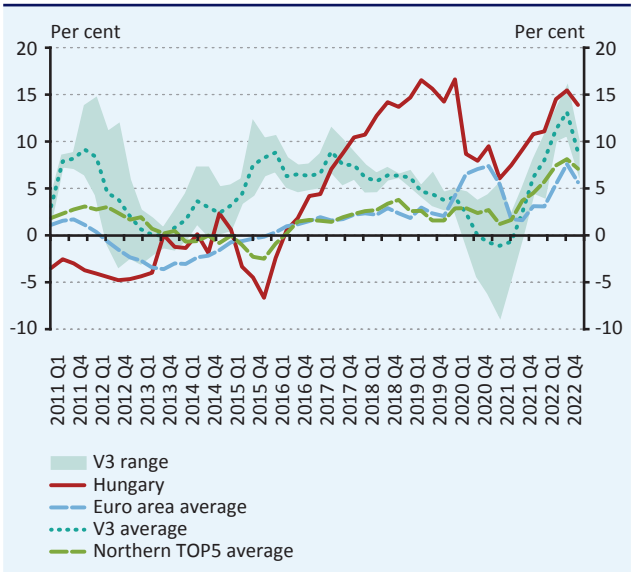
4.1.1 Developments in the volume of lending to the private sector as a percentage of GDP



Source: ECB, MNB

The efficient financing of economic actors across various cycles is essential to ensure sustainable economic convergence. After 2018, the dynamic expansion of credit portfolios halted the decline in the debt-to-GDP ratio. Subsequently, private sector borrowing expanded further thanks to the programmes launched by the central bank and the government in 2020 and 2021. However, in line with the strong nominal GDP growth, the debt-to-GDP ratio started to decline again, approaching a historical low of 30 per cent. As of the end of 2022, the figure of 32 per cent measured in Hungary was still well below the average both in the region and the euro area, i.e. there is substantial room for further prudent growth in lending.

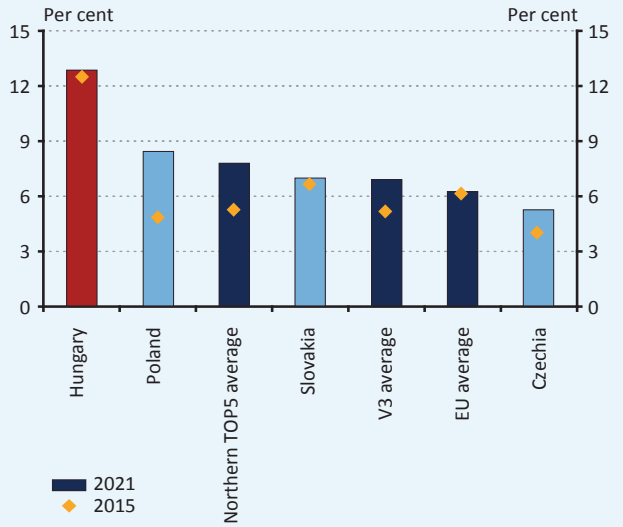
4.1.2 Development of corporate lending dynamics



Source: ECB, MNB

Within private sector credit, the credit dynamics of the corporate sector is of particular importance, as bank lending is a key factor in allowing companies to raise the funds they need to underpin high rates of capital expenditure. The Hungarian economy grew at an annual rate of 11 per cent in 2021 and at a rate of around 15 per cent in 2022 H1. After rising in previous years, inflation reached high levels in 2022 H2 following the outbreak of the Russia-Ukraine war. Coupled with a decline in domestic demand and growing economic uncertainties, this contributed to a slowdown in corporate credit growth in Hungary. The credit-constraining effects of these factors, particularly for corporate investment loans, are confirmed by several domestic and international market surveys, in line with the trends observed across the European Union. Despite the slowdown, domestic corporate growth dynamics remain high and broad-based by international standards, and are helped by government loan and guarantee schemes.

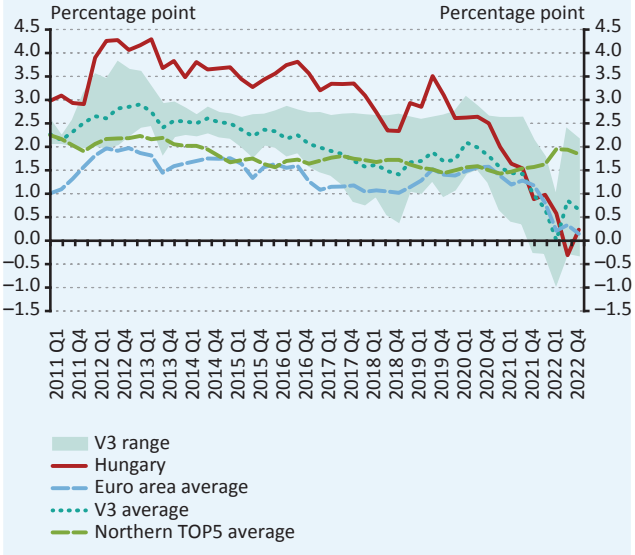
4.1.3 Share of finance-constrained firms



Source: EIB

According to the EIB's investment survey, around 6 per cent of businesses in the European Union and more than 12 per cent of businesses in Hungary faced a financing constraint in the financial year 2021. This means that for three consecutive years the Hungarian figure has been more than twice as high as the EU average. The number of Hungarian firms facing a financing constraint was around 3 percentage points higher than in 2020. Occurring within just one year, this adverse change affected both small and large companies to a similar degree. Construction sector businesses were the most exposed to these financing constraints. The most common financing barrier encountered by the surveyed firms was rejection, while firms in the infrastructure sector faced barriers due to the fear of rejection of their loan application. It is important to stress, however, that the vast majority of Hungarian companies do not face financing constraints, as confirmed by the MNB's business survey. In the last two years, an average of 21 per cent of respondents cited a financing problem as an obstacle to their activities. Respondents to the survey tended to put this factor at around 6th place, usually behind problems such as high energy prices, supplier price increases, rising labour costs, labour shortages and a lack of customers.

4.1.4 Spread based on the APR on housing loans extended in domestic currency

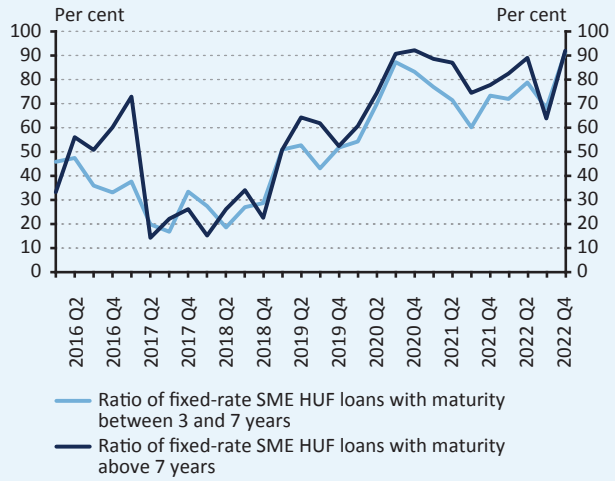


Note: In the case of housing loans with variable or fixed interest rates of up to 1 year, the 3-month interbank interest rate, in the case of 1-5 year fixed-rate loans, the 3-year rate, in the case of 5-10-year fixed-rate loans, the 7-year rate, while over 10 years in the case of fixed home loans, the APR-based smoothed surcharge over the 15-year IRS.

Source: ECB

Housing loan spreads have been falling steadily in recent years in Hungary and dropped to a historic low by 2022 Q3, falling below the average of the other Visegrád countries and the euro area. The decline was partly due to the fact that Hungarian banks tend to reprice their loans with a delay to pass on their rising financing costs. Also, given the increasing weight of loans that are subsidised or refinanced by the central bank, the average transaction interest rates on housing loans as a whole increased only moderately in 2021 and in 2022 H1. At the end of 2022, however, spreads were on the rise again in Hungary, while in other European regions a moderate narrowing was observed. By the end of the year, the upward adjustment of Hungarian spreads meant that it was above the euro area average again. With the changes in, and the spill-over effect of, the interest rate environment, spreads already rose in 2023 and may reach higher levels than in 2022.

4.1.5 Share of HUF fixed-rate loans among new loans

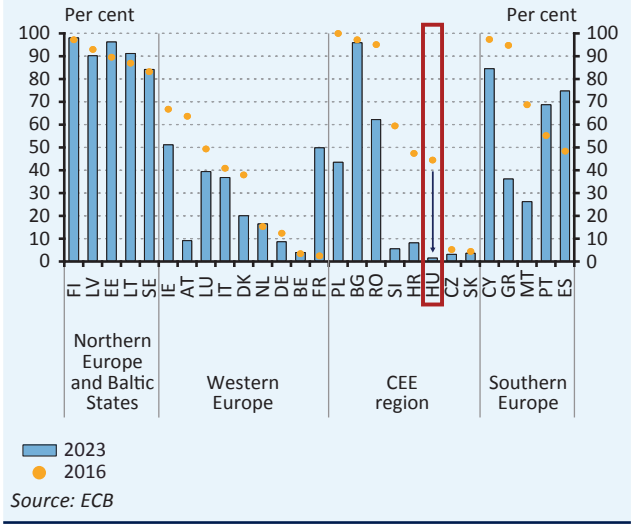


Note: Among the SME loan contracts reported by credit institutions in their data supply, loans larger than HUF 3 billion were eliminated in order to present SME lending trends without the distorting effect of individual large loans.

Source: MNB

The rise in market interest rates over the past two years has also highlighted that, both for individual borrowers and for financial stability, it is important to reduce interest rate risks and increase the share of fixed-rate loans, especially in the SME segment. The share of fixed-rate HUF-denominated loans in the SME segment started to increase in 2019 as a result of the FGS Fixed scheme. This trend then continued with the launch of the FGS Go scheme, which was intended to cushion the negative economic effects of the Covid-19 pandemic and prevent disruptions in the credit market. Once the central bank's crisis-management programme ended, the government put in place loan schemes to provide businesses with fixed-rate short- and longer-term finance from domestic sources; however, as the availability of such finance tightened, market loans increased as a share of all new issuances and floating-rate loans gained ground, mostly at shorter maturities. With rising inflation and falling consumption making the business environment increasingly uncertain in 2022, the demand for long-term loans fell. In an environment of interest rate hikes to curb inflation, subsidised loan schemes offered the possibility for accessing long-term finance denominated in the Hungarian currency and at favourable and fixed interest rates.

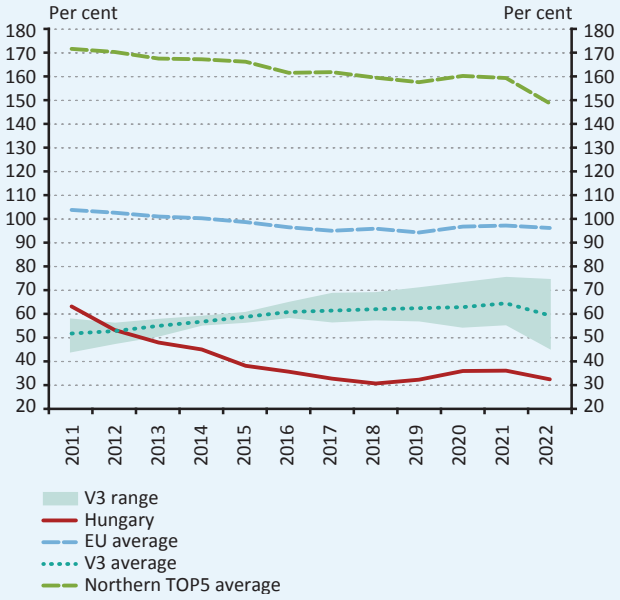
4.1.6 Weight of variable-rate loans within all new housing loans (2023 Q2)



Source: ECB

One key determinant of the resilience of households to shocks is the degree of their exposure to interest rate risk, in other words, the predictability of their repayments. While in early 2016 the ratio of variable-rate loans to total new housing loan issuance was only around 45 per cent, the introduction of Certified Consumer-Friendly Loans (MFL) and the differentiation of the legal limits on the payment-to-income ratio (PTI) by interest period had the combined effect that, by the end of 2019, these higher-risk loans were effectively removed from the market. The restructuring of new mortgage lending towards longer interest periods is also notable by international standards. The manifest increase in new disbursements and the now complete dominance of longer interest periods in lending is also causing a gradual reduction in the remaining portfolio of variable-rate mortgage loans. From 70 per cent in 2016, the proportion of variable-rate residential mortgages decreased to 16 per cent by September 2023. However, in an environment of higher interest rates resulting from monetary tightening to combat the high rate of inflation, deteriorating growth prospects and increased uncertainty, there is an increased risk of being stuck with a high interest rate as fixed-rate loans are now the norm. The main way to mitigate this risk would be to encourage loan refinancing by adopting legislation to cut the associated charges, especially the early repayment and notarial fees, and by reducing the associated administrative burden.

4.1.7 Debt burden relative to household income

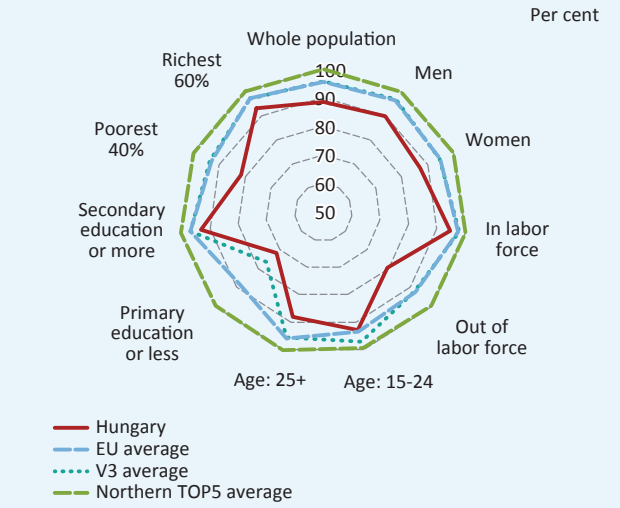


Note: The indicator captures the ratio of debt (ESA 2010: AF4) to annual disposable income (B6G).

Source: ECB – QSA

The debt-to-income ratio of Hungarian households is among the lowest in the European Union and is also substantially lower than in the other Visegrád countries, which indicates low credit penetration. While the debt-to-income ratio of the household sector in the European Union as a whole has been virtually stagnant over the past decade, in Hungary it steadily fell until 2018, as the combined result of the interest rate cut cycle started by the MNB in 2012, the favourable income trends and the reduction of the outstanding debt volumes accumulated in the previous credit cycle. Following the moderate increase starting in 2018, the indicator fell again in 2022, partly due to the contraction in household lending resulting from subdued demand for credit. The debt ratio was significantly lower in 2022 than 10–12 years earlier. The debt brake rules in force, which apply to more than 80 per cent of the outstanding debt of the population, prevent excessive borrowing.

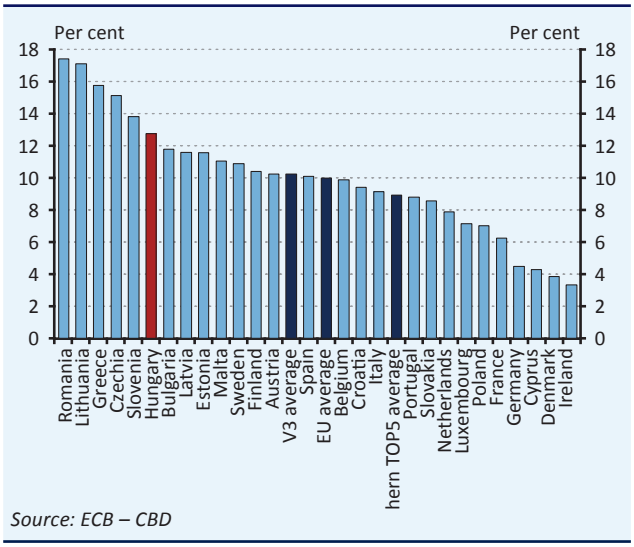
4.1.8 Ratio of bank account holders at financial institutions (2021)



Source: WB – GFD

To improve financial inclusion, it is necessary to ensure universal access to banking services. Although the share of persons with a bank account increased significantly in all segments in Hungary between 2017 and 2021, it still falls short of the Visegrád and EU averages in a number of social groups. Vulnerable groups (persons who are inactive or have lower educational qualifications or are in the bottom two income quintiles) are exposed to relatively greater disadvantages in terms of financial inclusion in Hungary. While digital channels can make it easier to attract some marginalised customers, the resulting rationalisation and de-cashing of branch networks and the promotion of digital banking must be conducted by taking into account the banking and payment preferences and attitudes of individual regions and social groups. In regions without bank branches, it may be necessary to employ mobile branches and multifunctional ATMs. The introduction of free account packages for disadvantaged social groups may also be beneficial. Further, the need to improve financial awareness in the population is tackled by a number of programmes encouraged by the MNB and the National Core Curriculum.

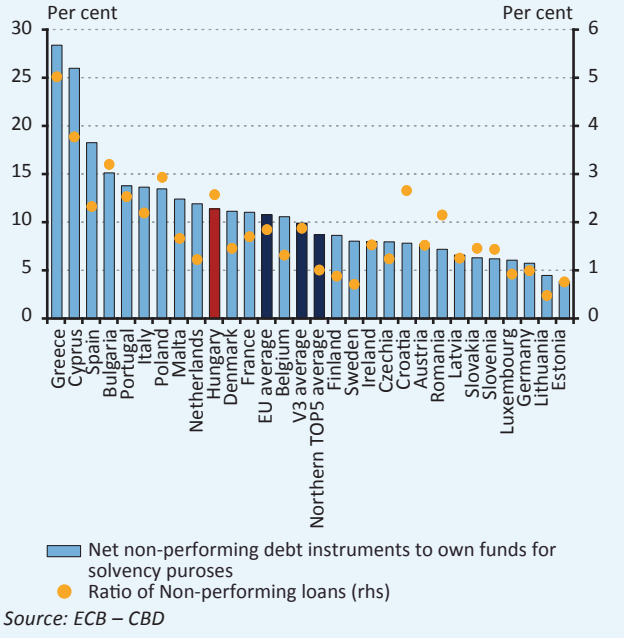
4.1.9 Return on equity (2022)



Source: ECB – CBD

Good profitability is equally important for maintaining a strong capital position of the credit institutions sector and for implementing efficiency improvements. While some banking sectors in the EU are experiencing lower returns on equity than was customary for years, in Hungary the sector has consistently achieved outstanding profitability and was ranked among the top performers in the EU from 2016 to 2019, thanks in part to the reversal of previously recognised impairments. Following record profitability in 2021, significant provisioning in the face of the macroeconomic risks caused by the war and bank levies had a negative impact on earnings in 2022; nevertheless, in an environment of rising interest rates, high interest income significantly offset the above, so that the 12-month consolidated rolling return on equity (RoE) was still higher in Hungary than the EU and Visegrád averages. With a RoE of 12.7 per cent in 2022, the Hungarian banking sector remained at the top of the European leaderboard. In 2023, return on equity rose steadily starting in the beginning of the year (even exceeding 20 per cent during the year), mainly driven by a significant increase in interest income, which meant that RoE in Hungary rose even further in an international comparison.

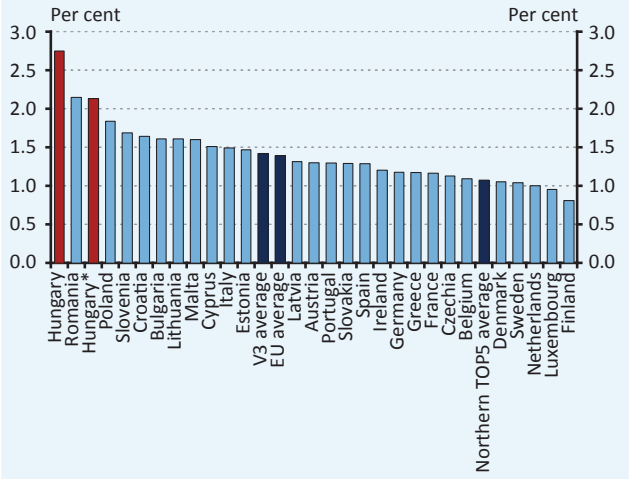
4.1.10 Net non-performing loan portfolio as a proportion of capital (2022)



Source: ECB – CBD

In 2022, Hungary's non-performing loan ratio (NPL ratio) rose somewhat from its historical low after the phase-out of the general payment moratorium in October 2021. The proportion of non-performing bank loans to the private sector is about half a percentage point higher than the EU-wide average and the average of the other Visegrád countries. In the corporate sector, the NPL ratio increased in large corporate loans as well as small and microbusiness loans in 2022. In household lending, personal loans and home equity loans in particular contributed to the deterioration in portfolio quality. Examples from across Europe indicate that the lifting of the payment moratorium did not cause large deteriorations in portfolio quality in most countries. Even with recovery from the Covid-19 pandemic, the risks stemming from the Russia-Ukraine war and rising interest rates, there was only a small increase in the NPL ratio. However, geopolitical tensions, economic sanctions against Russia and the spill-over effects of the inflationary environment create substantial uncertainty about the ability of debtors to maintain their solvency, especially in energy-intensive industries. The non-performing portfolio of the Hungarian banking sector stood at 11.4 per cent of equity in 2022, which is only 0.6 percentage points above the EU average; taking into account the aforementioned risks, the banking sector has sufficient reserves to cover potential non-performing losses. In 2023, the ratio of Hungarian banks' non-performing loan portfolios to equity continued to decline, falling to below 10 per cent at the end of 2023 H1; in the private sector, the ratio of non-performing loans did not increase significantly even after the payment moratorium was fully lifted at the end of 2022.

4.1.11 Operating costs-to-total assets ratio (2022)

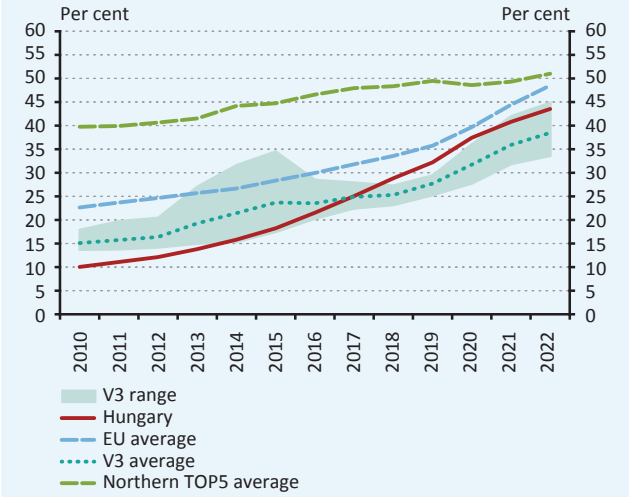


Note: The data for Hungary are exclusive of the transaction and the bank levy, and foreign subsidiaries.*

Source: ECB – CBD

As in previous years, the Hungarian credit institutions sector continues to be characterised by a high cost-to-assets ratio compared to the EU-wide average, which is a constraint on profitability and the pricing of banking products. This gap can be identified primarily in personnel expenditures and secondarily in administrative costs, and it is significant even after excluding the bank tax and the transaction levy. By the end of 2022, the cost-to-assets ratio of the Hungarian banking sector had increased in year-on-year terms, and it is high in a historical comparison as well. Although integration and consolidation in the banking sector may have helped reduce the cost-to-assets ratio in operating costs, these expenditures did not see improvement in 2022, due to the significant transition costs. In a Europe-wide comparison, the relative position of the Hungarian banking system remained unchanged; similarly to the domestic banking sector, the cost-to-assets ratio of European banking systems (measured with the EU and Visegrád averages) rose compared to 2021, due to subdued demand for credit and financial difficulties in an adverse macroeconomic environment.

4.1.12 Percentage of electronic payments for purchases



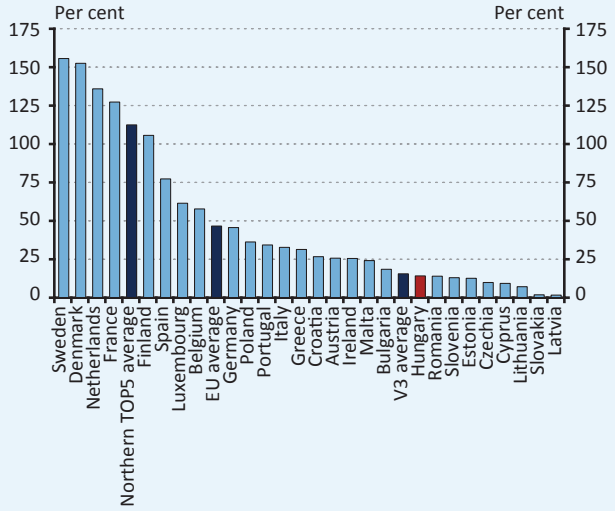
Calculation method: Annual amount of bank card purchases / Annual household consumption.

Source: ECB, Eurostat, HCSO, MNB

Increasing the share of electronic payments supports both economic growth and sustainable development. The share of electronic payments for purchases is steadily increasing in Hungary and (at 43.5 per cent in 2022) it exceeds the average of the V3 countries (38.5 per cent) and is steadily approaching the average of the Northern TOP5 countries (51 per cent). The development of the electronic payment infrastructure, the rapid uptake of contactless card technology and the spread of mobile phone payments in recent years have all contributed to the rapid expansion in electronic payments. Between 2020 and 2022, the number of smartphone (card) payments quadrupled, and the number of payments made from smartphones doubled. The MNB considers it a priority to enable electronic payments and encourage customers to use more electronic payment methods. The central bank has formulated a payments strategy for the period up to 2030,[3] which sets the objective of ensuring that electronic transactions account for at least 60 per cent across the entire economy by 2030 or, subject to further targeted promotional measures, at least two thirds. This payment strategy may be supported by the widespread use of services reliant on instant payments (such as QR code payments and payment requests), which will be free of charge for customers.

[3] Source: MNB (2023): Pénzforgalom 2030 (Payments 2030). https://www.mnb.hu/letoltes/penzforgalom-2030-strategia.pdf

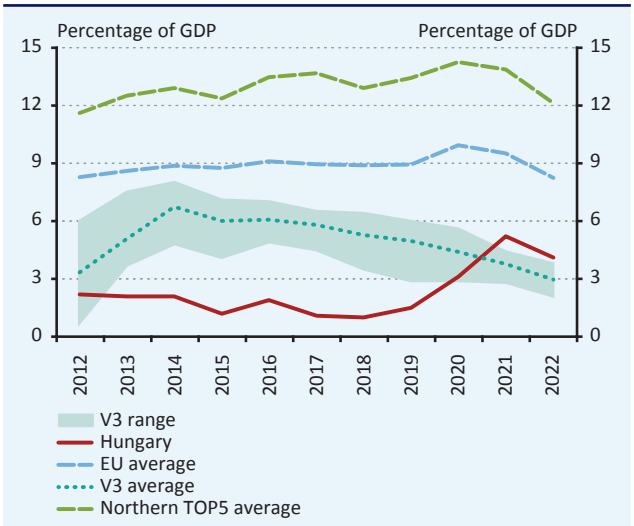
4.1.13 Market capitalisation / GDP (2022)



Source: World Bank, CEIC, national stock exchanges

Similarly to continental Europe, Hungary has long had a strong banking tradition, with businesses typically relying on bank finance as opposed to the capital markets. As a result, stock market capitalisation was only 14.1 per cent of GDP at the end of 2022 in Hungary, compared to the EU average of 46.7 per cent. Market turbulence and global developments have a significant impact on the indicator in terms of capital market pricing. As a result of the Russia-Ukraine war breaking out in that year, Hungarian capital market valuations fell significantly in early 2022, recovering somewhat by the end of that year but still remaining at pre-war levels. The diversification of the sources of finance, also including a mature equity market, is essential for a competitive economy and sustainable growth, as is exemplified by the Northern region. It is estimated that a 30-per cent increase in the stock market could boost the economy's potential output by up to 0.2 to 0.3 percentage points. In 2023, the Hungarian stock market registered a marked rise. The BUX index advanced by almost 40 per cent, while equity market capitalisation increased by almost 50 per cent to reach HUF 14,900 billion by the end of the year. This was due to the fact that, following major sell-offs in 2022, the market rediscovered Hungarian equities and the resulting increase on the demand side drove up share values. At the same time, there are no outlying P/E ratios in the Hungarian market, which indicates that the strong and stable earnings generation capacity of listed companies is the reason for the rise in price.

4.1.14 Stock of the corporate bond market in proportion to GDP

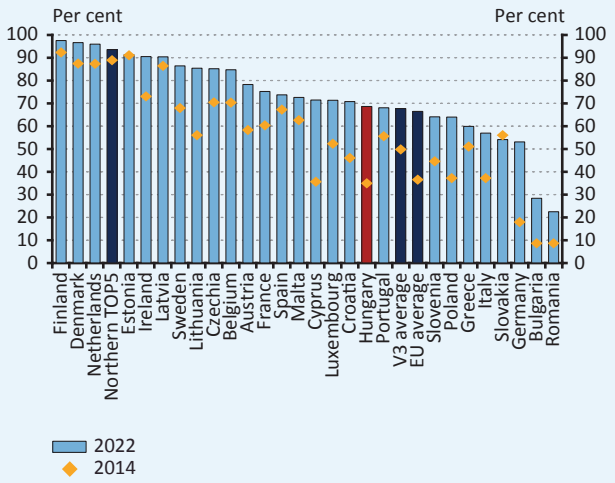


Source: Eurostat

In July 2019, the MNB launched its corporate bond purchase programme, the Bond Funding for Growth Scheme (BGS), with the aim of helping to diversify the funding structure of Hungarian companies and increase the efficiency of the monetary transmission mechanism by boosting liquidity in the Hungarian non-financial corporate bond market. By the end of 2022, 114 bond series from 89 issuers (including 20 green corporate bonds) had been issued under the BGS. Issuers raised more than HUF 2,859 billion in total through their bonds, while the nominal value of central bank bond purchases amounted to more than HUF 1,549 billion. As a result of the substantial contribution of the BGS, the Hungarian corporate bond market has moved from its position as a regional laggard to the top of the Visegrád group, as the market increased from only 1 per cent of GDP as of the end of 2019 Q2 to 4.1 per cent by the end of 2022. The first domestic certified green bond issuance took place in 2020, also under the auspices of the BGS. Since then, this has been followed by further issuances and dynamic growth in the green bond market, as well as further green issuances after the closure of the BGS.

THE DIGITALISATION OF BANKING

4.1.15 Percentage of people using internet banking

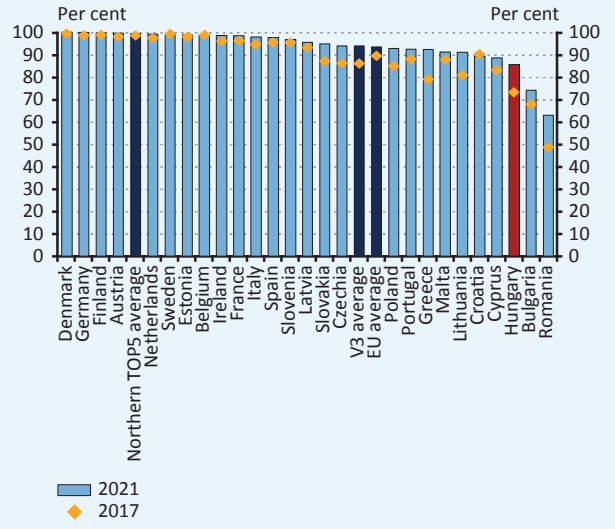


Note: as a proportion of internet users aged 16 and over.

Source: European Commission, Digital Scoreboard

The progress seen in the past decade in terms of the proportion of internet banking users has continued in the 2020s, albeit at different rates in countries at different development stages. Regions that are frontrunners in internet use have made only moderate progress, while average and less developed regions have achieved more significant progress in the last few years. The Hungarian figure rose at a rate similar to prior years, and the improvement of 5 percentage points between 2021 and 2022 puts it among the best in Europe. This places Hungary at the top of the growth chart of the Visegrád countries, and by 2022, it had surpassed the average internet banking user ratios measured in the V3 countries. While this is partly due to a moderate decline in the V3 average, Hungary has managed to outperform the EU average as well. Hungary ranks in the middle of the European field in terms of online banking activity, with an indicator of almost 70 per cent, but still lags behind the Northern TOP5 countries by a significant amount, 25 percentage points.

4.1.16 Use of digital payment methods

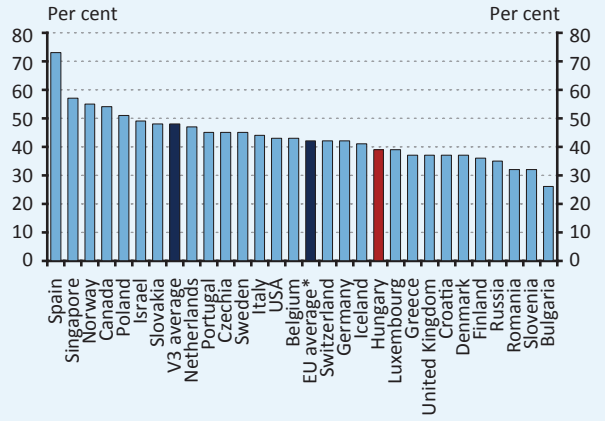


Note: The proportion of the population aged 25 and over who used a debit card, credit card, mobile phone or mobile wallet for various payment transactions in the previous 12 months. For Luxembourg, data for 2021 were not available.

Source: WB (2022) – Global Findex Database 2021

In more than four fifths of EU countries, at least 90 per cent of the population use some form of digital solution for their payment transactions. Although Hungary also has a penetration rate of 86 per cent in digital payments according to the latest available data, it is still in the bottom half of the EU rankings for this indicator, coming in below both the European average and the V3 average. Although digital payment method penetration has increased by more than 12 per cent in Hungary over the course of four years, there is still room for improvement in terms of growth rates. However, it should be noted that while in most countries the penetration of digital payments among young adults (15–24 year olds) was typically lower than in other age groups, this had reversed in many countries, including Hungary, by 2021.

4.1.17 Digital banking maturity in the banking systems of some countries (2022)

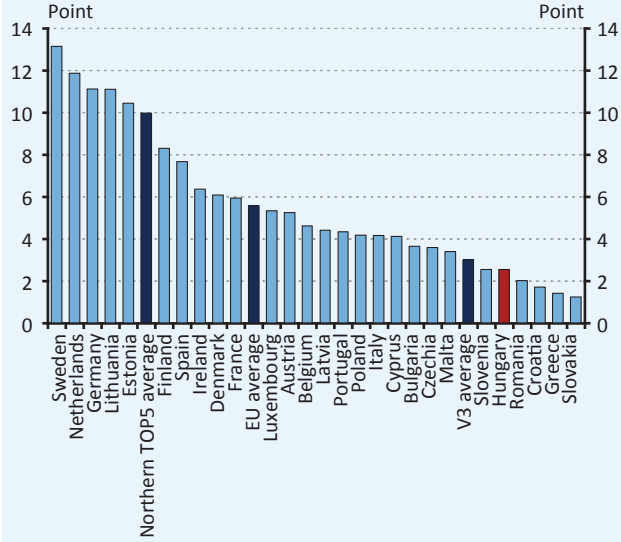


Note: Deloitte's Digital Banking Maturity is an aggregate indicator of three pillars that measure the range of banking services available in the digital space, the level of user experience on digital platforms and the consistency of digital developments with consumer needs. The EU average data point shows the average for 19 EU countries.*

Source: Deloitte (2022): Digital Banking Maturity 2022

In 2022, the digital maturity of the Hungarian banking system was still below the EU and V3 levels. Hungarian banks improved by 9 places in the international rankings between the 2020 publication and 2022, mainly driven by better access to information through digital channels, support for new users, increased onboarding opportunities and improvements in customer service and digital payments. By contrast, customer and product management and card processing were the digital banking maturity aspects where Hungarian banks lagged significantly behind their competitors. Although some progress has been made in personal financial management, regional convergence requires further steps in this domain as well. In addition to traditional banking services, banks can also provide a platform for ancillary services; of these, Hungarian banks can boast of results comparable with those of the leading digitally mature banks in commercial loyalty programmes, discounts and coupons, and services related to personal and public transport (e.g. ticket purchases, parking).

4.1.18 Assessment of EU countries based on their FinTech environments (2020)

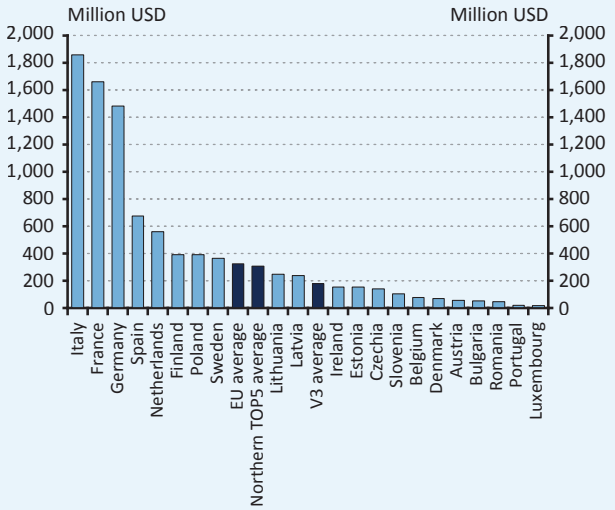


Note: The 2020 survey uses a different assessment method compared to the 2019 Global Fintech Index. The full survey had a broader, global scope, analysing a total of 83 countries.

Source: Findexable (2021): Global Fintech Rankings Report

The changing macroeconomic environment of recent years has posed significant challenges for the European FinTech market. In an environment of rising interest rates, financing for innovative businesses has become more difficult, which has dampened the growth of the market. Although Hungarian regulators are strongly committed to the innovative development of the financial sector, there is still significant room for improvement in promoting the development of the FinTech ecosystem. The 2020 survey by Findexable shows that the dynamism and success rate of FinTech firms in Hungary and the efficiency and maturity of the business environment are currently below the EU average, while in regional terms Poland and the Czech Republic are both ahead of Hungary.

4.1.19 Size of alternative finance markets in European countries (2020)

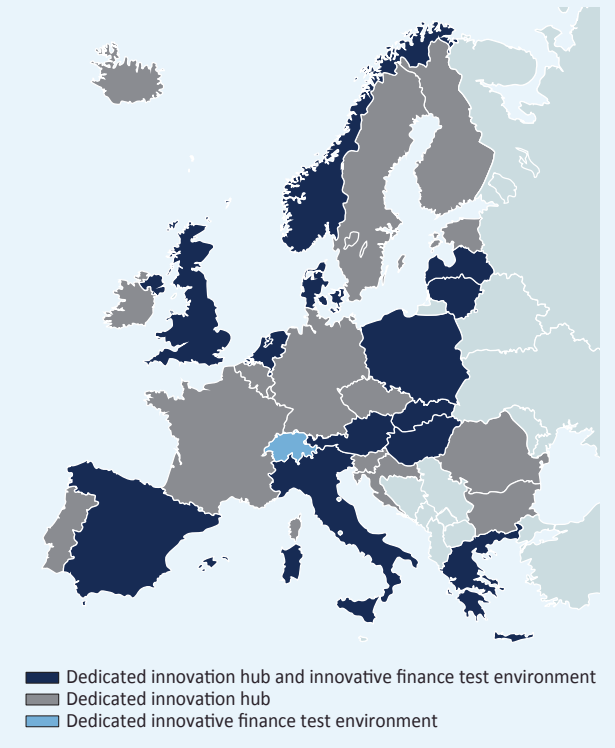


Note: The figures are for 2020. The chart excludes Slovakia, Greece, Cyprus and Croatia, where the size of the alternative financing market is below USD 10 million, and Hungary and Malta, where it is below USD 1 million.

Source: Cambridge Centre for Alternative Finance (2021): The 2nd Global Alternative Finance Market Benchmarking Report

Alongside the growing FinTech sector, alternative online forms of finance have also become a significant part of the start-up world across Europe. Turnover has grown significantly in recent years on platforms offering this form of finance, with the total value of transactions in the EU approaching USD 10 billion in 2020. In Europe, alternative finance is widely used mainly in the United Kingdom; in the EU, by contrast, only a few countries have demonstrated substantial activity in this sphere, with Poland leading the way among the V3 countries. In part due to the country's smaller market size, alternative forms of online financing have still not emerged in Hungary to any significant extent, with the aggregate volume of such financing still below USD 1 million, despite an increase of more than 70 per cent from 2019 to 2020. Non-commercial forms of crowdfunding (e.g. donation platforms) have proliferated, while in the future, commercially focused (lending and equity based) crowdfunding solutions may expand dynamically both at the national and the EU levels. The EU Regulation on European crowdfunding service providers for business, which entered into force on 10 November 2021, laid the foundations for the above by stipulating Europe-wide harmonised rules for operations requiring a high level of investor protection.

4.1.20 Innovation hubs and innovative financial test environments (2023)



Source: ESAs (2023): Innovation facilitators in the EU

Monitoring and responding to FinTech developments is becoming increasingly important for all European regulators; as a result, there are more and more examples of innovative supervisory frameworks being operated in Europe. Innovation Hubs helping FinTech innovators navigate the regulatory environment have been in place in almost all countries on the continent for several years, while Regulatory Sandboxes to test innovative solutions under real market conditions are also increasing in number. Advances in this area will also allow innovators to access practical help to evaluate the suitability of their innovative solutions with the involvement of actual customers. These two solutions are effective ways to support the innovative and also prudent development of financial systems, and the emergence of further Regulatory Sandboxes in Europe could be a way forward, since there remains considerable scope for their widespread adoption despite the progress achieved in recent years. Hungary is among the European countries where both innovation platforms are present: the Innovation Hub and the Innovation Finance Test Environment (IPT, Hungary's regulatory sandbox) have been active since 2018.

4.1.21 Ratio of online shoppers in 2021 and growth between 2016 and 2021 (2022)

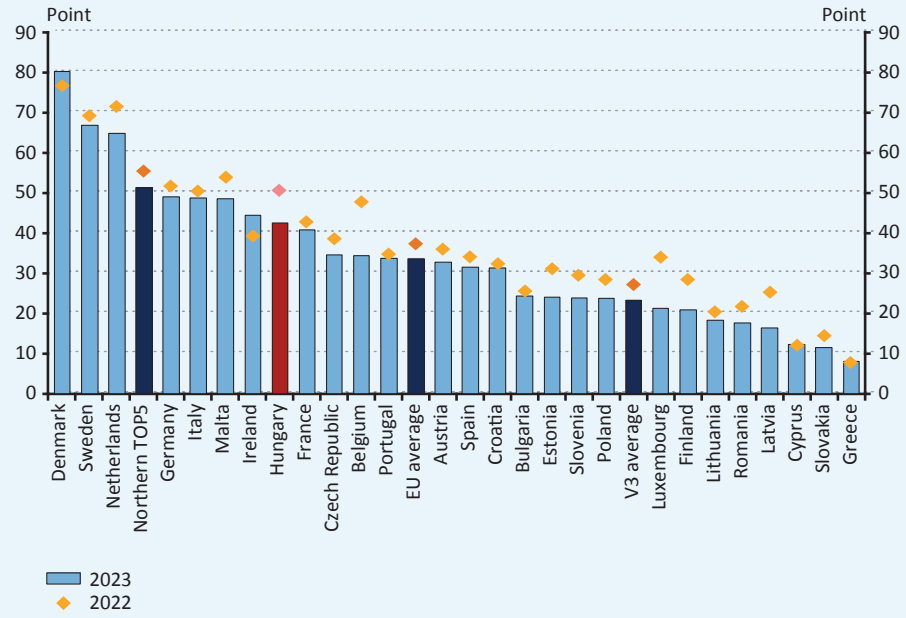
Source: Eurostat

In the era of digital transformation, commerce is also undergoing considerable development. The rise of online shopping has transformed consumers' shopping habits and triggered new processes in terms of competitiveness. Online shopping offers a chance to overcome geographical barriers, reduce the operational costs of businesses and generate large amounts of data to analyse user behaviour and use data-driven planning, which are changing the way commerce works in fundamental ways. Since 2016, Hungary has achieved an outstanding level of progress in comparison with the developments in the European market: it caught up with the EU average in 2021 and exceeded it in 2022, with the share of online shoppers in the last 12 months approaching 80 per cent, although it still remains 3 percentage points below the V3 average.

4.2 ACTIVATION OF HOUSEHOLD SAVINGS

The 2008 global financial crisis highlighted the risks of relying on external financing and underscored the importance of stronger domestic financing, which is also a precondition for balanced convergence. Growth financed from external sources and debt can make an economy extremely vulnerable. In that context, international examples and experience from economic history show that convergence models were only successful where investments supported long-term growth and relied mainly on domestic savings, primarily from households. With the budget deficit and public debt surging in the wake of the Covid-19 pandemic and the external environment becoming more uncertain in the shadow of the Russia-Ukraine war and rising inflation, high household savings and the financing of public debt from domestic sources are particularly important. In 2023, Hungary ranked 8th out of the 27 EU Member States in the area *Activation of household savings*, at 42.3 points. Compared to 2022, Hungary's performance deteriorated by 8.0 points, remaining above the V3 (23.1 points) and EU (33.4 points) averages, but falling short of the Northern TOP5 (51.1 points) average. The decline in Hungary's score was mainly driven by a fall in gross savings as a percentage of GDP.

Chart 4.2
Results of MNB Competitiveness Index at the area of the Activation of household savings in the Member States of the EU



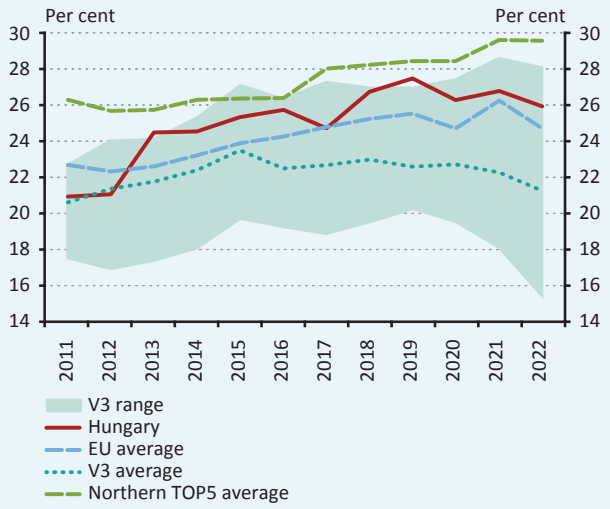
Source: MNB

Maintaining high levels of household savings, in which retail government bond financing plays a key role, is essential to preserve macrofinancial balance and continue the convergence process. Before the 2008 financial crisis, Hungary faced financing difficulties following a period of externally-financed growth. Post-adjustment, economic growth was achieved with a current account surplus and falling external debt ratios, as business investment was financed mainly by high domestic, household savings. The uncertainty caused by the Russia-Ukraine war and a changed inflationary environment put further pressure on household savings, while a natural rebalancing of the retail government securities market also took place gradually, with the population shifting its demand towards inflation-indexed instruments.

The diverse range of residential government bonds encourages households to increase their savings, which supports sustainable economic growth and financial and macroeconomic stability by stabilising the balance of payments. The current government bond supply is suitable for channelling the extra income generated by rapid wage rises into the government securities market, thereby underpinning a consistently high household saving rate. This is of particular importance for two reasons: firstly, as international examples show, such savings can contribute to financing investments aimed at improving competitiveness; and secondly, the financial savings of the population play a crucial role in ensuring the stability in the current account balance, a reduction of external debt and balance improvements. These factors all play

an important role in the decisions of credit rating agencies, as they reduce a country's external exposure and increase self-financing, which improves its financing conditions through better investor perception and lower risk premiums, especially in the current uncertain times caused by pandemic, war and high inflation.

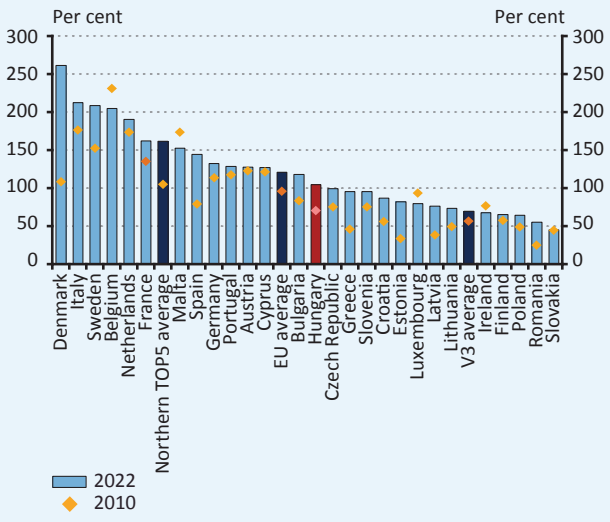
4.2.1 Gross savings as a percentage of GDP



Source: OECD

The amount of internal resources available to the Hungarian economy has increased significantly over the past decade. Low domestic savings (defined as the difference between income and consumption) before the 2008 crisis was a major factor of vulnerability, due to the need to rely on foreign sources of finance instead. Household deleveraging, rising incomes and government measures (e.g. tax cuts) have all contributed to an increase in the domestic savings figure to above the EU and regional averages. In the second half of the decade, tight labour markets and buoyant wage dynamics allowed households' saving position to improve further. In addition, in part owing to a significant increase in business investment, the gross domestic saving rate has consistently exceeded the regional and EU averages. In 2020, the pandemic restrictions forced households to postpone their consumption, which kept gross savings high. As the pandemic situation improved, savings started to fall, which was offset by the recovery in investment. In 2022, there was a drop in savings due to the energy crisis and rising inflation, but the gross domestic savings rate stabilised at a high level compared to the EU overall and other countries in the region. In 2023, high inflation and a decline in their real wages and real wealth combined with general economic uncertainty increased the caution of households and caused a rise in the domestic savings rate.

4.2.2 Households' net financial wealth as a percentage of GDP

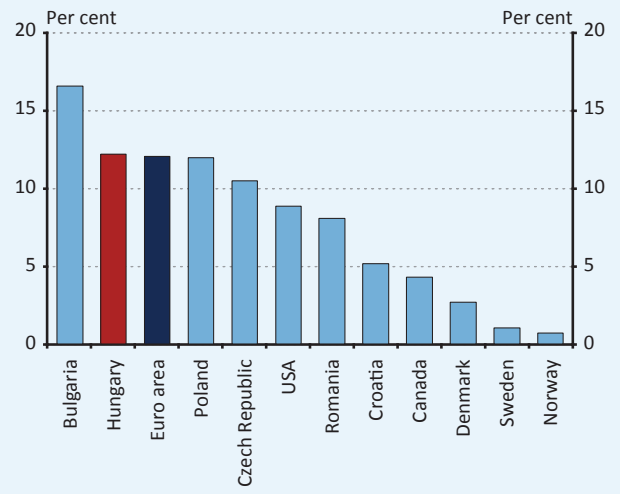


Note: 2012 figures are shown for Sweden, Germany, Austria and Finland.

Source: Eurostat, MNB

Net financial wealth, which is the difference between the financial assets and liabilities of Hungarian households as a percentage of GDP, increased significantly, rising from 70 per cent to over 100 per cent between 2010 and 2022. From 2019, growth was especially steep in long-term government bonds. Households' liabilities as a percentage of GDP halved from a peak of 43.7 per cent in 2010, in which one-off effects of final repayment, forint conversion and the MNB's market regulation measures played a significant role in addition to changes in households' savings behaviour in the wake of the crisis. The rising savings rate in 2020, which was primarily attributable to greater caution and forced savings due to the closures, resulted in an increase in financial assets. In 2021, as the economy reopened and restrictions were lifted, household savings moved to a typically downward trajectory, which was further exacerbated in 2022 by the energy crisis and falling real wages due to rising inflation. This has been accompanied by a decline in household net financial wealth, which nevertheless remains high, at around 105 per cent of GDP, well above the 2010 level measured in Hungary and the 2022 levels in the region. In 2023, the net financial assets to GDP ratio increased somewhat as a result of rising savings and high inflation.

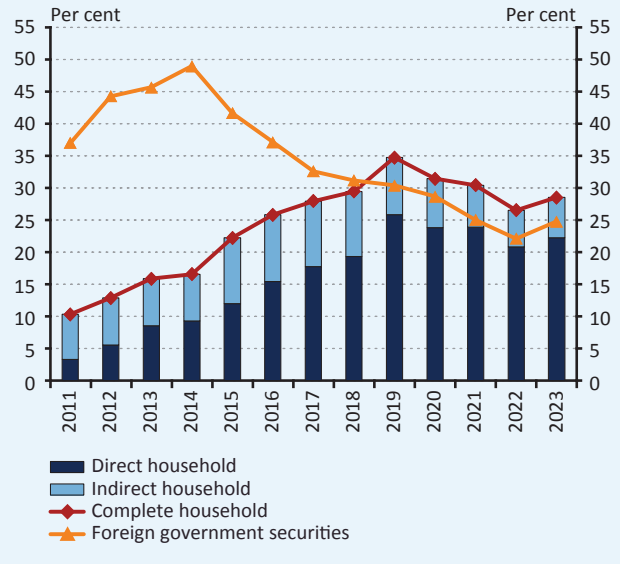
4.2.3 Cash-to-GDP ratio in certain countries (2022)



Source: Eurostat, IMF, national central banks

The Hungarian cash stock is high by international standards, and the mobilisation of cash, which has already started with some measures, could provide a significant source of finance for the economy. In the low inflation and low yield environment after the 2008 crisis, the popularity of liquid assets increased in most countries, and thus the increase in cash as a percentage of GDP was a general phenomenon. The Covid-19 pandemic boosted cash demand almost everywhere except the Northern countries. In 2021, the population spent a larger part of the cash they had stockpiled as a precaution, and accordingly the cash-to-GDP ratio declined in Hungary. In 2022, a sharp rise in inflation reduced cash demand in most countries, including Hungary. At the same time, the Hungarian cash stock is still high in international comparison. In recent years, the introduction of MÁP+, the development of the related services of the State Treasury and the innovative solutions proposed by the MNB in the Competitiveness Programme as well (interest rate capitalisation, abolition of the financial transaction levy to the Treasury) have also helped slow down the accumulation of cash assets. In addition, technical innovations (such as the introduction of the instant payment system) are reducing the cash stock via a decrease in cash demand for transactions.

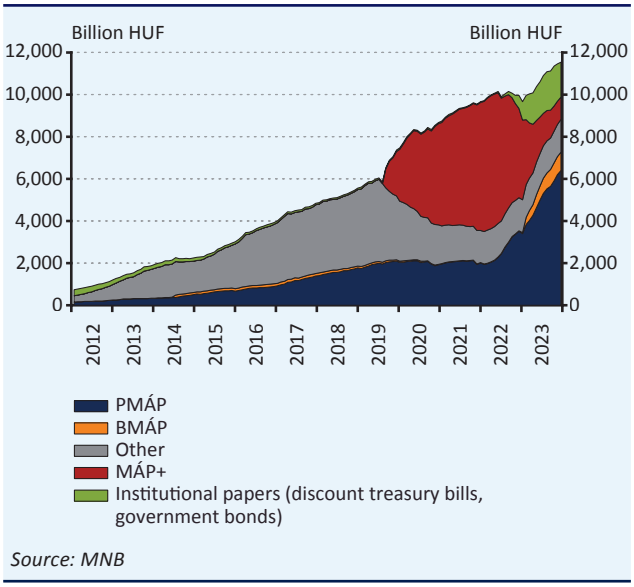
4.2.4 Household and foreign financing of public debt



Source: MNB

Measures to reduce external vulnerabilities have gradually decreased the importance of foreign sources in financing the public debt since 2011. Direct financing by the population increased from 2 to 3 per cent of public debt in 2011 to over 25 per cent in 2019; with indirect financing through financial intermediaries also taken into account, this rate reached 35 per cent. While the financing of pandemic-related public expenditures has reduced the weight of financing by households, the population still accounts for a high percentage of the financing of public debt, which has contributed to a fall in the weight of government securities held by non-residents, from 50 per cent in 2014 to 22 per cent as of the end of 2022. In 2023, the high net borrowing of the public sector and a rise in forint yields led to a renewed increase in the proportion of non-residents' holdings of government securities. At the same time, the proportion of government securities held directly by the public also increased significantly, owing mainly to the inflation-indexed PMÁP product.

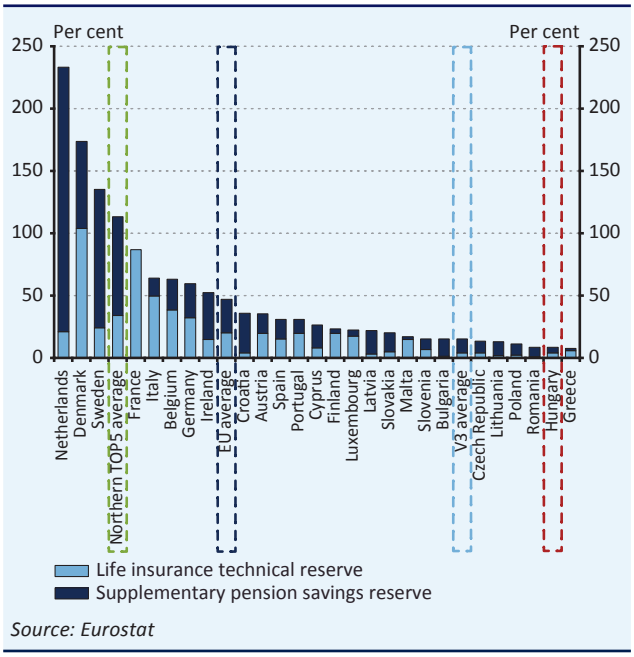
4.2.5 Changes in the government securities stock of households



Source: MNB

Thanks to a debt strategy that has deliberately strengthened the domestic investor base since 2011 to reduce external financial vulnerabilities, household holdings of government securities increased nearly 14-fold between 2011 and the end of 2022. In 2022, the retail government bond market faced a number of challenges due to the outbreak of the war between Russia and Ukraine and the uncertainty caused by an environment of rising inflation. Even in this turbulent period, however, households provided stable domestic financing to the state: the stock of government bonds held by households increased by around HUF 100 billion in 2022, which was a year marked by a gradual shift from the earlier top product (MÁP+) to the inflation-indexed PMÁP, as households restructured their government securities portfolios in response to the changes in the economic environment. Household demand for the reintroduced BMÁP, which is linked to the discount treasury bill yield, and for institutional instruments (discount treasury bill, government bond) also surged. Until 2023 H1, the stock of government bonds held by households grew dynamically, despite significant amounts maturing, and exceeded HUF 11,000 billion. A notable innovation in the retail government bond market is that, in order to reduce asset concentration and thus further diversify the investor base, a sales limit was introduced for distributors for PMÁP and BMÁP from the beginning of 2023 and was then gradually reduced during the year.

4.2.6 Gross life insurance and supplementary pension savings of households, as a percentage of GDP (2021)



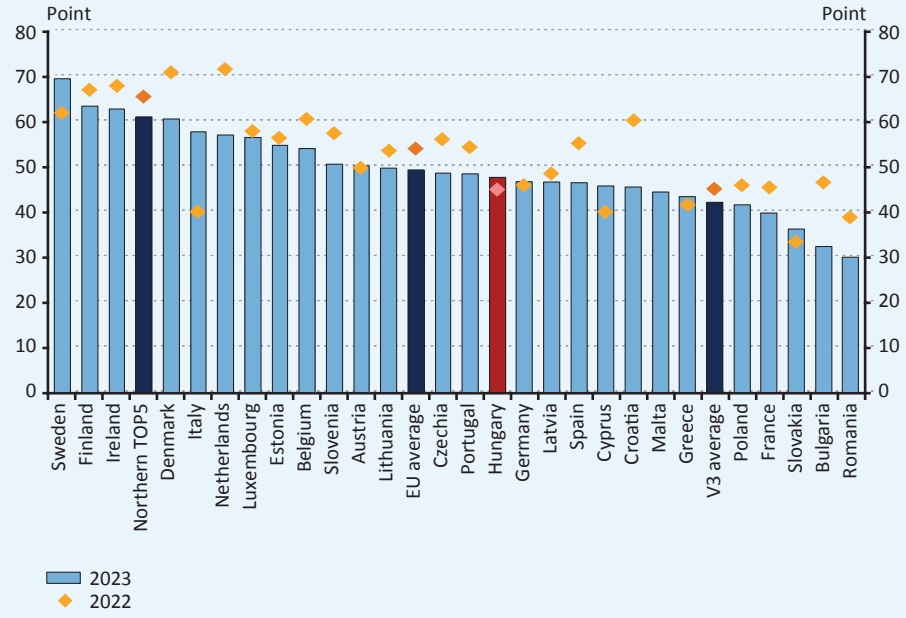
Source: Eurostat

In the current global market environment, it is of paramount importance to encourage medium- and long-term savings, as these can curb the build-up of a price-wage spiral by reducing consumption and reduce inflation while supporting economic growth through capital markets; they can also benefit the state by reducing external exposure. Because of their long-term nature, supplementary pension and life insurance savings are a stable source of finance for economies. For historical reasons, Western European countries have higher reserves in these sectors, where Hungary has significant opportunities for growth. The level of supplementary pension and life insurance reserves in 2021 was only 8.5 per cent of GDP, lower than the EU average of 47.3 per cent and the Visegrád average of 15.2 per cent. The current voluntary savings schemes (pension insurance, voluntary pension funds, retirement savings accounts) cover only 22 per cent of the active population. The low share of retirement savings in Hungary shows the untapped potential of the financial intermediation system. Different countries use different techniques to increase coverage; according to the OECD, the second most effective means of increasing penetration (after mandatory participation) is automatic inclusion (with an opt-out option offered). By raising financial awareness and by introducing such a scheme, household savings would be mobilised more than before, allowing more of these funds to be channelled into the financing of the economy and increasing Hungarian competitiveness.

4.3 SME STRATEGY

Hungarian small and medium-sized enterprises (SMEs) continued their recovery from the Covid-19 crisis in 2022, but the value they added increased only in nominal terms in 2022. SMEs are a catalyst for job creation and balanced economic growth. The digital transformation of SMEs has been slow to unfold, with the adoption of key digital technologies stagnating at a low level. As regards environmental sustainability, the performance Hungarian SMEs was around the EU average in 2022, with the exception of certain areas of cost rationalisation. In 2023, Hungary ranked 15th out of the 27 EU Member States in the area *SME strategy*, with a score of 47.4 points. Compared to 2022, Hungary's score improved by 8.3 points, mainly due to changes in the indicators taken into account and an increase in the business investment rate, and is higher than the V3 average (41.9 points), but below the EU average (49.0 points) and the Northern TOP5 average (60.6 points).

Chart 4.3
Results of MNB Competitiveness Index at the area of SME Strategy in the Member States of the EU



Source: MNB

Corporate duality in SME productivity declined significantly in Hungary between 2010 and 2021, but the productivity gap is still significant compared to the EU average. An easing of this duality is desirable for several reasons, including the fact that it makes SMEs self-sustainable in the long term by keeping them competitive with large companies. The relative productivity of Hungarian SMEs converged by 7.4 percentage points with that of the large domestic firms between 2010 and 2021. Although this result reflects the 11th largest improvement in the EU, the productivity of Hungarian SMEs remains at only 54 per cent of that of Hungarian corporates in 2021. This degree of corporate duality puts Hungary in the bottom third of the EU rankings. A higher real investment rate would support the process of convergence with EU SMEs. Although the nominal investment rate in 2021 was the 5th highest in the EU at 16.2 per cent for the total business sector, domestic capital formation slowed in real terms.

More and more SMEs are investing in advanced digital technologies and acquiring the skills and knowledge to become more competitive. Recognising the potential of digital solutions and implementing them in their specific business activities offers SMEs an opportunity to reduce their productivity gap. Hungarian businesses are increasingly using advanced digitalisation solutions such as cloud services and sensor solutions. Nevertheless, big data, artificial intelligence, robotic technologies and blockchain are innovations they still rarely use.

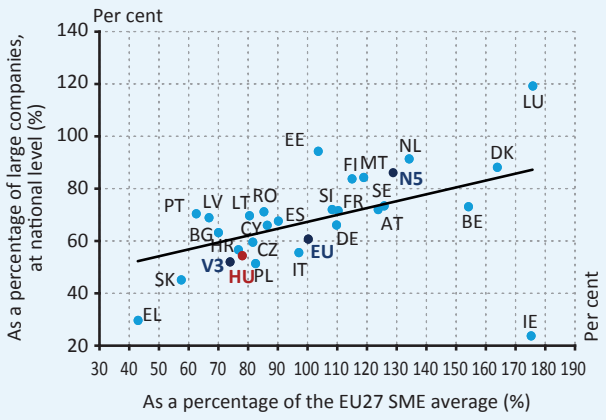
The innovation activity of Hungarian SMEs is below the EU average. In Hungary, the share of businesses active in product innovation increased significantly, from 11.1 per cent to 19.9 per cent in the period 2012–2020. Despite these positive

changes, Hungary has ranked in 21st place in the EU for almost a decade and is approximately 8 percentage points below the EU average.

Even though Hungarian SMEs have taken significant steps towards environmental sustainability, there is still considerable room for improvement. In line with its green mandate, the central bank pays special attention to the use of sustainable solutions by Hungarian businesses. Aa already mentioned, digitalisation not only offers the potential to increase the productivity of SMEs, but is also well-aligned with the various requirements concerning a green transition. Approximately 60 per cent of Hungarian SMEs are active in the reduction of waste and in saving materials and energy. By contrast, the majority of companies have not taken any action yet on renewable energy use, scrap sales, environmentally-friendly material usage and product design. The patterns observed in these areas are broadly similar across all the European companies surveyed.

Before the Covid-19 crisis, Hungarian SMEs had been characterised by strong convergence in productivity; the digital and green transitions are a precondition for the lasting and sustainable continuation of that process. To reduce the gap in business efficiency among SMEs, it is necessary to understand the potential of digital technologies and adopt them more widely, while accelerating the green transition would necessitate not only a mindset change, but also investment in energy and sustainability projects.

4.3.1 Relative labour productivity of SMEs (2021)

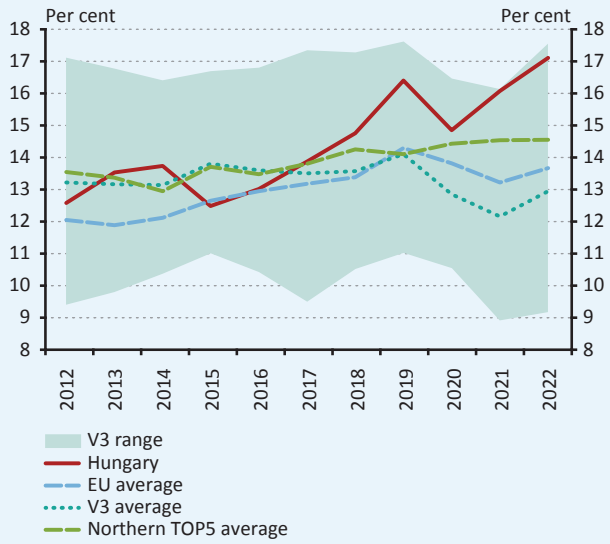


Note: Comparison with the EU-27 is calculated at purchasing power parity.

Source: Eurostat, DIW-ECON, MNB calculation

Despite dynamic growth over the past decade, the labour productivity of the Hungarian SME segment is still only 54 per cent of that of large Hungarian companies, putting Hungary in the bottom third of the European Union rankings. In an important achievement, the productivity of the Hungarian SME segment recorded a 7.4-percentage point convergence with large corporates between 2010 and 2021. This was well above the EU average, which reflected widening of 4.5 per cent, and also the group's Visegrád average, where the decline was 8.1 per cent. Compared to European SMEs, Hungarian SMEs are in a better position in purchasing power parity terms, with productivity close to 78 per cent of the EU average. The rates in the Czech Republic and Poland were above 80 per cent (81 and 82 per cent, respectively), while the average labour productivity of Slovak SMEs was just over half the EU average (57 per cent).

4.3.2 Business investment to GDP ratio

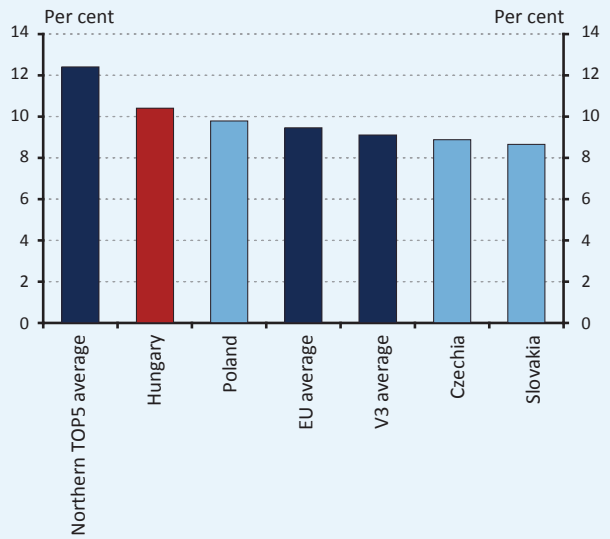


Note: Including financial corporations.

Source: Eurostat, MNB

At 17.1 per cent, Hungary's business investment ratio including financial intermediaries was the second highest in the region after the Czech Republic and the fourth highest in the EU in 2022. The Hungarian figure was also above the average of the Northern TOP5 countries (14.5 per cent). One key precondition for productivity growth is capital deepening, i.e. the relative increase in investment. Increasing business investment expenditures at a rate above depreciation allows companies to increase their productivity. Between 2015 and 2019, Hungary's business investment-to-GDP ratio increased significantly, contributing to the positive growth trends witnessed in the SME segment. The combination of a favourable financing environment, inflows of working capital, the central bank's targeted schemes (FGS), EU funds and high domestic demand underpinned by government support contributed to the increase in business investment activity. The dynamic upward trend in the business investment rate until 2019 was temporarily interrupted by the Covid-19 pandemic, but the rate remained above the regional and EU averages even during the crisis, thanks to central bank and government programmes, and then returned to growth in 2021. However, strong price effects also contributed to the high nominal investment rate after the end of the recession caused by the pandemic. In other words, to a large extent the nominal business investment rate is a consequence of higher investment costs after 2020. The volume of corporate investments decreased in 2023 due to increased costs and lower domestic demand.

4.3.3 Share of high-growth companies (2020)

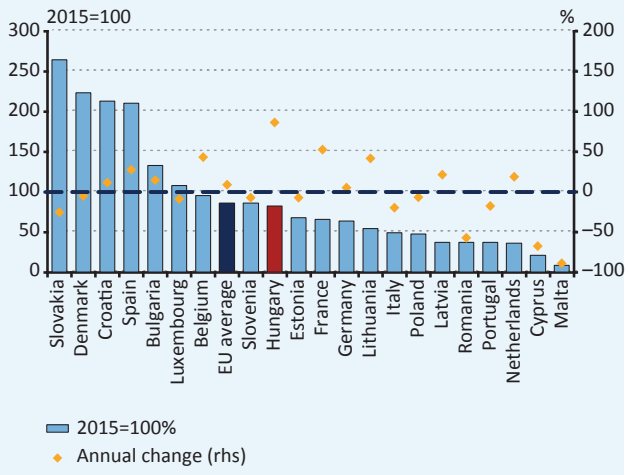


Note: Based on employment data. Calculation method: the number of high growth enterprises is divided by the number of active businesses with at least 10 employees.

Source: Eurostat, MNB

The share of high-growth companies in Hungary fell to 10.4 per cent in 2020, down from 12.3 per cent in the previous year. Share of high-growth companies is the proportion of businesses that have grown by over 10 per cent annually during a 3-year period versus the total population of businesses with 10 employees. The relatively solid performance of the Hungarian ratio was supported by government measures as well. In Hungary, the targeted measures to stimulate labour demand in the 2013 Job Protection Action Plan and the trends underpinning high demand (improving financing environment, family support measures, FDI inflows, EU funds) have also had a positive impact on the domestic figure, which rose to 12.3 per cent in 2019. As a result of the Covid-19 pandemic, the Hungarian indicator (10.4 per cent) contracted by 1.9 percentage points in 2020, while the EU average (9.4 per cent) also fell, by more than 2 percentage points.

4.3.4 Bankruptcy declarations in 2022 (2015=100%)

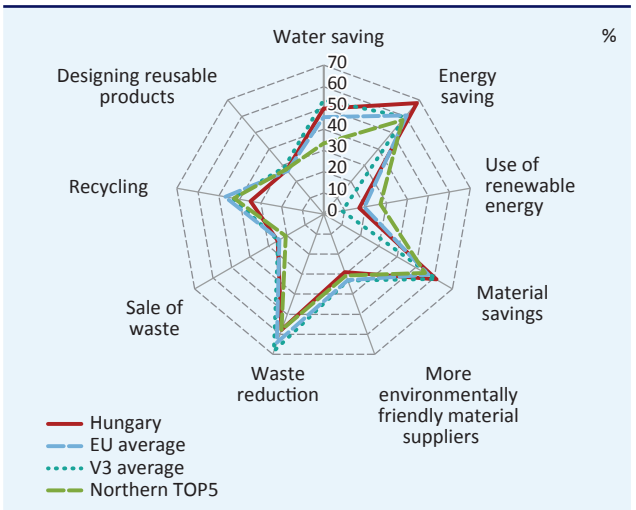


Note: Only for countries covered by data. For several countries including Hungary, data have been available from 2021. Due to a lack of data, the averages for the V3 and the Northern TOP5 countries cannot be calculated.

Source: Eurostat, edited by MNB

Conclusions on bankruptcy trends in EU Member States and the euro area should be drawn with caution. The legal entities taken into account when compiling the statistics are the firms that have filed for bankruptcy with a court declaration during the period under review. Such a declaration may have temporary effect and does not always mean the cessation of the company's activities. In Hungary, the number of bankruptcy proceedings in 2022 was 82 per cent of the number initiated in 2015, i.e. 18 per cent fewer bankruptcy proceedings were brought in 2022 than in 2015. The Hungarian figure is 3 percentage points lower than the EU-wide rate of 85 per cent. However, at 85 per cent, the 2021 Hungarian indicator is the highest in terms of the number of bankruptcies. The Economic Protection Action Plan in place in 2020 and 2021 played a role in this, and the most important element of the Plan was to protect jobs. For 2023, data are available on the number of dissolved business entities. According to the Hungarian Central Statistical Office, 8 per cent more businesses closed in 2023 than in 2015, but 20 per cent (31,600) fewer than in 2022.

4.3.5 Resource efficiency and green markets of SMEs (2022)

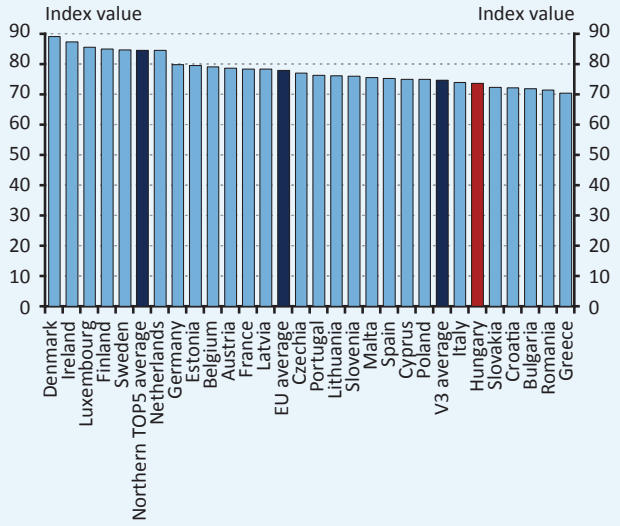


Note: Percentage of SMEs that have introduced energy efficiency measures in the relevant areas.

Source: MNB based on Flash Eurobarometer 498

The 2022 Flash Eurobarometer on SMEs and resource efficiency shows that SMEs in the EU have taken significant steps towards environmental sustainability. 89 per cent of SMEs have adopted at least one of the measures listed in order to become more resource-efficient. With a few exceptions, the sustainability actions of Hungarian SMEs showed a similar pattern as the small and medium-sized enterprises in the benchmark groups. Most of the SMEs surveyed were active in the areas of waste management and in cutting raw material and energy usage. Approximately 60 per cent of SMEs in the groups presented have introduced and applied such green measures. The lowest participation rates were in the domain of renewable energy usage and the sale of scrap materials and waste. These rates varied in the range of 20 to 30 per cent.

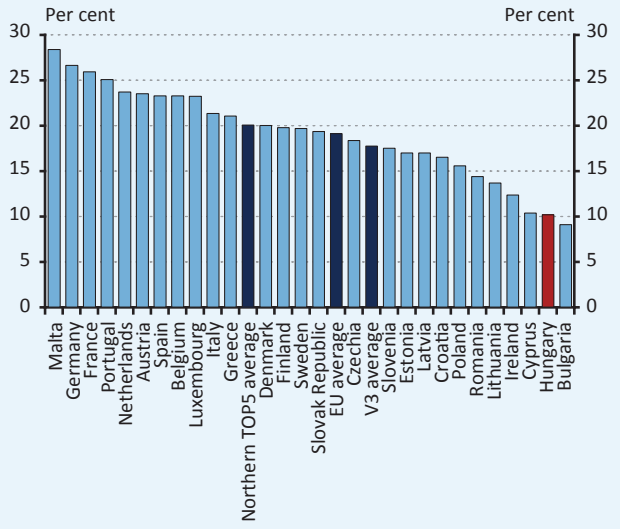
4.3.6 Economic freedom (2022)



Source: The Heritage Foundation

There is a positive link between economic freedom and many other social and economic objectives. The Index of Economic Freedom is a global level measure of the extent to which the regulatory and infrastructural environment of a country constrain the efficient functioning of business entities there. The Index of Economic Freedom scores each country between 0 and 100, where 100 indicates the highest level of economic freedom. In its brief assessment, The Heritage Foundation (Washington, DC), which compiles the index, highlights that Hungary has a transparent regulatory environment that strongly supports business creation and the flexible operation of companies. However, the World Bank data sources that make up the pillar included elements such as the perception of the regulatory environment, the economic status and the economic inclusion of women reduced Hungary's score. With an index score of 73.5, the Hungarian business environment is the 22nd freest to do business in the European Union. This score is 1.1 points below the average score for the Visegrád countries and 4.2 points below the EU average.

4.3.7 Composite average effective tax rate (2021)

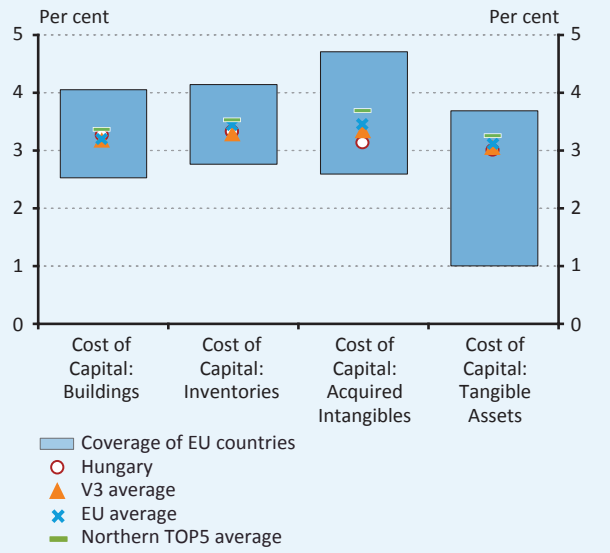


Note: The cost of capital is the pre-tax rate of return on capital required to generate an after-tax economic profit based on a stylized investment. This ratio is a weighted average of equity and debt financing.

Source: OECD

Rather than statutory corporate tax rates alone, a broad range of tax components play a role in companies' production and investment decisions. The composite average effective tax rate is calculated as a weighted average of the financial and asset-specific (buildings and fixed assets, inventories and acquired intangible assets) effective tax rates. It is a composite indicator that reflects the average tax burden that a company pays on an investment project with a profit above zero. The indicator is used to analyse investment choices between alternative projects. It is also monitored as an indicator of corporate direct investment attraction in cross-country comparisons (company size is not a factor). Hungary has the second lowest average effective corporate tax rate in the EU (10.2 per cent) after Bulgaria, which is beneficial for attracting capital and setting up business entities. The Hungarian rate is much lower than the average for the V3 (17.7 per cent), the EU (19.1 per cent) or the Northern TOP5 countries (20 per cent).

4.3.8 Effective rates of capital (2022)

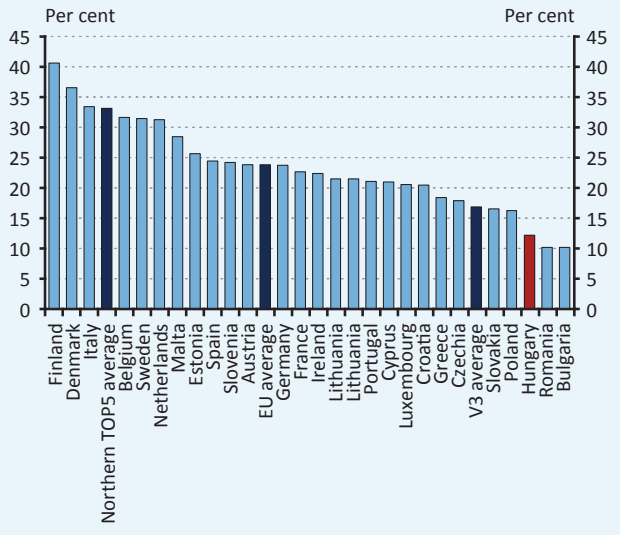


Note: The cost of capital is the pre-tax rate of return on capital needed to generate after-tax economic profit on the basis of a stylised investment. The indicator is the weighted average of equity and debt financing.

Source: OECD

In terms of capital costs, Hungary performed close to the regional benchmark, offering a similar interest rate environment for corporate financing. There is no substantial difference in the cost of capital in the four asset types examined (buildings, inventories, intangible and tangible assets): they all stood at around 3 per cent. There are many aspects of pro-business economic policy to assess, ranging from the quality of governance through infrastructure to the quality of the tax system. The overall tax burden on businesses depends on capital ratios and a low cost of capital, which can help boost investment substantially by leaving more funds with the firms.

4.3.9 Use of advanced digital business technologies amongst SMEs (2021)

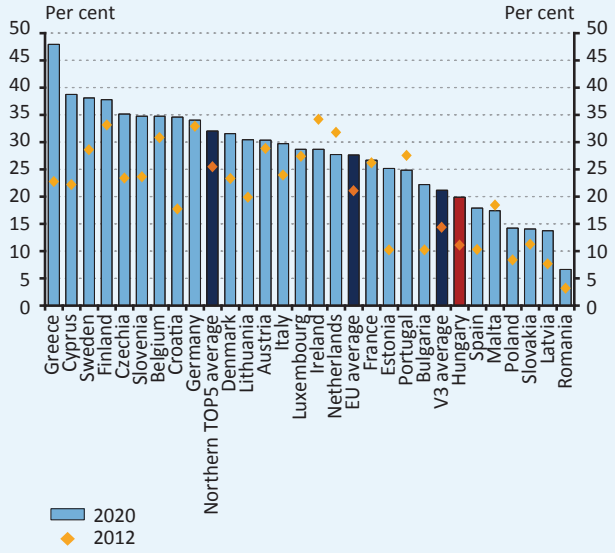


Note: ERP (2021), CRM (2021), e-invoicing (2020), cloud computing (2021), big data (2021), 3D printing (2020) and the use of robots in manufacturing and service industries (2022). Arithmetic mean. Excluding Greece.

Source: MNB calculations based on Eurostat data

Hungary ranks 25th in the European Union in terms of the overall share of SMEs using digital solutions, 4.7 percentage points behind the V3 average and 11.7 percentage points behind the EU average. The rate measured in Hungary is roughly one half of the EU figure and about one third of that recorded in the leading countries. Looking ahead, companies will be successful only if they take advantage of the opportunities offered by modern technologies and constantly improve their processes, products and services with the right digital solutions. Whereas non-digitalised or under-digitalised firms will fall behind in competition. The pace of digitalisation convergence accelerated during the Covid-19 crisis and sustaining that momentum in the SME segment is a key priority in order to ensure that the process closing of the productivity gap between SMEs and large corporates, which was seen in the previous decade, can continue.

4.3.10 SMEs active in product innovation (2020)



Note: 2018 figures for Luxembourg.

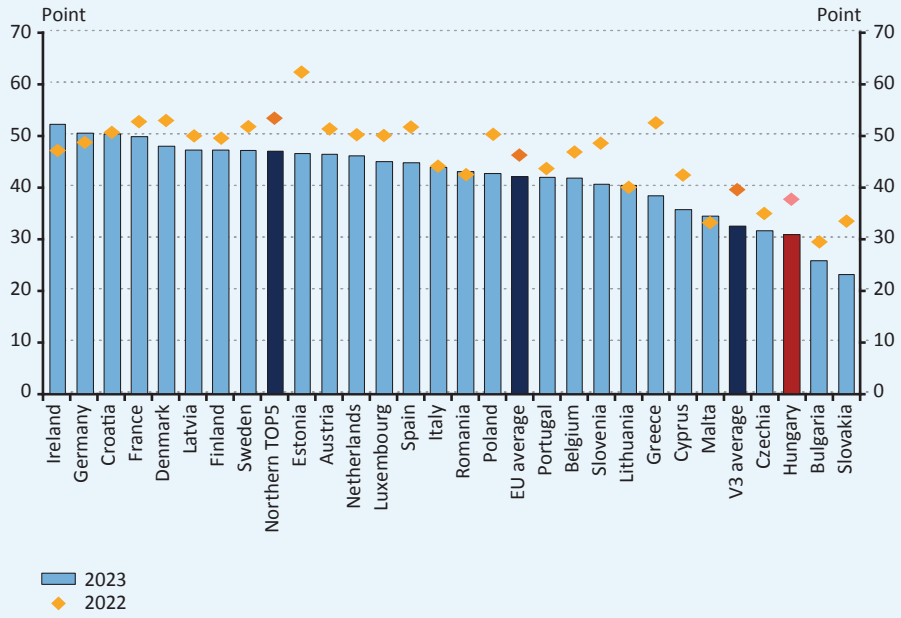
Source: European Commission

Innovation is a crucial factor in the competitiveness of developed economies. In general, the productivity and innovation capacity of the SME sector is closely correlated with the amount of added value that an economy is able to generate. In Hungary, the share of SMEs active in product innovation increased significantly, from 11.1 per cent in 2012 to 19.9 per cent in 2020. Hungary's relative competitiveness position within the EU has not improved, however, and for almost a decade the country has been ranked 21st in terms of this indicator. Innovation activity remains low in the Hungarian SME sector, and is around 8 percentage points below the EU average (27.6 per cent). In the region, the Czech Republic (35 per cent) has made dynamic progress in this domain and is now well ahead of Hungary, while Poland and Slovakia lag behind (both at 14 per cent). Boosting the innovation capacity of the domestic SME sector is an essential precondition for the Hungarian economy to transition to an intensive growth trajectory. Increasing R&D and innovation dynamism in this country would help Hungary move higher in global value chains.

4.4 FOREIGN TRADE AND ECONOMIC STRUCTURE

For small open economies, boosting exports is one of the fastest ways of convergence. It is also important, however, how broad the foundations for foreign trade and growth in such are. There are 35,000 SMEs with export operations in Hungary, and their performance is a key determinant of the country's competitiveness, while the competitiveness of the country also is key to the prospects of the exporters. In 2023, Hungary ranked 25th out of the 27 EU Member States in the area *Foreign trade and economic structure*, with 30.7 points. Compared to 2022, Hungary's performance decreased by 6.7 points, which is lower than the average for the V3 (32.3 points), the EU (41.8 points) and the Northern TOP5 countries (46.7 points). The decline in Hungary's score was mainly driven by a deterioration in the terms of trade and a fall in the share of high-tech exports.

Chart 4.4
Results of MNB Competitiveness Index at the area of Foreign trade and economic structure in the Member States of the EU



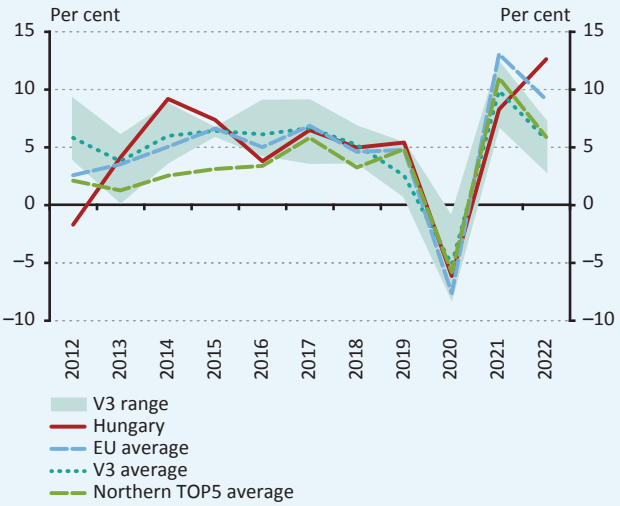
Source: MNB calculation

Given its historical and geographical characteristics, Hungary is an open economy, and thus it is highly dependent on developments in external markets, in both the cyclical and the structural sense. There are a number of positive effects of the highly competitive nature of some of Hungary's major exporter sectors (mainly the automotive and electronics industries, which are dominated by foreign firms), but these sectors are only moderately integrated into the domestic economy. Manufacturing companies (most of which direct their sales to export markets) rely mainly on imports for their production inputs. By contrast, the Czech Republic and Slovakia, which have similar economic structures, have a higher share of domestic inputs in manufacturing. An economic structure offering greater long-term development potential is one in which multinational companies, which are responsible for a significant share of Hungarian exports, work with an increasing number of domestic suppliers and rely on value added in Hungary.

Exporting is still concentrated in Hungary, with relatively few exporter SMEs; nevertheless, the proportion of exporting SMEs is higher in Hungary than the average for the Visegrád region. 5.2 per cent of SMEs export in Hungary and 5.7 per cent in Slovakia, and the ratio is more than one percentage point higher in Poland. By contrast, the rate is much lower in the Czech Republic, where less than 2 per cent of SMEs enter foreign markets. The gap is significant in comparison to other countries in the region: more than 16 per cent of SMEs export in Slovenia and more than 12 per cent do so in Austria, which puts these two countries in the TOP3 in Europe, above the average of the Northern TOP5. In Hungary, the 20 largest companies account for 30 per cent of exports, while in Poland exports are concentrated at only about half of that rate.

One of the main structural prerequisites for competitiveness is increasing the domestic value added of exports, most importantly, a wider use of knowledge-intensive services and promoting the creation of knowledge-intensive jobs. Increasing the share of services within total exports is also an important priority; the Covid-19 pandemic hit services exports through the damage it did to tourism and transportation. In 2022, the events of the Russia-Ukraine war also set back the recovery of international tourism in the region.

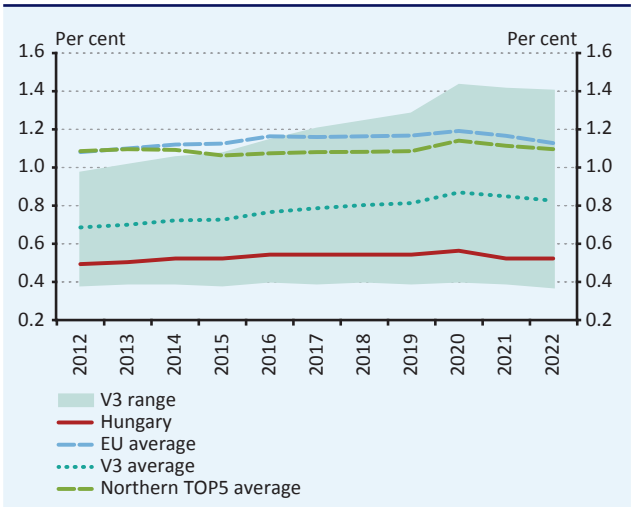
4.4.1 Annual change in export volumes



Source: Eurostat

Because of its open structure, the performance of the Hungarian economy strongly depends on changes in exports. Prior to the pandemic, exports exhibited robust growth. In 2020, export volumes dropped as a result of the pandemic, although to a lesser degree than in the EU on average. In 2021 H1, goods exports performed well (partly due to a low base), and net FDI inflows to Hungary continued. As a result of chip shortages worsening at the end of the year, exports of goods contracted, whereas exports of services grew further in year-on-year terms. In 2022 H2, export growth picked up significantly as supply disruptions eased, and the annual average growth of over 10 per cent outperformed the EU, the Northern TOP5 and the V3 averages. Domestic goods exports expanded substantially in 2023 Q1 and managed to grow in the second quarter as well. However, exports of services fell sharply owing to one-off effects in the second quarter. In 2023 Q3, the annual change in export volumes turned to decline, in parallel with more subdued domestic industrial production in Hungary.

4.4.2 Export market share

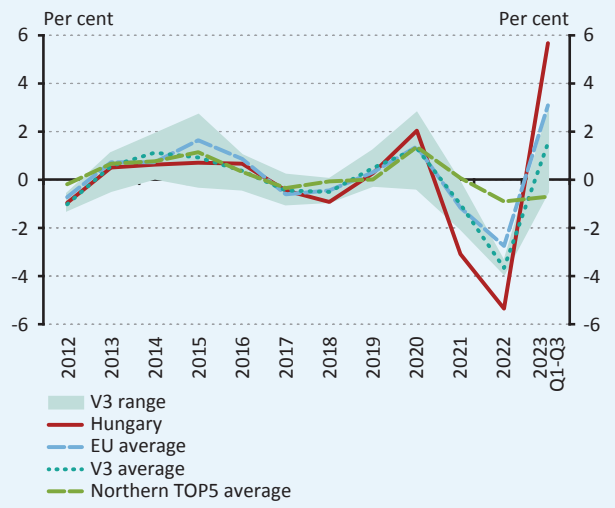


Note: Share of global exports.

Source: Eurostat

Hungary's share of global exports has stagnated in recent years and declined in 2021, just as it did in the EU and the Visegrád countries. In 2022, the Hungarian ratio returned to stagnation after its decline in the previous year, while the averages of the EU, the Visegrád countries and the Northern TOP5 registered additional minor decreases. Hungary currently accounts for roughly half a per cent of world exports, while the combined weight of the Visegrád countries in the world economy is around 3 per cent, with the Polish economy accounting for the largest share, at nearly 1.5 per cent. In 2020, Hungarian exports fell only moderately compared to Europe, which led to a further increase in export market share. Overall, the change in the Hungarian export market share over the whole period under review was below the average of the V3, the EU and the Northern TOP5.

4.4.3 Yearly change of terms of trade

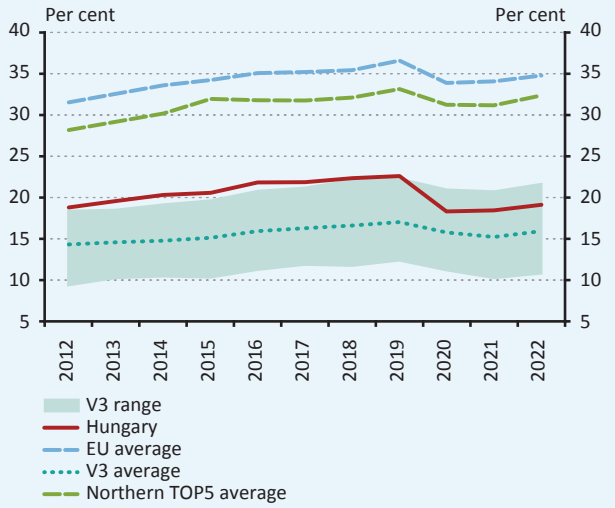


*Note: Trade of goods and services. *Regarding 2023 data is the average of the first three quarters' year-on-year change.*

Source: MNB calculation based on OECD and Eurostat

The terms of trade, i.e. the relative development of export versus import prices, is an indicator of competitiveness, in addition to the cyclical trends. For example, a sustained decline in the terms of trade (above and beyond oil price shocks) may indicate structural problems. By contrast, a sustained improvement in the terms of trade promotes convergence in real terms. The more open an economy is, the more important the positive changes in the terms of trade are. It is therefore a positive trend that terms of trade improved in Hungary in the first half of the previous decade, with the price of exports increasing in excess of the price of imports. Hungary's terms of trade continued to improve in 2019, when it surpassed the Northern TOP5, while in 2020, its 2-per cent rate of increase placed it above the EU and V3 averages as well. In 2021 H2, however, trends adverse for the terms of trade started: high commodity and energy prices caused a significant deterioration in the terms of trade, amounting to around 3 per cent over the year. The negative trends continued throughout 2022, as commodity and energy prices rose drastically, and the terms of trade deteriorated further. In 2023, the drop in commodity and energy prices was reflected in a substantial improvement in the terms of trade.

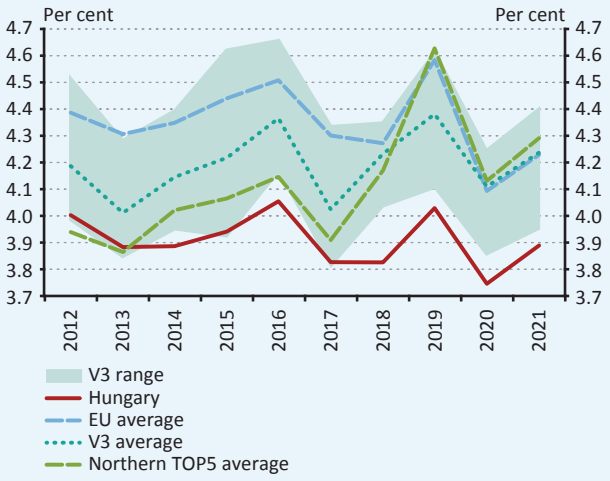
4.4.4 Ratio of services export



Source: Eurostat, MNB

Developed economies are characterised by the increasing weight of services within their exports. The strengths of this export group include its high domestic value-added content as well as the fact that it is more crisis-resilient than goods exports, which are exposed to cyclical factors. In addition, the flow of services cannot be hindered by classical customs instruments, nor do they depend on logistical barriers. The weight of services within Hungary's exports has been rising over the past decade and has exceeded 22 per cent. In 2020, however, the Covid-19 pandemic caused a significant decline in the services sectors, especially in accommodation services and catering. The weight of services within total exports contracted to 18 per cent. Given that the Hungarian tourism sector represents the 2nd highest weight within the Visegrád region, the absence of foreign tourists was reflected in the decline in the weight of services within exports. The approx. 4-percentage point drop in the indicator in Hungary in 2020 exceeded the average decline measured in the V3, the EU and the Northern TOP5. The ratio increased somewhat in Hungary in 2021 and continued to increase in 2022, at a similar rate to the EU growth. The Hungarian figure is more than 10 percentage points below both the EU and the Northern TOP5 averages, but above the V3 average.

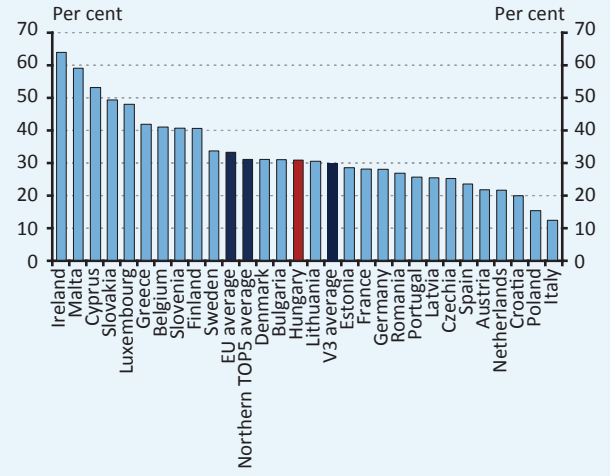
4.4.5 Average customs tariffs in foreign trade



Source: UNESCAP, MNB

Foreign trade terms can be categorised into tariff (tariff-like) and non-tariff (regulatory) conditions. Since non-tariff barriers are a difficult-to-quantify category of analysis, we present the average tariff rate characterising the individual bilateral relationships. Hungarian companies benefit from extremely favourable customs terms in the EU. According to the latest figures, at below 4 per cent, Hungary's tariff is the 9th lowest, owing partly to the country's integration into global value chains and partly to an active foreign trade policy. The variation in tariff rates is not significant across the EU, however.

4.4.6 Export concentration index – top20 (2021)

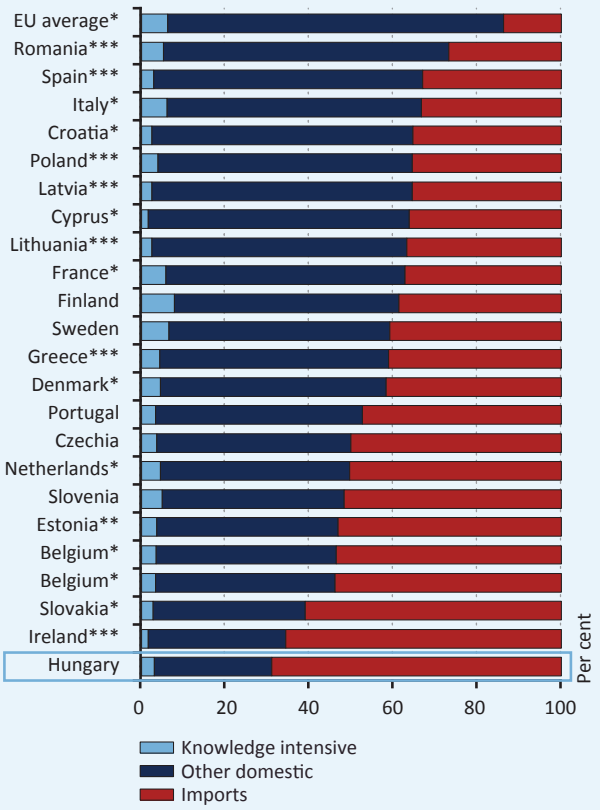


Note: Share of the top 20 companies based on nominal exports. Goods export only. In case of Bulgaria, Croatia and Poland only data from 2020 are available.

Source: Eurostat, MNB

Besides its aggregate level, it is also important how widely exports are distributed across operators. Fewer firms are internationally competitive if they are concentrated, while if they are broad-based, the economy as a whole is more competitive and economic growth is more inclusive. The top 20 exporting companies in Hungary account for 30 per cent of its foreign trade, which puts Hungary in the middle of the European field, close to the V3, but somewhat below the EU and the Northern TOP5 averages. In the Czech Republic and Poland, foreign trade in these terms is more balanced than in Hungary and Slovakia. Among the Northern TOP5 economies, Estonia and the Netherlands have a more balanced external trade base, while Denmark, Sweden and Finland are in the middle of the rankings, similarly to Hungary, but closer to the EU average.

4.4.7 Decomposition of manufacturing production by intermediate consumption (2020)

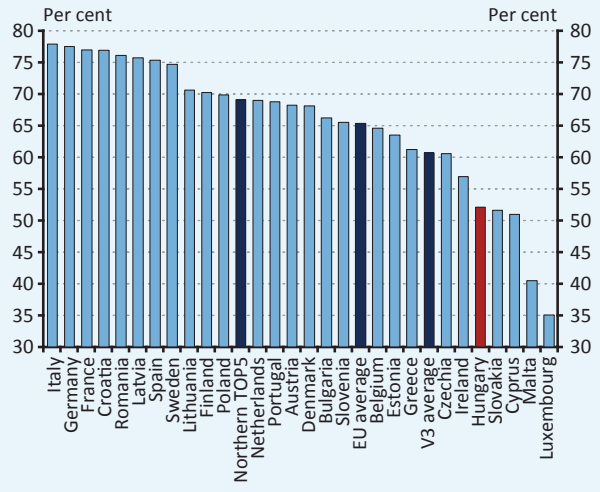


*Note: In percentage of total intermediate use. Taxes and subsidies are excluded from calculation. *2019 data. **2018 data. ***2015 data. There are no data available for Bulgaria, Luxembourg, Malta and Germany.*

Source: Eurostat, MNB

In Hungary, manufacturing is less integrated into the economy as a whole. Most foreign-owned companies operating in the sector use little domestic input (28 per cent), nor do they use knowledge-intensive services (3 per cent). Of the countries surveyed, Hungary has the highest share of imports within its manufacturing output (69 per cent). Slovakia is in a similar position with a domestic weight of 36 per cent, while the Czech Republic and Poland have much higher domestic contributions of 46 per cent and 61 per cent, respectively. The use of knowledge-intensive services is low in the region as a whole. This is a priority area for development, as it would offer an opportunity for a breakthrough in the Visegrád region, including Hungary, where national economies are poor in raw materials.

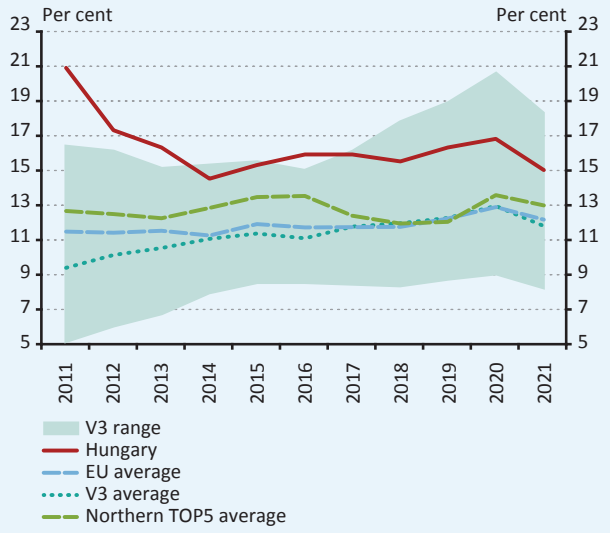
4.4.8 Domestic value added share in gross exports (2020)



Source: OECD

In exports, the higher the value added content, the more the income and benefits from exports reach the widest possible range of beneficiaries within the country. Globalisation has made production chains more complex, so economists can rely on international input-output tables to estimate the volume of value added produced in one economy within the entire international value chain. At 52 per cent, the domestic value added share of domestic exports is low in Hungary and is one of the lowest in the EU. If the weight of domestic developments within exports were higher, or if more phases of the value chain were operated in Hungary, the domestic value added in exports would rise, which would also accelerate economic growth. The Hungarian indicator is below the average of the V3 region (60.7 per cent), the EU (65.4 per cent) and the Northern TOP5 (69.1 per cent) as well. The Czech and Polish ratios are substantially higher and, with a domestic value added content of around 70 per cent, and the latter somewhat outperforms even the Northern TOP5 average.

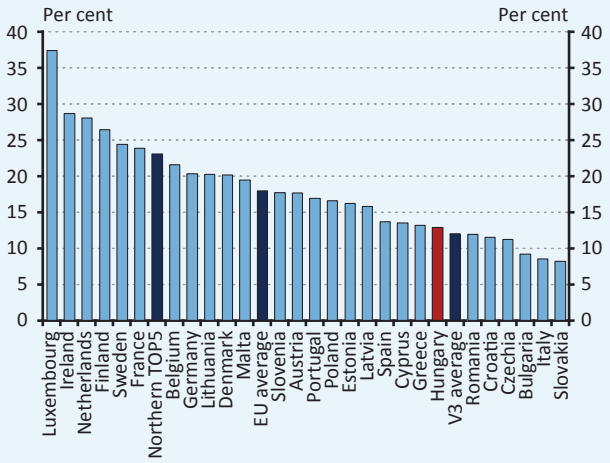
4.4.9 Exports of high technology products as a share of total exports



Source: Eurostat

Hungary has traditionally had a high share of high-tech products within its total exports. International demand for products with high technical complexity has been stable at around 15–17 per cent in recent years and did not decline even during the Covid-19 pandemic. In 2021, a global shortage of semiconductors dampened demand, which nevertheless remained stable above the EU, V3 and Northern TOP5 averages. Hungary and the rest of the region show a mixed picture in terms of manufacturing trends. While the share of high-tech products in the total national export is above the EU average, these are mainly produced by foreign-owned firms that are not sufficiently embedded in the Hungarian economy, while their production relies largely on imported high-tech components.

4.4.10 Employment in knowledge-intensive activities – manufacturing (2022)

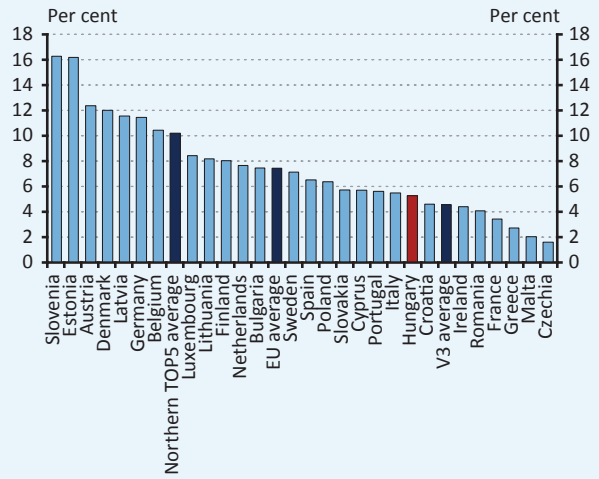


Note: Ratio of managers and self-employed professionals (FEOR divisions 1 and 2) versus total employment.

Source: Eurostat, MNB

One important precondition for the shift towards higher value-added activities is the wide availability of highly skilled labour in the manufacturing sector. Sectoral and product structure data indicate that the products of high-tech industries such as pharmaceuticals, electronics and the machine industry do indeed account for a high weight within exports. However, when it comes to the labour market, the share of people employed in knowledge-intensive jobs in Hungary and the V3 as a whole is below the EU average, at around 13 and 12 per cent, respectively. The gap compared to the Northern TOP5 countries is substantial, at around 10 percentage points.

4.4.11 Ratio of SMEs pursuing export activities (2020)



Note: Industrial, utility, construction, trade, transport and storage, information-communication, professional services, administrative services.

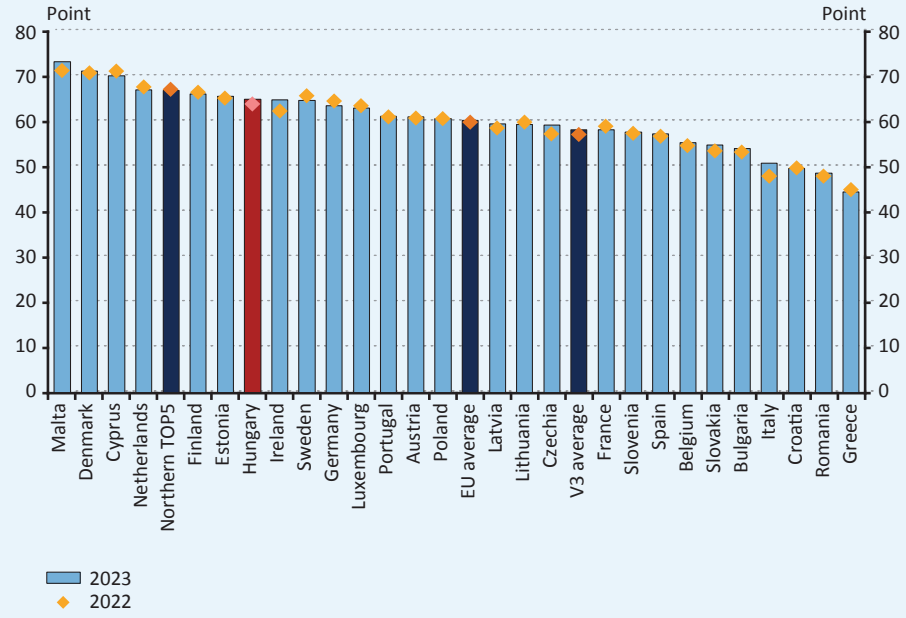
Source: Eurostat, MNB

Hungary has a large number of SMEs exporting, but their ratio to the total SME population (5.2 per cent) is well below the EU and Northern TOP5 averages, which are 2 and around 5 percentage points higher, respectively. The Hungarian figure is still above the V3 average, due to the low Czech rate of 1.6 per cent. Two thirds of the Hungarian SMEs that are exporters within the selection of sectors (industry, utility, construction, trade, transport and storage, information-communication, professional services, administrative services) are microbusinesses. It is important to note that the statistics only include firms that are active in the external market independently. In reality, Hungarian SMEs may have a much greater presence on foreign markets through supply chains. Looking ahead, it may increase Hungary's competitiveness if more and more SMEs were to enter foreign markets on their own.

4.5 LABOUR MARKET

Human capital and productivity is a crucial factor for economic growth, convergence and competitiveness. The quantitative and qualitative characteristics of human capital affect economic growth through several channels. Firstly, it exercises an impact through the size of the labour force available in the economy, which is measured by the rates of activity, employment and unemployment. Secondly, it plays a role through labour productivity, which is largely determined by skill levels and health. Hungary ranked 7th in the EU in the area *Labour market* with 64.6 points in 2023, ahead of the EU (59.9 points) and Visegrád (58.0 points) averages. Compared to 2022, Hungary's score has increased by 1.1 points. The improvement in Hungary's score was mainly due to a reduction in the tax wedge.

Chart 4.5
Results of MNB Competitiveness Index at the area of Labour market in the Member States of the EU



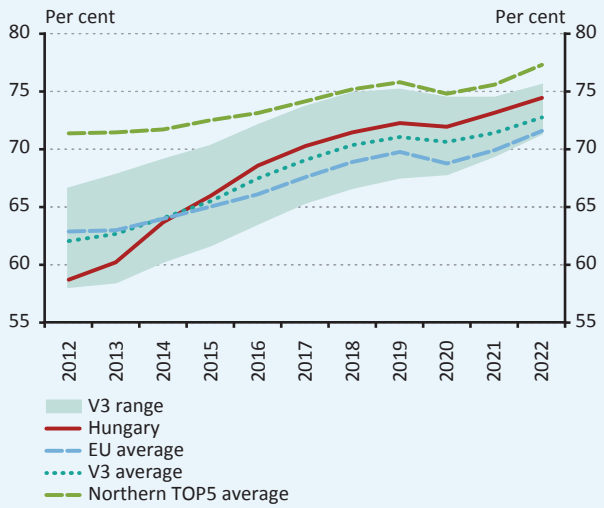
Source: MNB calculation

In Hungary, the steadily improving labour market trends of the 2010s were temporarily interrupted by the crisis caused by the Covid-19 pandemic, but employment has been at historically high levels since then. Between 2010 and 2019, the Hungarian employment rate grew at the 3rd highest rate in the EU, and the domestic labour market approached full employment. The Covid-19 crisis caused a small interruption in these positive developments, as the employment rate declined and unemployment rose to a small degree. As the economy reopened, the labour market started to recover, helped by the measures of the central bank and the government. The employment rate for 15–64 year olds rose to 74.4 per cent in 2022, the highest level measured in Hungary since it became a market economy. The Hungarian indicator is above the average of both the EU and the Visegrád competitors, and has shown the 2nd highest growth in the EU since 2010. As employment has risen, the unemployment rate has also improved in the post-Covid period, falling by 0.5 percentage points year-on-year, to 3.6 per cent in the 15–74 age group in 2022, which is better than the EU average.

Tightening of the labour market continued in 2022, but there are still significant reserves in the more vulnerable labour market groups. In 2022, the number of job vacancies increased and the unemployment rate decreased compared to the previous year, and thus the labour market tightened further and was close to the pre-crisis levels measured before the pandemic. Labour shortages affect a wide range of sectors in Hungary, in particular manufacturing and IT. There are still significant labour reserves in groups such as young people, persons approaching retirement or with low qualifications. Rates of part-time and work-from-home employment, arrangements that became prevalent during the Covid-19 pandemic, declined in 2022 as the labour market recovered; Hungary is at the bottom of the EU rankings in both indicators.

In line with labour productivity, Hungarian wage levels remain significantly below the EU average. In 2022, average wages in Hungary grew at the fastest rate in the EU in nominal terms (based on national accounts data). However, higher inflation meant that the increase was only around 2 per cent in real terms. In addition to the strong underlying wage increase trends caused by the tight labour market, the large rise in the minimum wage and one-off benefits also contributed to the significant increase in nominal wages. Average wages in Hungary were still the 4th lowest in the EU in 2022. Measured at purchasing power parity, the wage level is in line with Hungarian labour productivity, which is around 70 per cent of the EU average. In 2022, the reduction in the social contribution tax and the abolition of the vocational training contribution led to a further reduction in the tax wedge.

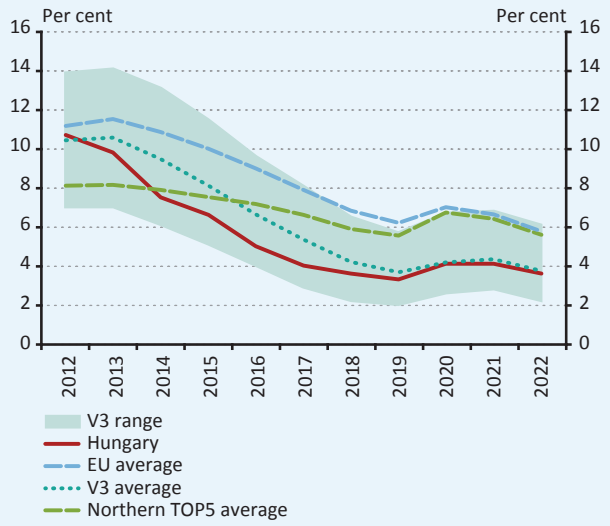
4.5.1 Employment rate in the 15–64 age group



Source: Eurostat

Between 2010 and 2019, the Hungarian employment rate grew at the 3rd highest rate in the EU, above the EU-wide average and approaching full employment. Positive developments stalled somewhat during the pandemic, but as the economy reopened in 2021, the labour market started to recover, helped by the measures of the central bank and the government (loan moratorium, wage subsidies). In 2022, the number of people aged 15–64 in employment was close to 4.6 million, the highest level in Hungary's history as a market economy. At 74.4 per cent, the employment rate was 1.3 percentage points higher in 2022 than in the year before, outperforming both the EU and the Visegrád averages (71.5 and 72.7 per cent) but lower than the average for the Northern TOP5 countries (77.3 per cent). The employment rate in Hungary continued to rise in 2023 Q1–Q3, averaging 74.7 per cent over the period and still remaining above the V3 and EU averages.

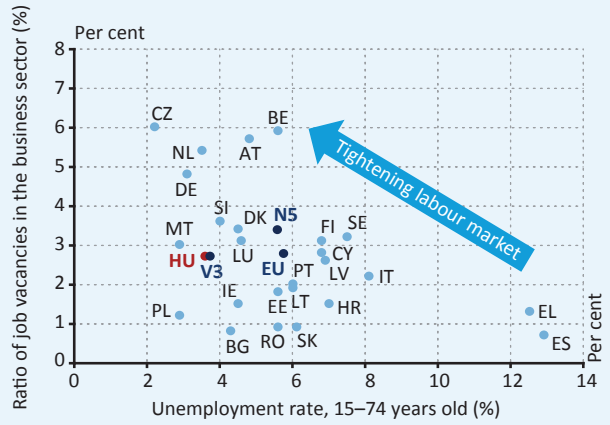
4.5.2 Unemployment rate in the 15–74 age group



Source: Eurostat

In line with employment trends, the Hungarian unemployment rate also improved significantly, falling to a historic low of 3.3 per cent before the outbreak of Covid-19. As a result of the pandemic, the indicator rose somewhat and stood at 4.1 per cent in 2020–2021 in the 15–74 age group. In 2022, the unemployment rate in Hungary decreased by 0.5 percentage points, to 3.6 per cent, which is above the historic low before the pandemic, but significantly lower than the average of around 6 per cent in the European Union and the Northern countries and close to the average of the Visegrád competitors (3.7 per cent). The Czech Republic has the lowest unemployment rate in the EU (2.2 per cent), while Spain has the highest (12.9 per cent). In 2023, the Hungarian unemployment rate rose moderately compared to the previous year, averaging 4 per cent in the first three quarters, but still remaining better than the EU average of around 6 per cent.

4.5.3 Labour market tightness in the European Union (2022)

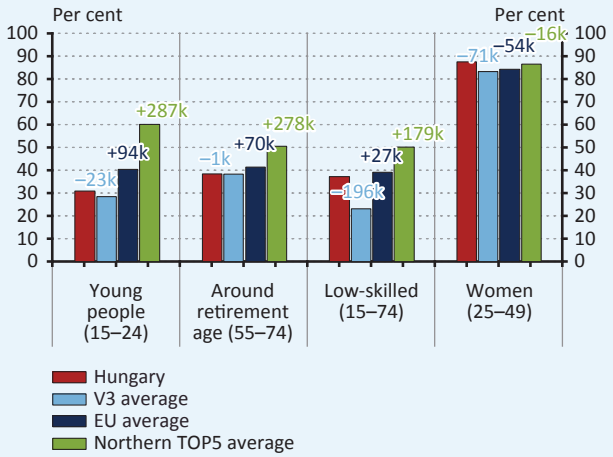


Note: Job vacancy rates in the business sector capture the number of vacancies as a percentage of total vacancies in sectors B to N. No data are available for France.

Source: Eurostat

Tightness in the Hungarian labour market increased steadily in the 2010s, before easing temporarily in 2020 as a result of the Covid-19 crisis. In 2022, the number of job vacancies increased again and the unemployment rate fell compared to the previous year, as a result of which the labour market tightened further and was close to pre-pandemic rates. The job vacancy rate in the private sector rose by 0.5 percentage points to 2.7 per cent, while the unemployment rate across the national economy fell by 0.5 percentage points to 3.6 per cent. Labour shortages affect a wide range of sectors in Hungary, in particular manufacturing, IT, and professional and administrative jobs. Labour markets continued to tighten in most EU countries in 2022. Unemployment rates in Hungary are lower, but job vacancy rates are similar to the EU average, and thus the Hungarian labour market remains tighter than the EU average overall. Among the V3 countries, labour market tightness is substantially above the regional and even the EU average in the Czech Republic. In 2023 Q1–Q3, the job vacancy rate decreased to 2.3 per cent in Hungary, while unemployment increased somewhat, and accordingly labour market tightness eased to a small degree compared to 2022.

4.5.4 Activity rates in vulnerable groups (2022)

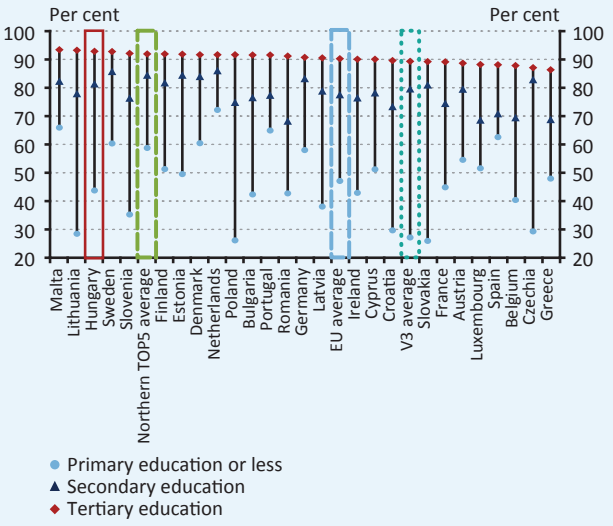


Note: The figures represent activity surplus/deficit versus the V3, EU and Northern TOP5 country groups.

Source: Eurostat

The labour market activity of vulnerable groups has increased overall during the past decade, but there continue to be significant labour reserves in several groups. In 2022, the activity rate of young people and people with lower educational qualifications fell somewhat in Hungary in year-on-year terms, while the activity rate of people around retirement age and women improved. Hungary's female participation rate outperforms the regional, EU and Northern TOP5 averages. However, significant labour reserves can still be identified among young people, persons approaching retirement age and those with low qualifications. Compared to the EU average, Hungary's largest growth reserve is in the participation rate of young people (more than 90,000 persons), but there is also room for boosting the activity of persons around retirement and low-skilled people. Compared to its Visegrád competitors, Hungary can boast better activity rates (for people around retirement age) or very similar activity rates in the vulnerable labour market groups.

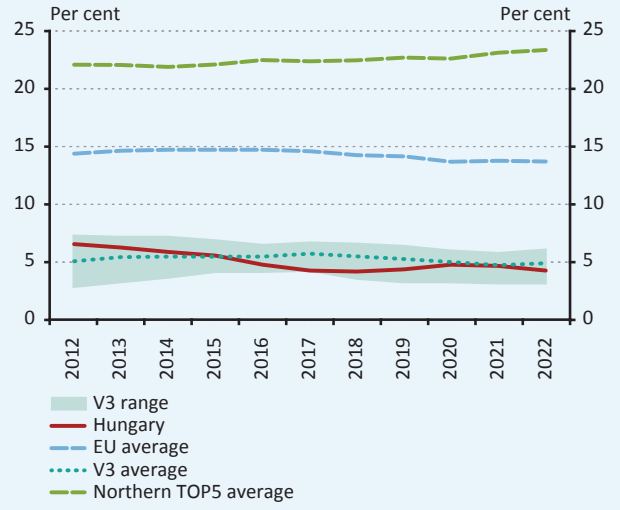
4.5.5 Activity rates by educational attainment level in the 15–64 age group (2022)



Source: Eurostat

There are significant differences in activity rates between the different educational attainment levels in Hungary, similarly to the EU average, while the Visegrád region shows greater differences than Hungary. In Hungary, the activity rate of 15–64 year olds with tertiary qualifications was 92.7 per cent in 2022, more than twice as high as in the segment of individuals with primary qualifications (43.8 per cent). The Hungarian activity rate is the 3rd highest in the EU among persons with tertiary education and, at 81.3 per cent, it also exceeds the EU (77.5 per cent) in the group with secondary education. By contrast, the activity rate of persons with primary education is lower (43.8 per cent) than the EU average (47.1 per cent). Compared to Hungary, the activity rate is significantly lower in the Visegrád countries in the low-skilled group (27.3 per cent) but there is no significant difference in the other categories.

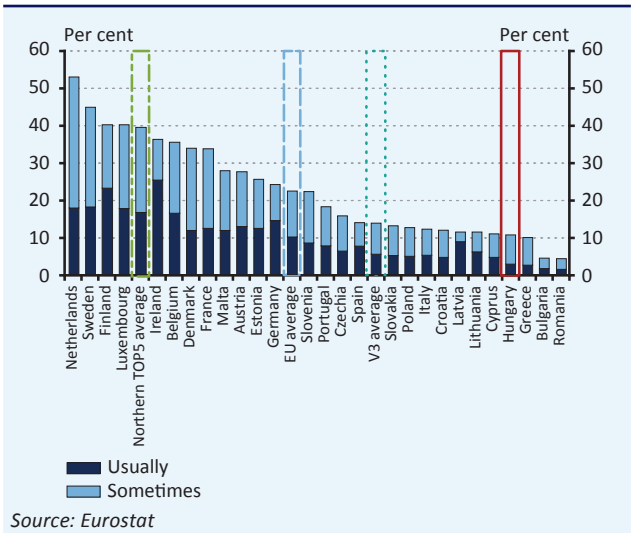
4.5.6 Part-time employees as a proportion of total employment in the 15–64 age group



Source: Eurostat

Part-time employment in the Visegrád countries is among the lowest in the EU. The proportion of part-time workers in Hungary rose somewhat during the pandemic, when reducing working hours was one of the ways for companies to adapt to lockdowns. In 2022, however, the proportion of part-time workers contracted to its pre-crisis level of 4.2 per cent in Hungary. The Hungarian indicator is the 4th lowest in the EU, well below the EU average of nearly 14 per cent. In the EU, part-time employment is traditionally most prevalent in the Northern countries as well as Austria and Germany, with rates above 20 per cent.

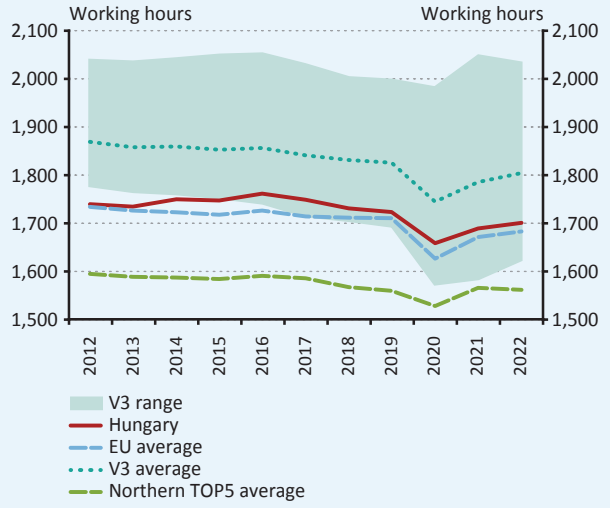
4.5.7 Employed persons working from home as a percentage of the total employment in the 15–64 age group (2022)



Source: Eurostat

During Covid-19, working from home became much more important to meet social distancing rules. The proportion of people working from home in Hungary has roughly doubled compared to pre-pandemic levels and continued to rise moderately in 2021. In 2022, the work-from-home rate declined as the proportion of people who worked from home occasionally contracted by 1 percentage point, to 7.8 per cent, and the share of individuals working from home regularly fell by 1.7 percentage points, to 2.8 per cent. Overall, 10.6 per cent of Hungarian employees worked from home with some degree of regularity in 2022, the 4th lowest rate in the EU. The average is 13.8 per cent for the V3, 22.4 per cent for the EU and 39.4 per cent for the Northern TOP5. As a result of the recovery of the labour markets, almost all EU countries recorded a decline in the proportion of people working from home in 2022.

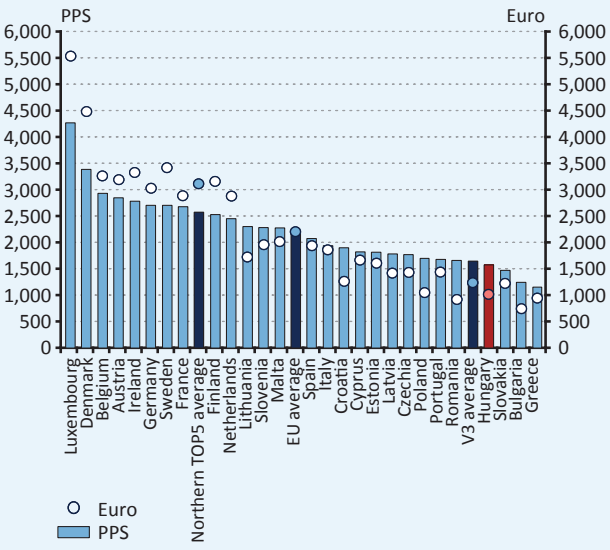
4.5.8 Average annual hours worked per employee



Source: AMECO

The number of hours worked was on a moderate downward trend in Hungary after the mid-2010s, before dropping more sharply in 2020 as a result of the higher prevalence of reduced-hours employment due to the pandemic. In 2021 and 2022, as the economy reopened and the labour market recovered, average annual working hours per employee increased again in Hungary, similarly to most EU countries. In 2022, the Hungarian indicator stood at 1,700 hours, somewhat higher than the EU average and significantly higher than the average of the Northern TOP5 countries (1,560 hours). However, the average of the Visegrád competitors (1,800 hours) is higher than the Hungarian average.

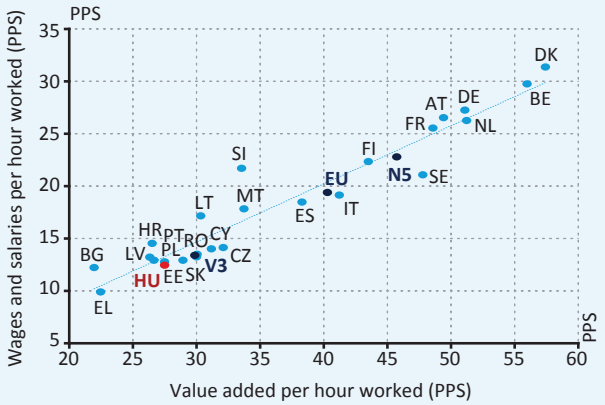
4.5.9 Monthly gross average wage in the European Union (2022)



Source: Eurostat

Gross domestic wages and salaries, calculated on the basis of national accounts, rose by 17.4 per cent year-on-year in 2022, which was the highest increase in the EU. In addition to the strong underlying wage growth trends caused by the tight labour market, the large rise in the minimum wage and one-off benefits also contributed to the more intensive rise in wages in Hungary. However, as a result of rising inflation, real wages increased by only around 2 per cent in Hungary and fell in most EU countries. The Hungarian average wage was the 4th lowest in the EU in 2022, both in euro and in PPS terms, at 46 per cent of the EU average wage in euro terms and 71 per cent in PPS. Average wages in Hungary are also somewhat below the average of the Visegrád peers. In 2023, nominal wages continued to rise in Hungary, but higher inflation meant that the real value of salaries contracted by 5.4 per cent on average in the first three quarters.

4.5.10 Labour productivity and labour costs in the European Union (2022)

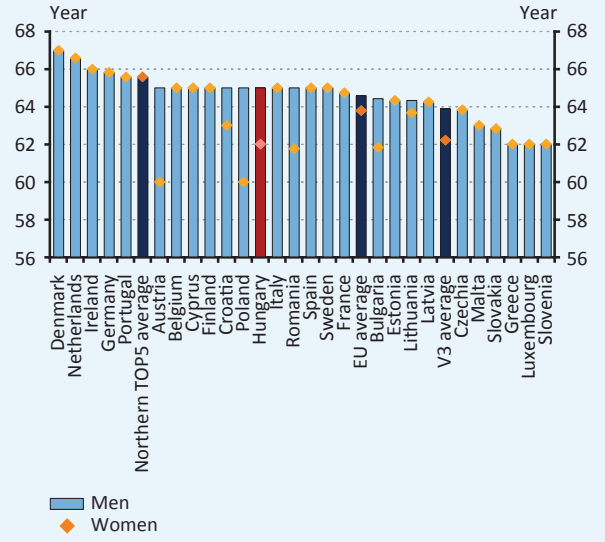


Note: Ireland and Luxembourg are not included as their figures are outliers.

Source: Eurostat

Despite average wages lagging significantly behind the EU average, domestic wage levels are in line with productivity. Although wages and salaries per hour worked and value added indicators rose more steeply in 2022 than in previous years (by 8 and 9 per cent, respectively), Hungary remains at the bottom of the EU rankings in both indicators. In parallel with the significant wage differentials, Hungary's productivity is around 70 per cent of the EU average and 60 per cent of the Northern TOP5 average in purchasing power parity terms. Among the Visegrád countries, Poland performs similarly, while Czechia and Slovakia have higher productivity and wage levels per hour worked than Hungary. For competitiveness and sustainable convergence, it is important that wage convergence in the long term go hand in hand with the productivity growth that underpins it.

4.5.11 Retirement age for people retiring in 2022

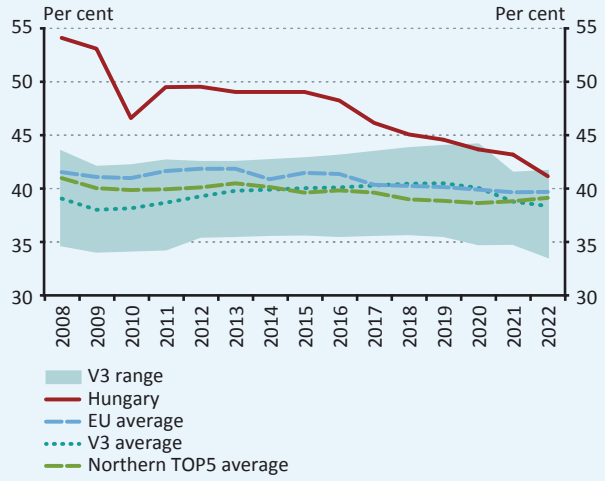


Note: Persons retiring in 2022 after working continuously since age 22.

Source: OECD: Pensions at a Glance 2023

The retirement age has been gradually increasing over the past decade in Hungary, reaching 65 years in 2022. Since women can claim their full pension before retirement age if they have reached the 40-year period required for eligibility, retirement age in their case stood at 62 years in 2022, based the assumption that they worked continuously since age 22. The 65-year retirement age for men is above the EU (64.6) and Visegrád (63.9) averages, but below the average for the Northern TOP5 countries (65.6). The retirement age of women is lower than the Northern and EU averages and similar to the V3 average due to the above consideration.

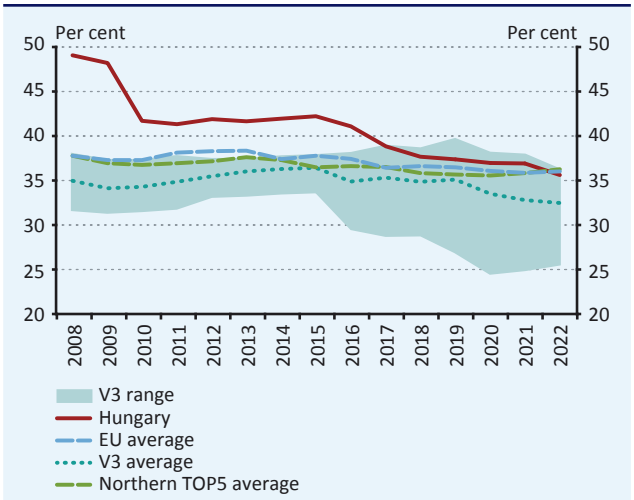
4.5.12 Average tax wedge of employees with no children, earning the average wage



Source: European Commission

The restructuring of the tax system after 2010 shifted the focus of tax centralisation away from labour taxes towards consumption taxes, resulting in a lower average tax wedge. A single rate of personal income tax (16 per cent) was introduced in 2011 and then reduced to 15 per cent in 2016. In 2017, the social contribution started to gradually decrease and starting from 27 per cent it reached 13 per cent by 2022. Effective from 1 January 2022, the 1.5-per cent vocational training contribution was abolished, and thus the only tax payable by employers is the 13-per cent social contribution. As a result, the average tax wedge of a childless worker earning the average wage is currently 41.2 per cent, which, despite its significant decline over the last decade, is still moderately higher than the average for the EU, the V3 and the Northern TOP5 (38–40 per cent).

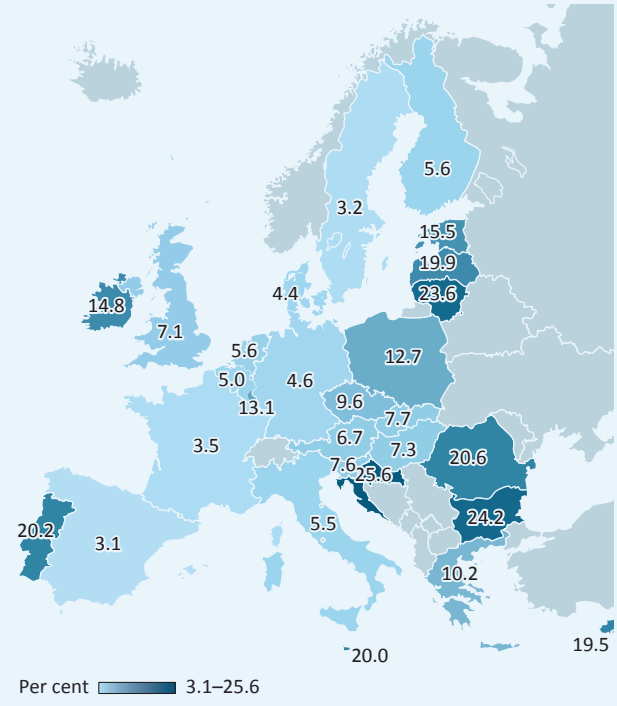
4.5.13 Average tax wedge of families with two children and average wage



Source: European Commission

The tax burden on families has also been significantly reduced in recent years as a result of tax restructuring, and tax benefits have resulted in a lower tax wedge for families than for single people. In addition to changes in personal income tax and social contribution tax, the reduction in the family tax wedge was helped by the introduction of the family tax base allowance in 2011 and the doubling of the allowance, in four phases between 2016 and 2019 for families with two children. In 2022, the average tax wedge for families with two children earning the average wage was 35.6 per cent, above the V3 average (32.4 per cent), but somewhat lower than the EU average (36 per cent) and almost 6 percentage points lower than the tax wedge for persons without children.

4.5.14 Ratio of the population living abroad within the total population of the EU countries (2020)



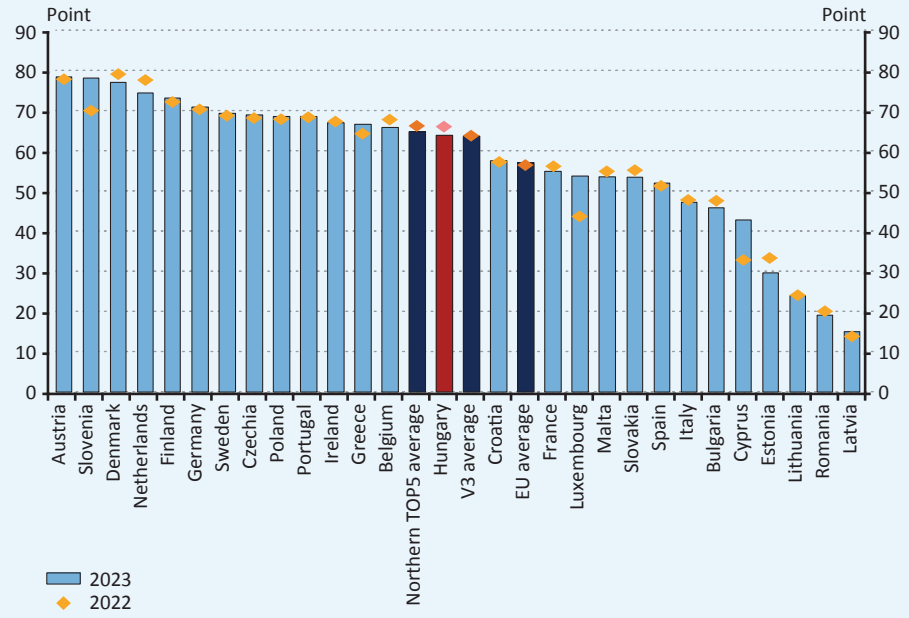
Source: UN, Eurostat

In line with regional trends, the number of citizens emigrated abroad in the past twenty years rose in Hungary as well. The process accelerated in the second half of the 2000s, mainly as a result of the 2008 crisis and the opening of labour markets in Western Europe. According to the UN, the number of Hungarian citizens living abroad habitually was 714,000 in 2020. However, Hungary is a country of moderate emigration compared to both the core countries and the region: at 7.3 per cent, the proportion of Hungarians living abroad is the lowest in the Central and Eastern European region and significantly below the EU average (11.8 per cent). Between 2019 and 2021, in contrast to previous years, the number of immigrants born in Hungary (returnees) exceeded the number of emigrants (by an average of 2,000 per year); in 2022, however, nearly 5,000 more emigrated than returned.

4.6 REGIONAL AND SOCIAL CONVERGENCE

Economic and regional disparities can affect the sustainability of economic growth. Indeed, one of the preconditions for sustainable growth is to ensure that the benefits of economic growth are shared by a broad section of society. Inequality may be a natural corollary and even a stimulus of market economy and competition, but too much inequality can undermine social cohesion and mobility, and thus jeopardise the sustainability and inclusiveness of economic growth and convergence. Conversely, moderate levels of inequality are less likely to generate social conflict, they promote equal opportunities and social mobility, and increase labour productivity, which are essential pillars for long-term economic and social development and successful convergence. In the area *Regional and social convergence*, Hungary was in the middle of the EU rankings, coming in 14th place with 63.7 points. Hungary's score is almost identical to the Visegrád average (63.5 points) and somewhat below the average of the Northern TOP5 countries (64.6 points), but is above the EU average (56.9 points). The Hungarian indicator fell by 2.2 points versus the previous year, mainly due to an increase in the deviation both of the Regional Competitiveness Index and per-capita investment.

Chart 4.6
Results of MNB Competitiveness Index at the area of the Regional and social convergence in the Member States of the EU



Source: MNB

In Hungary, regional disparities narrowed in several economic indicators since 2010, but inequalities remain significant. Similarly to other countries in the Central and Eastern European region, Hungary is characterised by the dominance of its capital, while the level of development of each domestic region is largely influenced by its location within the country (Hungary has marked differences between its Eastern and Western regions). The gap between dynamic centres and slower-growing peripheral areas widened after the political transition in Hungary (Káposzta, 2014).[4] As a result of the positive economic developments in the 2010s, targeted government measures and regional development programmes, the gaps between the counties have narrowed in several economic indicators, but they remain considerable. Regional disparities widened moderately for some indicators (labour market indicators) in the wake of the Covid-19 pandemic, but with the recovery, regional disparities narrowed or remained substantially unchanged in 2022.

[4] Source: Káposzta J. (2014): Területi különbségek kialakulásának főbb összefüggései (Key correlations of the development of regional differences)

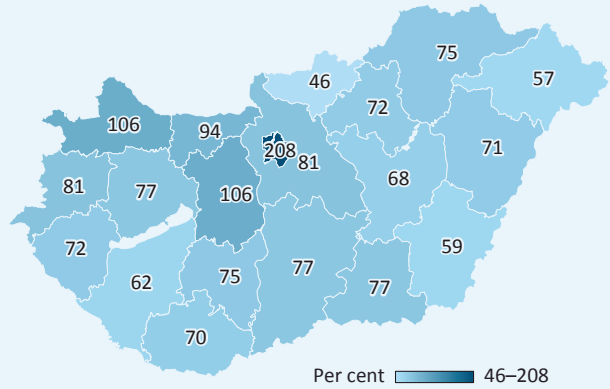
In 2021, the development level of Budapest was also significantly higher than that of the counties; the capital is the only Hungarian NUTS 3 region with a development level above the EU average. GDP per capita in Budapest was more than double the national average and one and a half times the EU average in 2021 too, while the least developed county, Nógrád, was at only 46 per cent of the national average and one third of the EU average. While most Hungarian counties and Budapest have improved their positions in recent years in an EU-wide comparison, most of the counties in Hungary (15 counties) are in the bottom quarter of the EU development rankings. The development gap across the counties was the highest in 2009, then steadily narrowed until 2015 and has remained more or less unchanged since then.

Strong inflows of foreign direct investment, advanced business services and the output of the manufacturing sector have contributed significantly to improving the development level of the counties over the past decade. In 2022, geographical differences in industrial production and investment were similar to previous years. Industrial production increased in most of the counties and in the capital compared to the previous year, while investment activity decreased in most counties. Per capita investment was the highest in Budapest in 2022 too (2.5 times the national average) and the lowest in Nógrád county. Industrial output per capita was highest in the counties Komárom-Esztergom and Győr-Moson-Sopron, more than double the national average, whereas some counties did not reach even half of the national average.

Labour market participation rates continued to improve in most counties in 2022 as the labour market recovered after the Covid-19 crisis and regional disparities narrowed somewhat. Employment rates increased in a large majority of counties in 2022 and will exceed pre-crisis levels. In most counties, the labour reserve (unemployed persons and public workers) decreased, while the number of job vacancies grew compared to the previous year. In some more highly developed regions, strong labour demand has led to a virtual depletion of the labour reserve, while several less developed counties are characterised by higher labour supply and low labour demand.

In terms of income and wealth inequalities, Hungary has traditionally been among the countries with lower inequality both in global and EU comparisons. As in previous years, the income Gini index remained stable during the Covid-19 crisis and has declined somewhat over the last two years. The indicator remains above the V3 average, but below the EU average. The Hungarian wealth Gini coefficient increased moderately during the pandemic, but fell somewhat in 2022. The Hungarian figure, which is below the EU average, is influenced largely by real estate wealth, as Hungary has traditionally been dominated by home ownership. The AROPE indicator, which measures the proportion of the population at risk of poverty or social exclusion, has fallen the most steeply in Hungary out of all EU members since 2015 and continued to fall in 2022. The Hungarian AROPE figure remains more favourable than the EU average, but exceeds the average of the other Visegrád countries.

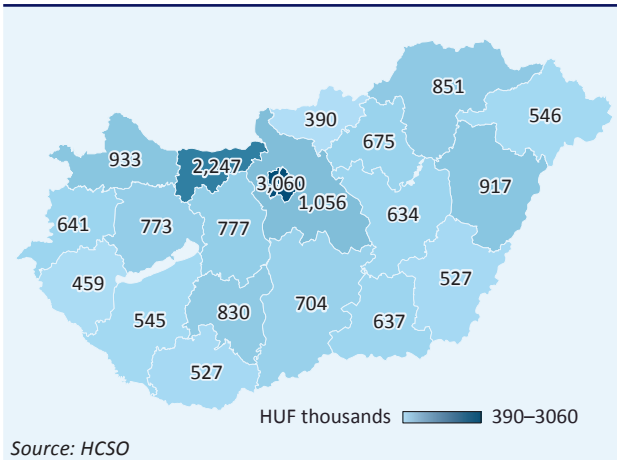
4.6.1 GDP per capita as a percentage of the national average by county (2021)



Source: HCSO

In Hungary, the development differences among the counties have narrowed overall since 2010, yet substantial inequalities remain, especially when comparing the capital and the counties. In 2021, Budapest registered a development level that was still more than twice the national average (208 per cent) and is one and a half times the EU average in purchasing power parity terms. Also, Budapest and Pest county account for almost half of the national GDP. The counties of Győr-Moson-Sopron, Fejér and Komárom-Esztergom have GDP per capita above or around the national average, while the majority of counties have a development rate of between 60 and 80 per cent. The least developed county, Nógrád, rates at only 46 per cent of the national average and only one third of the EU average. In 2021, the relative development level of Fejér county increased the most in a year-on-year comparison (7.7 percentage points), while Győr-Moson-Sopron county recorded the steepest decrease (-6.9 percentage points). In 2021, the overall inequality between counties was similar to the preceding years.

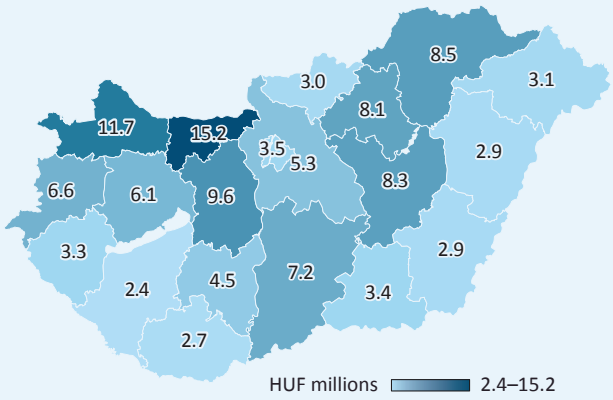
4.6.2 Investment per capita by county (2022)



Source: HCSO

In 2022, Budapest-based business entities continued to receive the highest proportion of investments, accounting for 44 per cent of all capital expenditure. Investment per capita increased in only 7 counties in year-on-year terms, with the highest growth rates measured in Komárom-Esztergom (37 per cent) and Hajdú-Bihar (32 per cent) counties, due to development projects in the manufacturing sector. The largest drops (above 10 per cent) were recorded in the counties Zala and Bács-Kiskun, partly due to a high base in the previous year. Per capita investment was the highest in Budapest (HUF 3.1 million), which is 2.5 times the national average (HUF 1.2 million). Komárom-Esztergom county also exceeded the national average, with HUF 2.2 million per capita, while the lowest investment activity was recorded in Nógrád (HUF 390,000).

4.6.3 Industrial production per capita by county (2022)

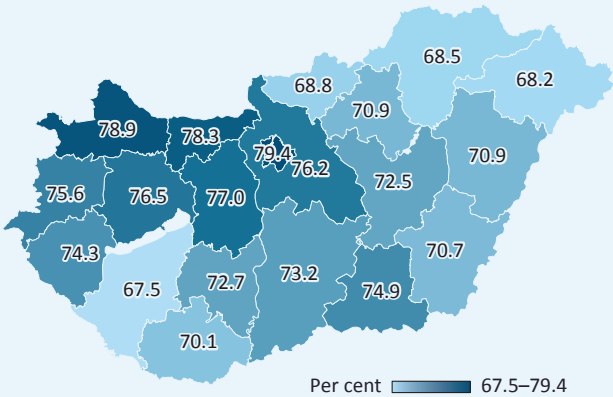


Note: Data from businesses with 5 or more employees, by place of business.

Source: HCSO

Industrial production increased in most counties as well as in the capital in 2022. Output increased most steeply, by more than 30 per cent, in Komárom-Esztergom county, while Pest, Baranya and Nógrád also achieved growth of more than 10 per cent. Production volumes decreased most markedly (by 10 per cent) in Zala county. In 2022, industrial output per capita was still highest in the counties Komárom-Esztergom and Győr-Moson-Sopron (HUF 15.2 and 11.7 million, respectively), more than double the national average (HUF 5.6 million). In the counties Somogy and Baranya, the indicator stood below half the national average. In terms of industrial production per capita, regional differences were broadly similar to the averages of recent years.

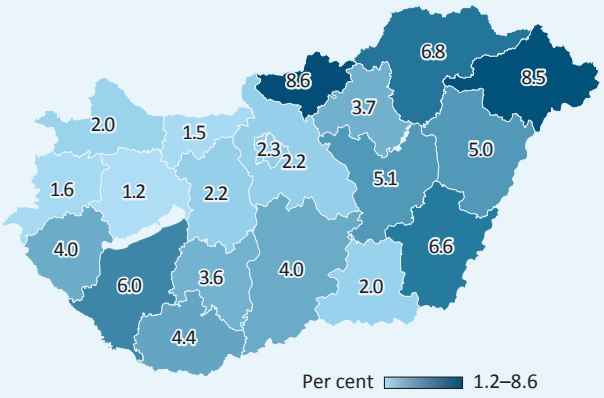
4.6.4 Employment rate in the 15–64 age group by county (2022)



Source: HCSO

As the labour market recovered after the pandemic, employment trends continued to improve in 2022, with employment rates increasing year-on-year in a large majority of the counties. The employment rate increased by the highest rate, 4.2 percentage points, in Jász-Nagykun-Szolnok county, and rose everywhere except in the counties Békés and Vas (where decreases of 0.3 and 1.1 percentage points, respectively, were measured). Employment exceeded pre-pandemic levels in all but two counties (Vas and Zala). In 2022, the employment rate was highest in Budapest, at 79.4 per cent, but the West and Central Transdanubian counties, as well as Pest and Csongrád-Csanád all exceeded the national average (74.4 per cent). Employment rates remain the lowest in Somogy county and Northern Hungary, below 70 per cent. The geographical disparities between counties decreased compared to the previous year.

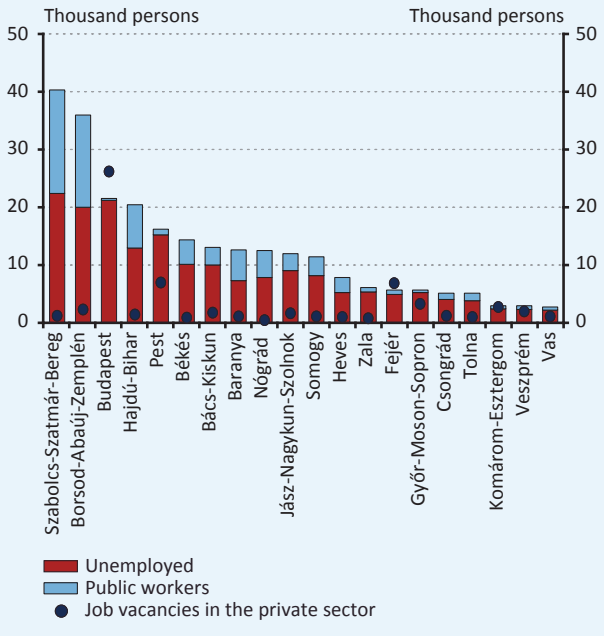
4.6.5 Unemployment rate in the 15–64 age group by county (2022)



Source: HCSO

In 2022, the unemployment rate fell in most counties and in Budapest, as employment increased. Nógrád county saw the largest decrease, by 2.1 percentage points year-on-year, but it still has the highest unemployment rate at 8.6 per cent. The indicator increased most in Tolna county, by 0.9 percentage points. In 2022, the unemployment rate was lowest in Veszprém county, at 1.2 per cent, while unemployment of around or below 2 per cent was measured in Western and Central Transdanubia, and the counties Pest and Csongrád-Csanád. In addition to Nógrád, the counties Szabolcs-Szatmár-Bereg, Borsod-Abaúj-Zemplén, Békés and Somogy were significantly above the national average (3.7 per cent). In terms of unemployment, the disparities among the counties decreased compared to 2021.

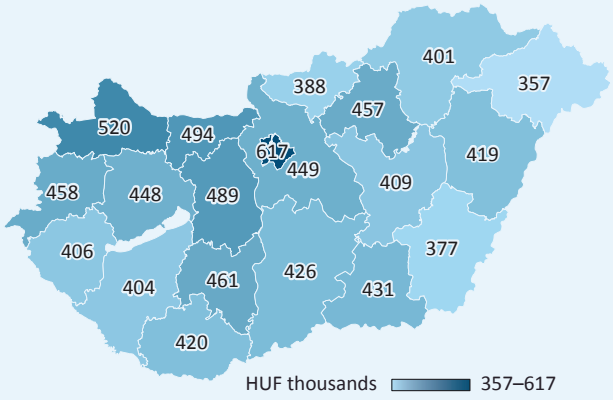
4.6.6 Number of private sector vacancies and labour reserve (unemployed persons and public workers) by county (2022)



Source: HCSO, MNB calculation

In 2022, the geographical distribution of labour reserves and job vacancies remained uneven across the counties. The number of unemployed persons and public workers, which constitute the labour reserve, also decreased year-on-year (by a total of 30,000 persons nationwide), bringing the total labour supply to around 250,000 persons in 2022. By contrast, labour demand, i.e. the number of vacancies in the private sector, was around 62,000. The labour reserve decreased in 14 counties and in Budapest, while the number of job vacancies increased in all counties except Heves and Szabolcs-Szatmár-Bereg in 2022. The number of job vacancies per 100 unemployed persons was the highest in Fejér county (142), and also exceeded 100 in Budapest and Komárom-Esztergom county. The ratio is lowest in the counties Nógrád and Szabolcs-Szatmár-Bereg (4 and 5, respectively). Notably, in some more highly developed regions, strong labour demand has led to a virtual depletion of the labour reserve, while several less developed counties are characterised by higher labour supply and low labour demand.

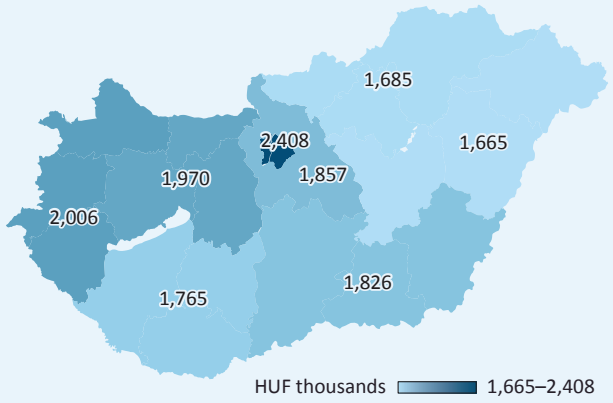
4.6.7 Gross monthly average wage by county (2022)



Note: Gross monthly average wage for full-time employees.
Source: HCSO

In 2022, strong underlying wage developments, a considerable rise in the statutory minimum wage and targeted wage increases led to a dynamic, double-digit boost to average wages in all counties. Compared to the previous year, the gross monthly average wage of full-time employees increased the most in Nógrád county (20.4 per cent) and the least in Tolna county (14.4 per cent). In 2022, Budapest again recorded the highest gross average wages, of HUF 617,000, while the indicator for Győr-Moson-Sopron county (HUF 520,000) also exceeded the national average (HUF 500,000). The average wage was the lowest in Szabolcs-Szatmár-Bereg county (HUF 357,000), which is 71 per cent of the national average. Wage differentials among the counties decreased compared to the previous year.

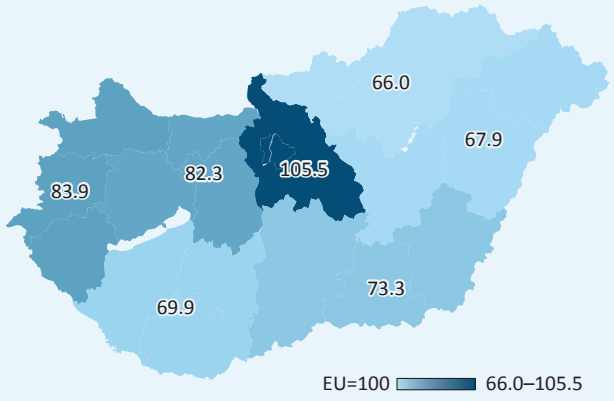
4.6.8 Annual net household income per capita by region (2021)



Source: HCSO

In 2021, per capita household income continued to rise in all the regions. Compared to the previous year, net per capita income increased the most in Southern Transdanubia, by 15 per cent, and the least in Pest county, by 3.3 per cent. In 2021, Budapest had the highest annual net per capita income, of HUF 2.4 million, while the lowest figure was recorded in the Northern Great Plain region (HUF 1.67 million). Two other regions (Western and Central Transdanubia) exceeded the national average (HUF 1.92 million). Income disparities among the regions decreased compared to the previous year. In addition to regional disparities, there are also differences by type of settlement: the larger the local population, the higher the per capita income of a household.

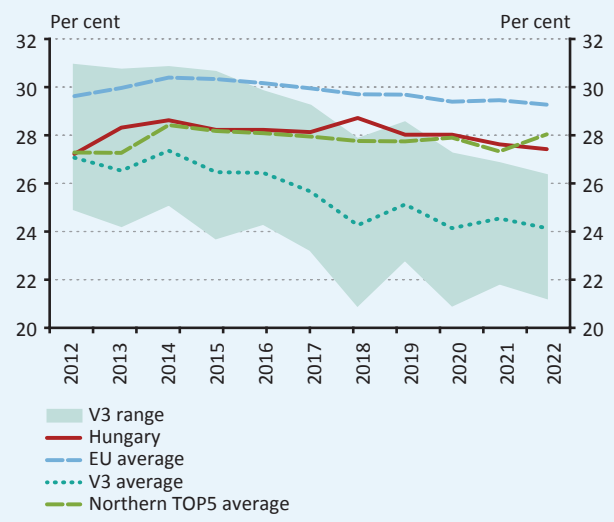
4.6.9 Regional Competitiveness Index (RCI) by region (2022)



Source: European Commission

Published once every three years, the Regional Competitiveness Index compares the performance of the NUTS-2 regions of the EU in relation to 11 factors that cover economic fundamentals (e.g. institutions, education, health), efficiency (e.g. labour market efficiency) and innovation (e.g. technological readiness). Hungary's performance is weakest in the innovation sub-pillar and best in the efficiency sub-pillar, mainly due to labour market indicators. The RCI also identifies significant geographical differences within Hungary, at rates higher than the EU average. In the aggregate index, Central Hungary scored the highest among the Hungarian regions, at 105.5 per cent of the EU average, placing it in the middle of the EU rankings. The performance of Western and Central Transdanubia is above 80 per cent of the EU average, while Northern Hungary and the Northern Great Plain are below 70 per cent.

4.6.10 Income Gini index

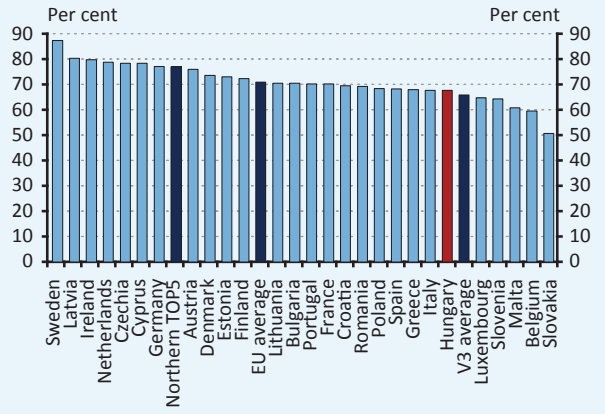


Note: The years refer to the year when the data was collected, i.e. the year following the reference year.

Source: Eurostat

In the 2010s, the income Gini index, which is one of the most widely used indicators of economic inequality within societies, ranged around 28 per cent in Hungary. The indicator remained stable during the Covid-19 pandemic and has fallen moderately in the last two years. It stood at 27.4 per cent in 2022, meaning that income inequality in Hungary remains below the EU average (29.2 per cent) and is similar to the Northern TOP5 average; however, it exceeds the average of the Visegrád peers (24.1 per cent). The rise in the Hungarian Gini index following the 2008 global economic crisis may have been driven by a gradual increase in capital income for higher income earners and a sustained deterioration in the position of lower income earners, who were more exposed to the crisis. In the subsequent years, the rise in the inequality index halted as disposable incomes stabilised and employment picked up. Factors contributing to the decline in the indicator both during and after the pandemic may have included the job protection programmes in place and the rapid recovery of the economy from the crisis.

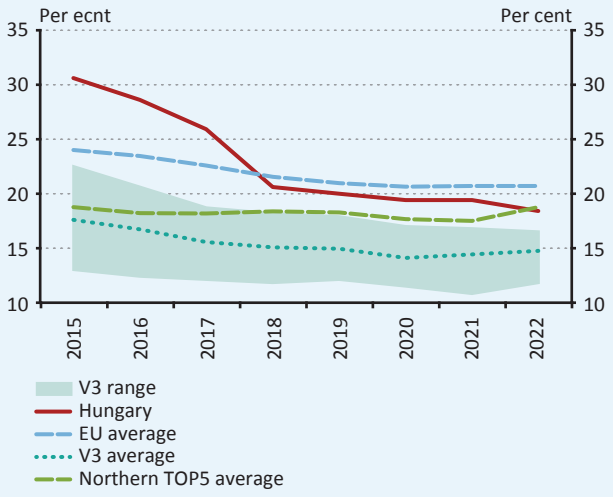
4.6.11 Wealth Gini index (2022)



Source: Credit Suisse – UBS (2023): Global Wealth Report 2023

Wealth inequality increased in most countries as a result of the Covid-19 pandemic, as the position of the wealthier classes improved (mainly due to increases in stock prices and house prices), while the position of the lower wealth classes remained unchanged or worsened. In 2022, as the recovery progressed, average inequality decreased both globally and across the EU. The Hungarian wealth Gini index was estimated by Credit Suisse and UBS to be 67.7 per cent in 2022, 0.3 percentage points lower than the year before, but still above the pre-pandemic level of around 66 per cent. In most EU countries too, the indicator fell versus the previous year but remains higher than before the pandemic. In 2022, the Hungarian wealth Gini index remained more favourable than the EU average (71 per cent), yet it moderately exceeded the average of the Visegrád peers (65.9 per cent). The wealth Gini index is fundamentally influenced by real estate wealth. In Hungary, as in other Central and Eastern European countries, the proportion of homeowners significantly exceeds the proportion of renters. Around 90 per cent of Hungarian households own their home, which is one of the highest ratios in the EU.

4.6.12 Ratio of people at risk of poverty or social exclusion (AROPE)



Note: Data according to the new methodology are available for the years starting in 2015. The years refer to the year when the data was collected, i.e. the year following the reference year.

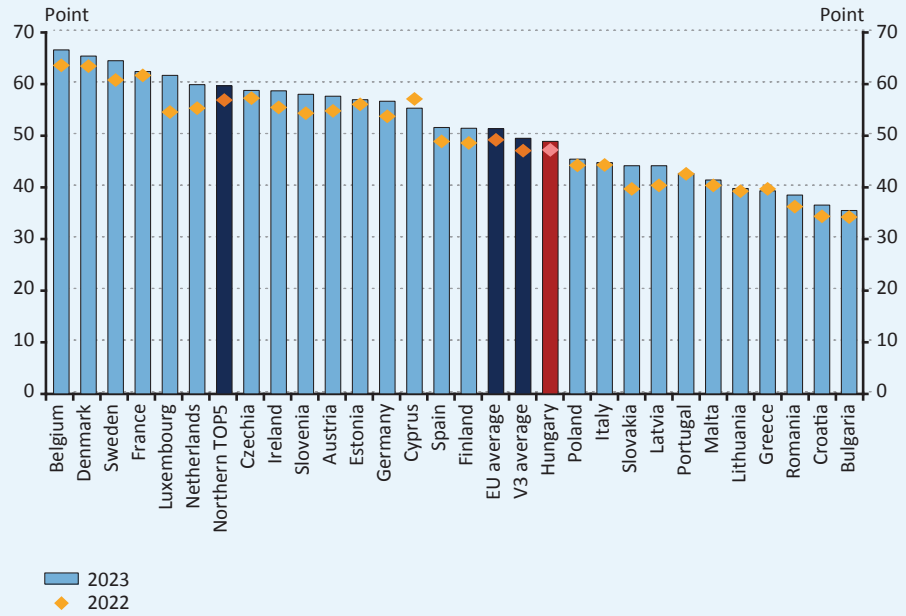
Source: Eurostat

Hungary measured the steepest fall since 2015 in the AROPE indicator (12.2 percentage points), which measures the proportion of the population at risk of poverty or social exclusion. The Hungarian indicator remained unchanged during the pandemic and then fell further in 2022, dropping by 1 percentage point to 18.4 per cent. The Hungarian figure remains better than the EU average (20.7 per cent) and is similar to the average of the Northern TOP5 countries, but it somewhat exceeds the average of the Visegrád countries (14.7 per cent). In Hungary, the risk of poverty or social exclusion mainly affects the long-term unemployed and those with only primary educational qualifications. Of the three dimensions of AROPE, relative income poverty is the dimension affecting the largest numbers, 12.1 per cent of the population in Hungary. Severe material deprivation affects 9.1 per cent of the population, and low work intensity affects 6.2 per cent. The proportion of people affected by poverty and deprivation decreased year-on-year, while those affected by low work intensity increased.

4.7 FAMILY-FRIENDLY PROGRAMME

One of the key issues for long-term economic growth is the quality and quantity of human capital active in the labour market. Over the long term, quantitative factors of human capital are determined mainly by demographic trends, of which the decline and ageing of the population is the greatest challenge for almost all developed countries, including Hungary. If current demographic trends continue, population projections suggest that the Hungarian population will continue to shrink in the decades ahead and, by 2030, the working-age population may decrease by 450,000, compared to 2020 due to natural attrition. Long-term economic convergence is difficult to achieve with a declining population. A birth rate that is lower than in previous decades also has an impact on the population structure, because it results in a smaller number of younger cohorts compared to older generations. The decline in the working-age population is leading to a reduction in the labour supply, with negative effects on economic growth. In order to reverse the negative demographic trends, it is important to pursue social policies that can effectively support families in their plans to have children. In 2023, Hungary ranked 16th out of the 27 EU Member States in the area *Family-friendly programme*, with a score of 48.8 points. Compared to 2022, Hungary's score increased by 1.7 points. Despite this increase, the Hungarian score is somewhat lower than the regional average (49.3 points) and the EU average (51.2 points). The improvement in the score was mainly driven by a moderate improvement in the infant mortality rate and the fertility rate.

Chart 4.7
Results of MNB Competitiveness Index at the area of Family-friendly programme in the Member States of the EU



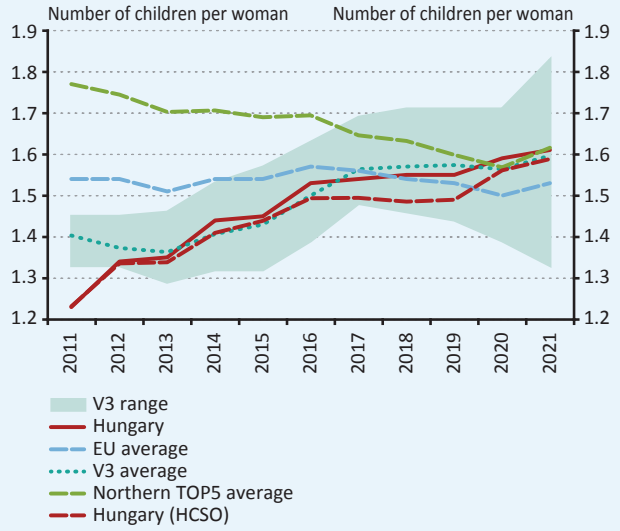
Source: MNB

A steady rise in fertility rates is a prerequisite for reversing negative demographic trends. Achieving and maintaining a fertility rate of around 2.1 is necessary to ensure a stable population size. Currently, the indicator is below the replacement threshold in all EU Member States and has stagnated, on average, in recent years. Hungary has seen positive trends in the recent period, as the fertility rate rose significantly, from a historic low of 1.23 in 2011 to 1.61 in 2021; this is higher than the EU and regional averages. Data suitable for international comparison are available only up to 2021; however, figures based on the somewhat different methodology used by the HCSO indicate that Hungary's decade-long upward trend halted in 2022 as fertility decreased moderately. Demographic trends would be improved by further reducing infant mortality, increasing the availability of artificial insemination and further promoting atypical employment for women.

Another determinant of population trends is life expectancy at birth, the increase in which also increases the amount of human capital available. In Hungary, similar to EU trends, life expectancy at birth dropped significantly (by 2.2 years) as a result of the pandemic, returning to 2009 levels in 2021. However, in 2022, as the global pandemic subsided, the indicator improved again and approached pre-crisis levels. Hungarian women currently live for 79.5 years and men 72.7 years; these lifespans are 3.9 and 5.3 years shorter than the EU average.

In terms of demographic trends, ageing is an increasing challenge, along with population decline. Population ageing is caused by low fertility rates and a gradual increase in life expectancy. Population ageing can be captured by several indicators, such as the proportion of the population aged 65 and over. The proportion of the population aged 65 and over is rising in developed countries. In Hungary, the indicator was 20.5 per cent in 2022, which is somewhat lower than the EU average (21.1 per cent), but above the average for the Visegrád countries (19.0 per cent). The ageing of the population, all other things being equal, is increasing the inactivity rate per active worker, which could have a negative impact on growth prospects and the long-term sustainability of the balance of welfare systems.

4.7.1 Total fertility rate

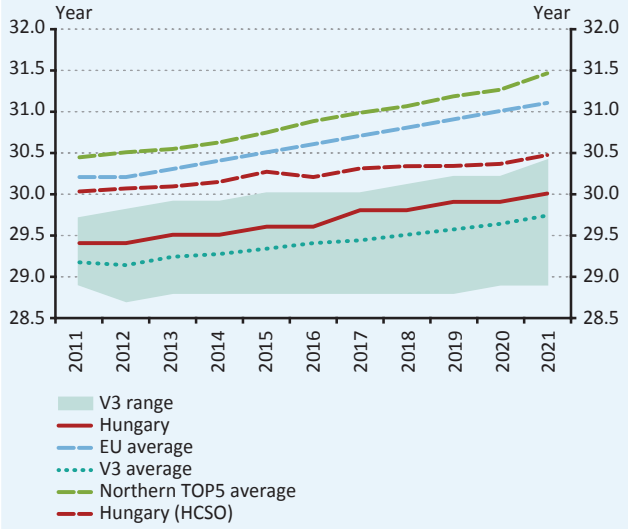


Note: For methodological reasons, the Hungarian figure published by Eurostat differs from the figure published by the HCSO.

Source: Eurostat, HCSO

The total fertility rate is the hypothetical number of children per woman of childbearing age (15–49 years) based on the number of births in a given year. Achieving and maintaining a fertility rate of around 2.1 is necessary to ensure a stable population size. Low birth rates represent a challenge for all developed countries. Currently, none of the EU Member States are able to meet the reproductive threshold and the average for EU countries has stagnated in recent years. In Hungary, however, there have been positive trends, as the fertility rate has increased significantly from its historic low of 1.23 in 2011 and has been around 1.5–1.6 since 2016. In 2021, the Hungarian fertility rate (1.61) was higher than the EU average (1.53), according to Eurostat. Until 2021, Hungary's fertility rate increased at the 2nd highest rate compared to 2011 in the European Union, behind the Czech Republic. This may have been facilitated by the substantial strengthening of the family support system after 2010 and the sustained improvement in the economic environment. Data suitable for international comparison are available only up to 2021; however, figures based on the somewhat different methodology used by the HCSO indicate that Hungary's upward trend in fertility halted in 2022 and the fertility rate decreased moderately.

4.7.2 Mean age of women at childbirth

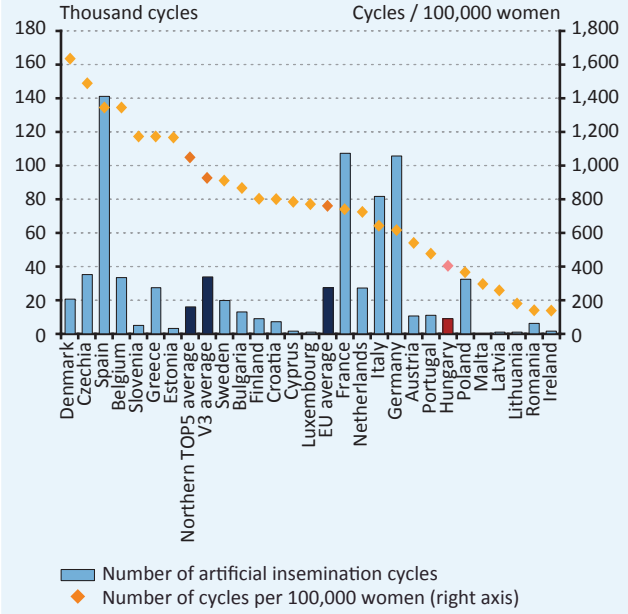


Note: For methodological reasons, the Hungarian figure published by Eurostat differs from the figure published by the HCSO.

Source: Eurostat, HCSO

In recent decades, the childbearing age has shifted considerably towards later years. In 2021, the average childbearing age of mothers in Hungary was 30.0 years, which means that the indicator has increased by 0.6 years over the last 10 years. The Hungarian figure is lower than the EU average (31.1 years) and broadly in line with the V3 average (29.7 years). The observed fertility rate is reduced by the gradual postponement of the age of childbearing until later in life. Where the postponement of childbearing age is halted and the postponed childbearing plans are implemented, the fertility rate rises compared to the previous period.

4.7.3 Number of artificial insemination cycles (2018)

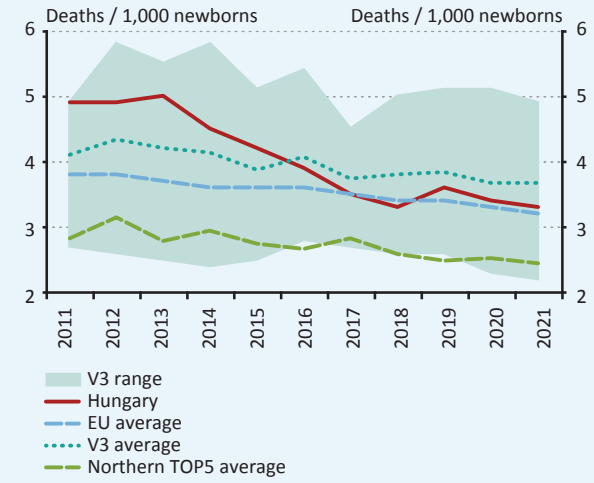


Note: Database relies on registers and does not provide full coverage. Projected on the number of women of childbearing age (15–49 years). No data available for Slovakia. Croatia 2017, Cyprus 2016.

Source: ESHRE, Eurostat

Based on data from the European Society of Human Reproduction (ESHRE) – which are compiled on the basis of registers and thus do not provide full coverage – artificial insemination in Hungary is less common than in most countries of the EU and the region. In Hungary, the ratio of artificial insemination cycles per 100,000 women of reproductive age (15–49 age group) was 401, which is about half the average for EU countries (758) and even lower than the average for the other Visegrád countries (923). The results are nuanced by the fact that at present no precise data as to the number of children born in Hungary through artificial insemination are available. However, most of the reasons for this (e.g. the databases cannot be connected, non-comprehensive data collection) are expected to cease as a result of the acquisition of the institutions engaged in artificial insemination by the Hungarian government in 2020.

4.7.4 Infant mortality

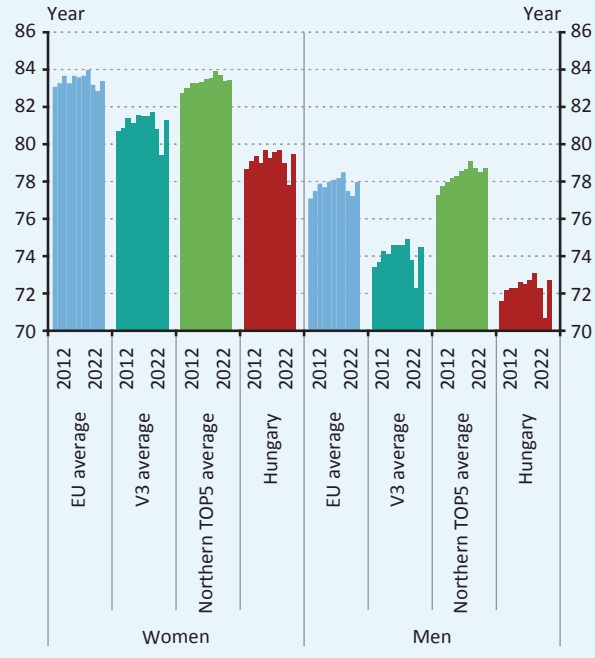


Note: Number of deaths before the age of 1 year per 1,000 newborns

Source: Eurostat

Infant mortality is an internationally accepted indicator of the health and social systems of countries and is measured as the number of deaths before the age of 1 year per 1,000 newborns. According to WHO data, the global infant mortality rate was 29 deaths per 1,000 newborns, which represents 4.0 million deaths in total.[5] This compares with an average infant mortality rate of just 3.2 in the European Union. In Hungary, the infant mortality rate has fallen significantly over the last decade (from 4.9 to 3.3), and is now better than the average for the other Visegrád countries (3.7), while the most developed Northern countries have achieved even better rates (average 2.4). The decrease in infant mortality in the country was mainly due to a decrease in the mortality of infants on the day of birth (from 1.2 to 0.5 between 2010 and 2017). This has been driven by a decrease in the proportion of children born with a low birth weight (below 2,500 grams) and an increase in the survival of children born with a very low birth weight (below 1,500 grams).[6]

4.7.5 Life expectancy at birth

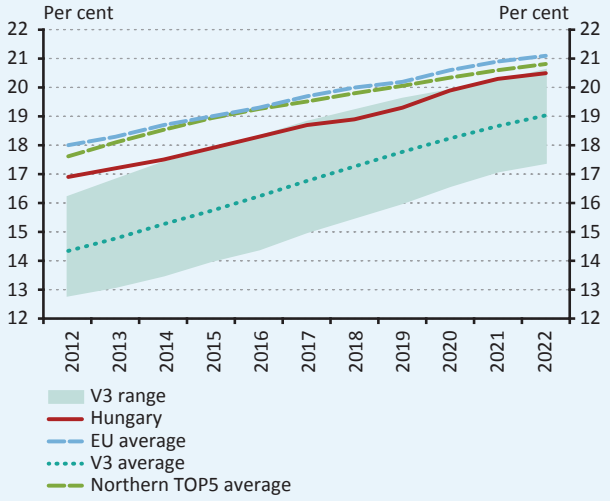


Source: Eurostat

Life expectancy aggregates the mortality statistics of the current population. Life expectancy at birth shows how many years of life an individual born in a given year can expect to live given the mortality conditions in that year. Life expectancy has risen significantly in the last decades in developed countries, including Hungary, thanks to the continuous development of health care and health awareness. In Hungary, life expectancy at birth was 76.2 years in 2022, 1.9 years higher than the previous year's 74.3 years, but 0.3 years lower than the 76.5 years before the pandemic. Between 2019 and 2021, life expectancy at birth fell by an average of 1.2 years in the EU, 2.2 years in Hungary and 2.6 years in the other Visegrád countries. The life expectancy at birth of Hungarian women (79.5 years) is the 3rd lowest in the European Union, while the life expectancy of Hungarian men (72.7 years) is the 5th lowest. On average, Hungarian women live 3.9 years less than the average EU resident, while men live 5.3 years less.

[5] Source: WHO (2022): Infant mortality
[6] Source: HCSO (2019): Csecsemőhalálozás. Statisztikai tükör (Infant deaths. Statistical Mirror), 22 February 2019

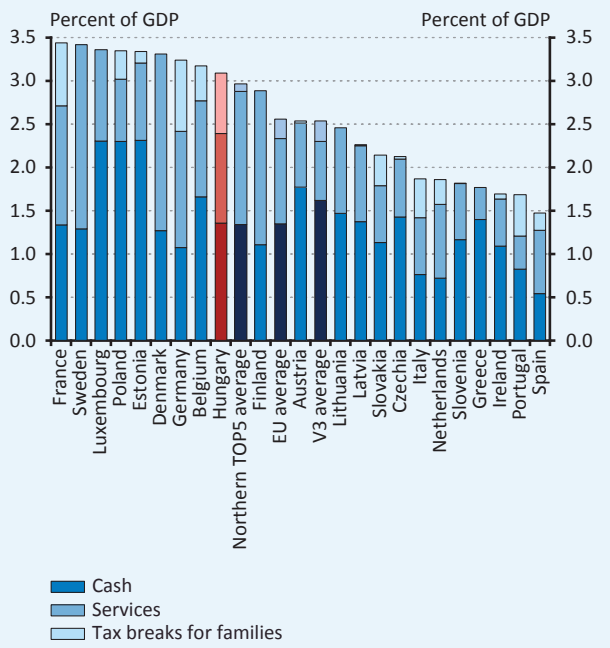
4.7.6 Proportion of population aged 65 and over



Source: Eurostat

One measure of population ageing is the proportion of the population aged 65 and over, which is increasing in all of the countries under review. The increase in the proportion of older generations in the population is due to two factors: a lower birth rate than in previous decades and an increase in life expectancy. In Hungary, society is ageing at a rate that is similar to, but somewhat slower than the EU average. In Hungary, the proportion of the population aged 65 and older was 20.5 per cent in 2022, somewhat lower than the EU average (21.1 per cent), but above the average for the Visegrád countries (19.0 per cent).

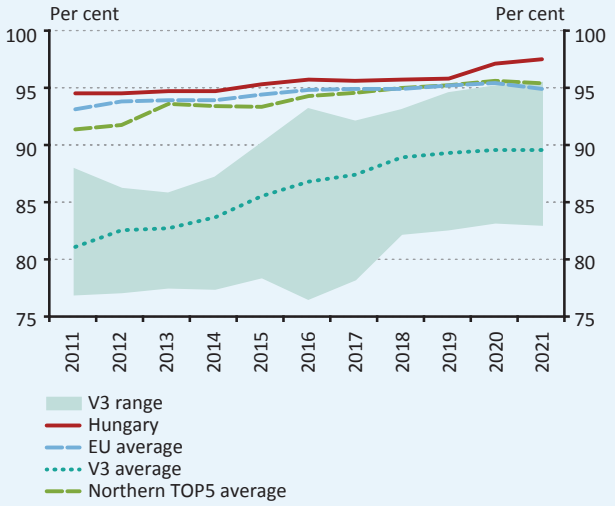
4.7.7 Public spending on family benefits as a percentage of GDP (2019)



Source: OECD

Hungary's spending on family benefits is high by international standards. According to the latest available international data, family support expenditures in Hungary accounted for 3.1 per cent of GDP in 2019, the 9th highest among the EU countries that are members of the OECD. Within the Hungarian family support expenditures, cash benefits amounted to 1.4 per cent of GDP and benefits in kind (services) to 1.0 per cent of GDP, while the tax allowances received by Hungarian families amounted to 0.7 per cent of GDP. The 2019 Hungarian figure is significantly higher than the average of 2.6 per cent for OECD-member EU countries. Domestic expenditure levels are in line with the EU average in cash benefits and benefits in kind and significantly higher in tax benefits.

4.7.8 Enrolment rate in early childhood education between the age of 4 and school age

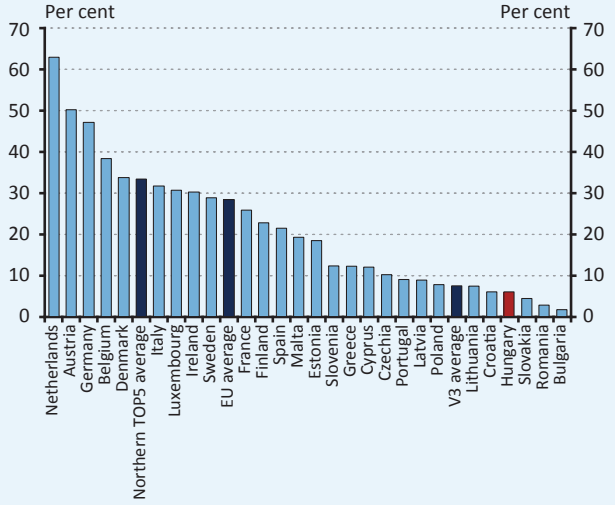


Note: Students between 4 years and the starting age of compulsory education.

Source: Eurostat

The ratio of students in early childhood education in Hungary is higher than the EU and regional averages. In Hungary, 98 per cent of pupils between 4 years old and school age were enrolled in age-appropriate education according to the International Standard Classification of Education (ISCED). Since 2015, kindergarten education has been compulsory in Hungary from the age of 3, but exemptions can be requested for children over 5 for a variety of reasons (e.g. family circumstances, development of skills). The relevant rules were tightened effective from September 2020 (exemptions can be requested from the age of 4, but only for a more limited range of reasons), which has led to an increase in the proportion of children in education. The increase in the share of early childhood education in the other Visegrád countries is mainly due to the performance of Poland, where the indicator has risen from 78 per cent to 95 per cent in 10 years.

4.7.9 Ratio of women in part-time employment (2022)



Note: Women in the 15–64 age group.

Source: Eurostat

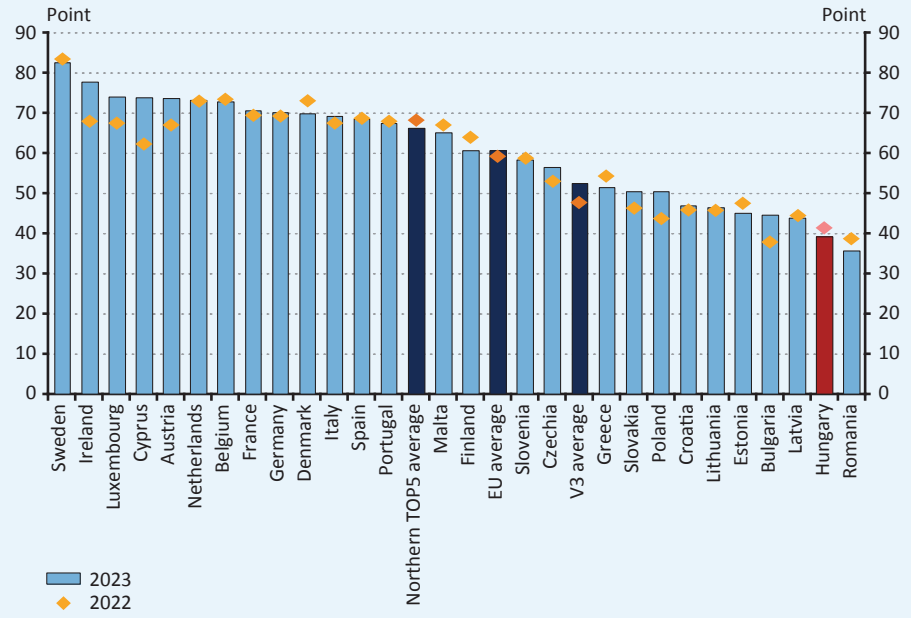
The return to the labour market after having children can be helped by the wider availability of atypical forms of employment. Examples include part-time employment and teleworking, which make it easier to achieve a work-life balance. According to an analysis conducted in 2019 by the HÉTFA Research Institute,[7] the availability of flexible employment opportunities has a positive impact on the birth of first and second children. However, in 2022, only 6.0 per cent of women aged 15–64 years were in part-time employment in Hungary. Although this is similar in magnitude to the average of the other Visegrád countries (7.5 per cent), it is significantly lower than the averages of the EU and of the Northern countries (28.4 and 33.4 per cent, respectively).

[7] Source: HÉTFA (2019): Evaluation of family policy measures and their impact on fertility

4.8 HEALTHY SOCIETY

Health is part of national wealth and the foundation for a country's most important resource: its human capital. The health status of the population is not just a personal and family matter, it is also one of the most important issues for the national economy, as health affects the economic performance and competitiveness of a country through the quality and quantity of the available workforce. Chronic illnesses reduce active time spent working and also lower labour productivity, and premature mortality also causes significant damage to the national economy. This is why preserving good health is beneficial for society from both an individual and an economic point of view. The Covid-19 pandemic also highlighted the importance of health to society. In 2023, Hungary ranked 26th out of the 27 EU Member States in the area Healthy society, with a score of 39.3 points. Compared to the previous year, Hungary fell 2.2 points and dropped by 1 place in the ranking. The Hungarian score remains well below the regional (52.5 points) and EU average (60.7 points). Methodological reasons (e.g. the exclusion of Covid-related indicators from the study) and a deterioration in Hungary's relative position in the number of CT scans played a role in the decline in the national score.

Chart 4.8
Results of MNB Competitiveness Index at the area of the Healthy society in the Member States of the EU



Source: MNB

The health status of the Hungarian population offers considerable potential for convergence with the regional countries with similar levels of development. Along with the gradual ageing of society, its current health status is placing an increasing burden on a health care system that is already facing many challenges. From a health perspective, disease prevention is the simplest and most cost-effective way to ensure that the population is in good health. However, the Hungarian population is not yet invested sufficiently in the pursuit of a healthy lifestyle, as is confirmed by morbidity and mortality indicators. Hungary has the 2nd highest obesity rate (24 per cent) among EU countries. This is also why a rather high number of Hungarians suffer from diseases that could be partly avoidable with a healthier lifestyle (such as hypertension and diabetes). It is worth noting, however, that the childhood vaccination system for the prevention of infectious diseases in Hungary is of outstanding quality, even by global standards, so these diseases are not a problem in Hungary.

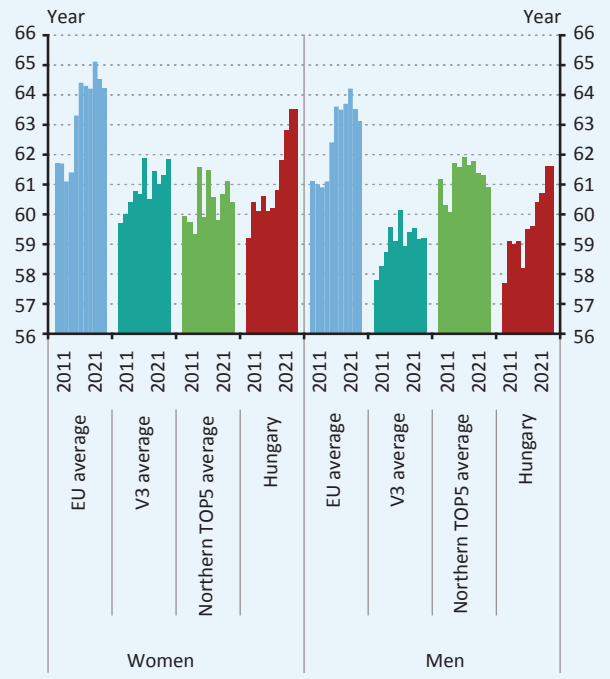
Healthy life expectancy in Hungary in 2021 for both sexes was considerably higher than the average of the other Visegrád countries, but fell short of the EU average. On average, Hungarian women spend 63.5 years and men 61.6 years in good health. Mortality figures reflect a more negative picture, however. Almost one half of all deaths in Hungary can be attributed to some behavioural risk, which makes Hungary the 2nd worst performer in the European Union in this respect. The number of deaths that could be prevented with proper prevention programmes and avoided with appropriate treatment was the 3rd highest in Hungary among EU countries. The standardised mortality rate for malignant tumours in Hungary is the highest in the EU, both in the total population and in the population under 65. A major factor in the unfavourable mortality statistics in Hungary is that a significant proportion of these diseases are diagnosed at a late stage, which increases the cost and reduces the effectiveness of treatment.

Hungary's health expenditure as a percentage of GDP has risen by 1.1 percentage points in two years (from 6.3 per cent to 7.4 per cent), but is still the 6th lowest in the European Union. Hungary spends somewhat less than the average of the other Visegrád countries (7.7 per cent), and both indicators fall well short of the EU-wide average expenditure (10.9 per cent). In Hungary, 72 per cent of health care expenditure comes from the government budget, which is 9 percentage points lower than the average of the European Union and the other Visegrád countries. One of the problems of the Hungarian health care system is that private expenditures on health care are not spent via health funds or supplementary private health insurances. Households' out-of-pocket health expenditures amount to 1.8 per cent of GDP, higher than both the regional average (1.3 per cent) and the EU average (1.6 per cent).

Hungary also falls short of the EU average in terms of the availability of human resources in the health sector, which is a challenge in all developed economies. The number of practicing doctors and especially nursing professionals as a share of the population is below the EU and regional averages. In Hungary, there are 1.6 nursing professionals (nurses and midwives) per doctor, below the EU average (1.9). The number of newly graduated doctors per 100,000 inhabitants in Hungary is about the same as the average in the EU and the other Visegrád countries, but the number of newly graduated nursing professionals with EU-recognised qualifications is below the international average.

The Hungarian health care system has a number of efficiency opportunities that could be exploited to improve the sustainability of the system without increasing expenditure levels. The average hospital stay in Hungary is more than 2 days longer than the EU average, mainly due to inadequate cooperation between the social and healthcare systems. In 2020, 69 per cent of the very frequently performed cataract operations were performed in same-day care in Hungary; this rate is still lower than the EU average (88 per cent), despite a significant increase (more than doubling) over the past decade. Furthermore, there is a significant efficiency gap in the fact that pharmaceutical expenditures are the 7th highest in the European Union as a percentage of GDP, mainly due to the popularity of over-the-counter medicines.

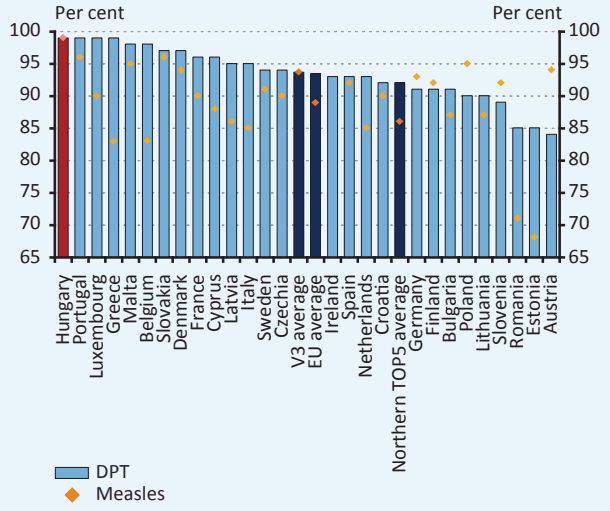
4.8.1 Healthy life years



Source: Eurostat

Healthy life years are a measure aimed at condensing the health status of a society into a single indicator, taking into account the mortality (death statistics) and morbidity of the population (an assessment of the health status of individuals). In 2021, the Covid-19 pandemic halted the improvement in healthy life expectancy seen over the past decade in Hungary. In 2021, the average time spend in good health status was 63.5 for women and 61.6 years for men in Hungary. Compared to 2011, the Hungarian indicator increased by 4.3 years for women and 3.9 years for men, which were the 6th and 5th steepest increases in the European Union. Healthy life expectancy at birth was significantly higher in Hungary than the average of the other Visegrád countries in both sexes (women: 61.8 years; men: 59.2 years), but lower than the EU average (women: 64.2 years; men: 63.1 years). In the European Union, healthy life expectancy fell by 0.3 years on average for women and 0.4 years for men in 2021, in which the pandemic played a major role.

4.8.2 Immunisation rates for childhood vaccinations (2022)

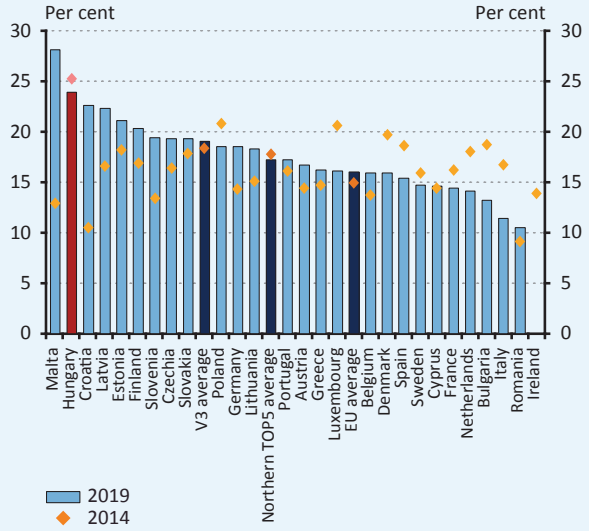


Note: DPT vaccination coverage: proportion of children aged 12 to 23 months who have received all three doses of the combined diphtheria, pertussis and tetanus vaccines. Measles vaccination coverage: proportion of children who have received both doses of measles vaccine in the age group recommended for this purpose under the national vaccination programmes. Data on measles vaccination coverage is not available for Ireland, Cyprus and France in 2019.

Source: UNICEF

Hungary has a high rate of child vaccination coverage, even by global comparisons. Immunisation coverage for DPT (diphtheria, pertussis and tetanus) and measles is practically complete (99 per cent) in the relevant age group. The average for EU countries is 93 and 89 per cent, respectively, while the other Visegrád countries have only 94 per cent vaccination coverage in both categories. Hungary is the only country in the European Union to achieve 99-per cent immunisation coverage for both vaccines in 2022. Low vaccination coverage in some countries (e.g. Romania, Belgium, Ireland) has contributed in recent years to the resurgence of measles, which had previously been almost completely eradicated.

4.8.3 Prevalence of obesity, age 18+

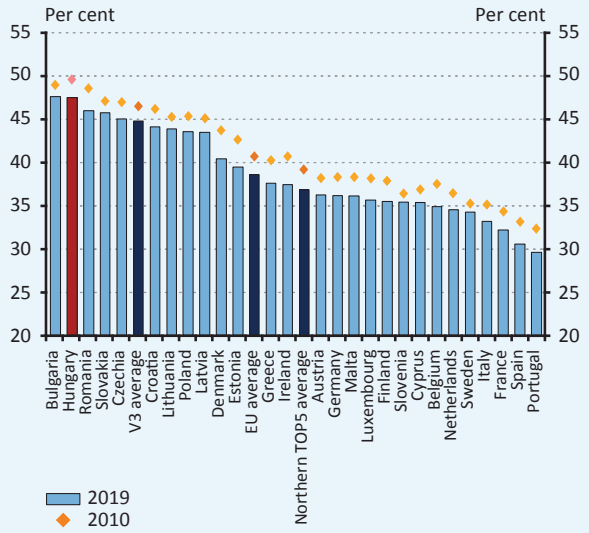


Note: Body mass index (BMI) > 30. Data for Ireland is not available for 2019.

Source: Eurostat

Obesity (BMI > 30) is an increasingly serious problem in European countries, and one that contributes significantly to rising health care expenditures in Hungary and reduced potential economic output due to related diseases (e.g. diabetes, hypertension). In the European Union, 16 per cent of the population aged 18 and over were considered obese in 2019, while the average for the Visegrád countries was somewhat higher (19 per cent). In Hungary, 24 per cent of the adult population is considered obese, the second highest in the EU after Malta (28 per cent). In 2014, 25 per cent of the Hungarian population was considered obese, and thus the indicator has fallen by 1 percentage point in 5 years. Obesity prevention is one of the most effective ways to improve health status. Striving for healthy nutrition, regular exercise and curbing smoking and alcohol consumption could make a significant contribution to improving the health of Hungarians.

4.8.4 Share of mortality driven by behavioural risks (2019)

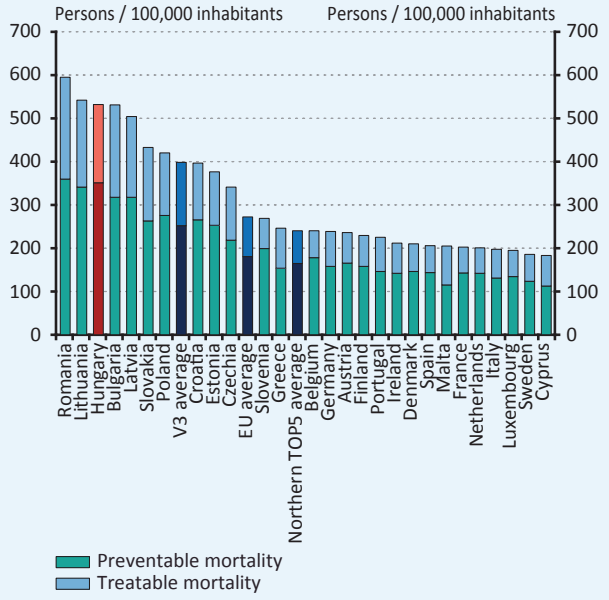


Note: Behavioral risks cover the risks related to nutrition smoking, alcohol consumption and low level of exercise.

Source: IHME

In Hungary, almost one half (47 per cent) of all deaths are linked to some kind of behavioural risk, which is the second highest rate in the European Union. The average for the V3 countries was 45 per cent, compared to 39 per cent for all EU countries in 2019. In 2019, 61,000 deaths in Hungary were linked to behavioural risk. Compared to 2010, the proportion of deaths related to behavioural risks in Hungary has decreased by 2 percentage points, but most of this decrease occurred in the first half of the decade, with no significant changes seen in the last 5 years. Behavioural risks include risks related to diet, smoking, alcohol consumption and low levels of physical activity; examining these factors separately, we find that Hungary ranks among the worst-performing EU countries in almost all of these areas.

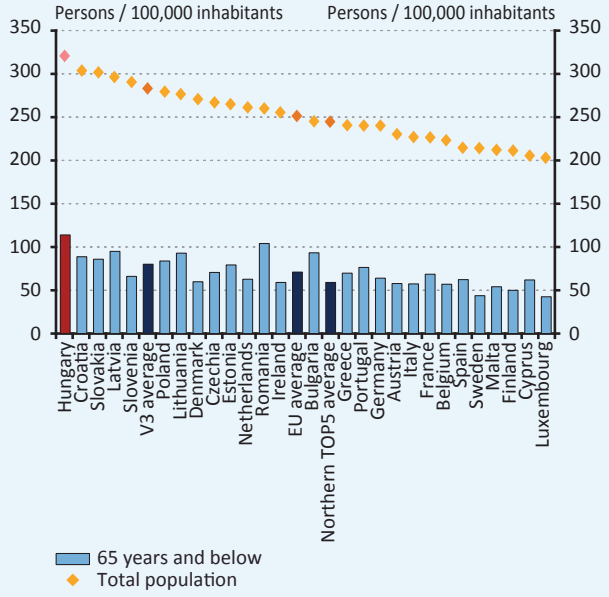
4.8.5 Avoidable mortality (2020)



Note: Age-standardised mortality rate per 100,000 inhabitants.
Source: Eurostat

Avoidable mortality is defined as death that could have been prevented or avoided by the proper application of the existing achievements of medical science. Within these, two groups may be distinguished: preventable deaths, which could have been avoided with appropriate prevention, and treatable deaths, which could have been avoided with appropriate treatment. In 2020, Hungary had the 3rd highest standardised avoidable mortality rate in the European Union (530 deaths per 100,000 inhabitants), which meant that it had improved its ranking by one place compared to the previous year. The mortality rate in Hungary is almost twice the EU average (272) and one third higher than the average for the other Visegrád countries (395). Between 2011 and 2019, the Hungarian mortality rate fell by 12 per cent, but a similar rate of average decline was also measured across the EU and in the V3 countries. The Covid-19 pandemic reversed the downward trend of the preceding years and avoidable mortality rose by 8 per cent in Hungary and 12 per cent on average in the EU in just one year.

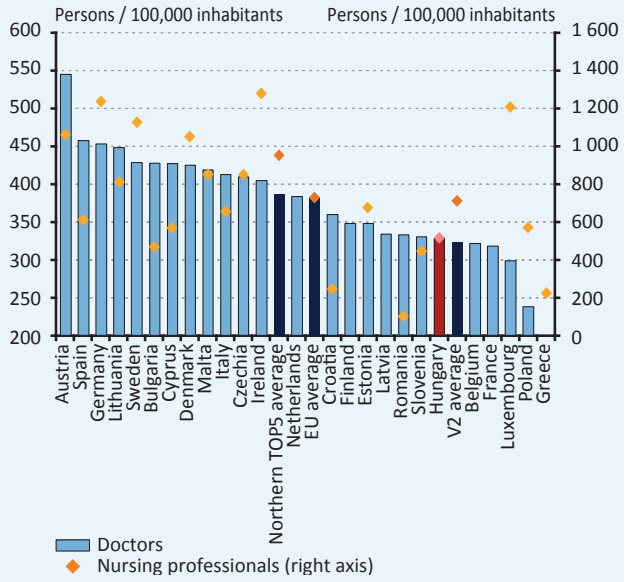
4.8.6 Standardised death rate – Malignant neoplasm (2020)



Note: Age-standardised mortality rate per 100,000 inhabitants.
Source: Eurostat

The standardised mortality rate shows what the mortality rate would be in a country if its age distribution were the same as the standard European population. Hungary still has the highest standardised mortality rate for malignant tumours in the European Union. In 2020, there were 321 deaths per 100,000 inhabitants in the total population of Hungary and 114 deaths in the under-65 age group. Both are significantly higher than the regional (283 and 80) and EU (251 and 72) averages. However, there is a downward trend in malignant cancer mortality in Europe, including Hungary. Between 2011 and 2020, the death rate from malignant tumours for people under 65 fell by 23 per cent (from 149 to 114), although this was not enough to allow Hungary to improve on its poor position in the ranking of EU countries. Increasing screening participation rates would be a key factor in reducing deaths from malignant tumours, as early diagnosis can significantly improve survival for most cancers.

4.8.7 Number of practicing doctors and nursing professionals per thousand inhabitants (2021 or latest available data)

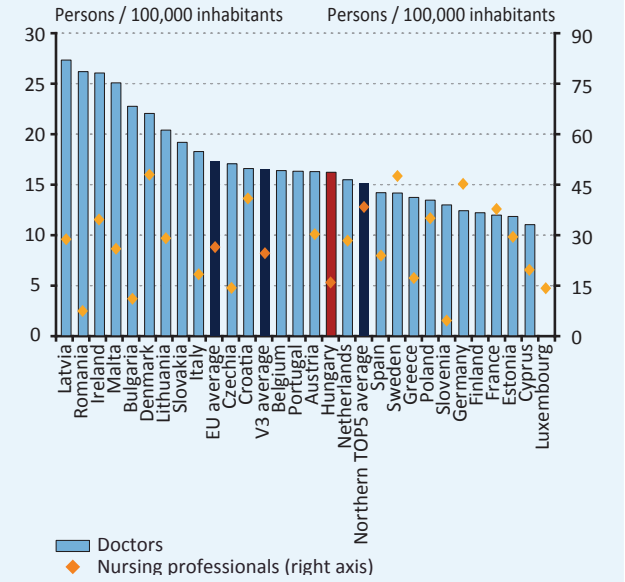


Note: The number of nursing professionals includes nurses and midwives. Data are not available on the number of doctors for Greece, on the number of nursing professionals for Belgium, Finland, France, the Netherlands and Latvia, and on the number of both doctors and nursing professionals for Portugal and Slovakia.

Source: Eurostat

In 2021, Hungary had the 5th lowest number of practicing doctors per 100,000 inhabitants in the EU (328). The Hungarian figure is somewhat higher than the average for Poland and the Czech Republic (324), but significantly lower than the EU average (383). The indicator is also affected by population decline and the later retirement and ageing of doctors. Also, it shows the number of licensed doctors in the country, not all of whom are working in the health care system, as they have left the profession or the country. The number of practicing nurses and midwives per 100,000 inhabitants (515) is significantly lower in Hungary than the averages for the Czech Republic and Poland (710), and the EU (727). In Hungary, there are 1.6 nursing professional per doctor, which is lower than the regional (2.2) and EU (1.9) averages. In countries with a well-developed health care system, the ratio can be twice as high (e.g. Luxembourg 4.0, Ireland 3.2).

4.8.8 Number of newly graduating doctors and nursing professionals per thousand inhabitants (2021 or latest available data)

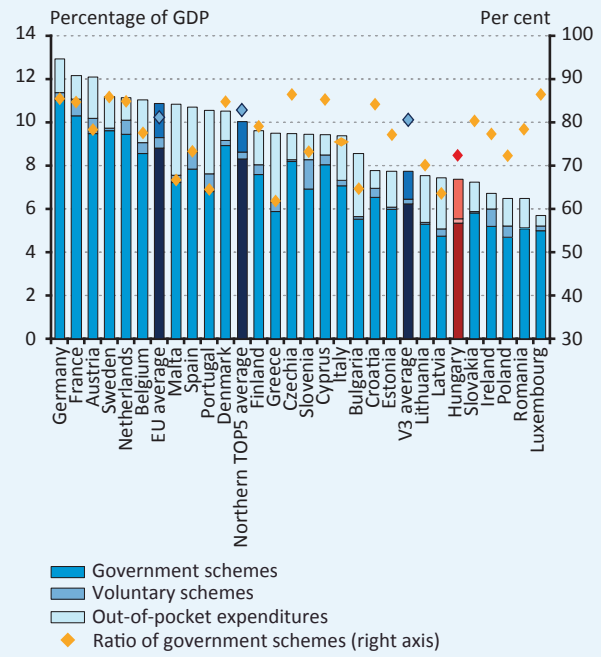


Note: The number of nursing professionals includes nurses and midwives.

Source: Eurostat

Finding adequate supplies of human resources for their health care systems is a challenge for all developed countries, even as the need for this type of service increases in their aging societies. In Hungary, the number of newly graduated doctors per 100,000 inhabitants (16) is somewhat lower than the average for the EU (17) or the other Visegrád countries (17). The number of EU-recognised graduates in nursing and midwifery per 100,000 inhabitants in 2021 was 15, lower than the EU average (26) and the average for the other Visegrád countries (25). The proportion of recent graduate doctors versus their total numbers of doctors is 4.9 per cent in Hungary, which is between the regional average (5.1 per cent) and the EU average (4.5 per cent). In the case of nursing professionals, the rate is 3.1 per cent in Hungary, lower than both the V3 (3.4 per cent) and the EU (3.6 per cent) averages.

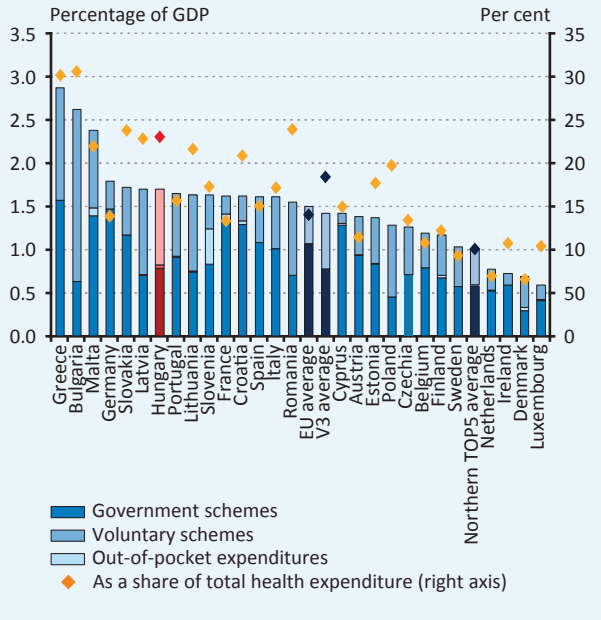
4.8.9 Health care expenditures as a percentage of GDP by financing scheme (2021 or latest available data)



Source: Eurostat

Hungary's health care expenditure as a percentage of GDP (7.4 per cent) was still the 6th lowest in the European Union in 2021. Hungary spent somewhat less than the average of the other Visegrád countries (7.7 per cent) and significantly less than the EU average (10.9 per cent). The average level of health care expenditure as a percentage of GDP did not change significantly between 2010 and 2019 in the European Union or in the region, while Hungary registered a moderate downtrend compared to the 7.5-percent level measured in 2010. However, the Covid-19 pandemic led to a significant increase in health spending in almost all countries, including Hungary. The increase in spending was largely financed from public sources: in two years, public expenditure increased by 1 percentage point from the 4.3 per cent recorded in 2019; nevertheless, the share of public spending remains significantly lower in Hungary (72 per cent) than the EU and the regional averages (both of which are at 81 per cent). Households' out-of-pocket expenditure is 1.8 per cent of Hungarian GDP, which is higher than the EU average (1.6 per cent). The importance of voluntary schemes has declined in recent years, both in Hungary and in the EU.

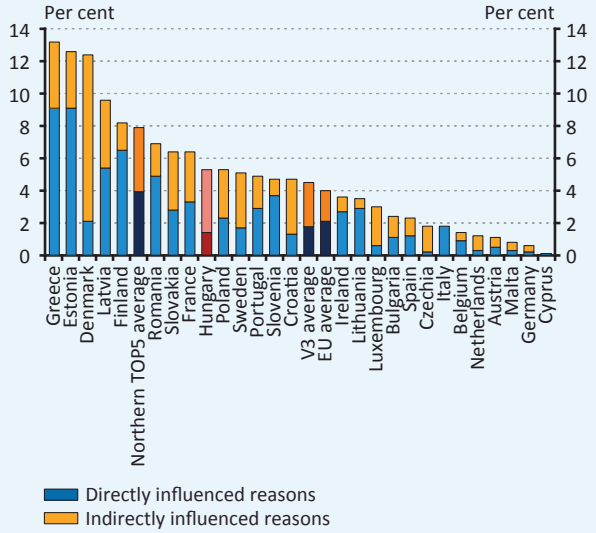
4.8.10 Pharmaceutical expenditures as a percentage of GDP by financing scheme (2021 or latest available data)



Note: Data for Malta is from 2018
Source: Eurostat

Hungary has the 7th highest pharmaceutical expenditure as a percentage of GDP in the European Union. In 2021, Hungary spent 1.7 per cent of GDP on medicines, higher than the 1.4-per cent average for the V3 countries and the 1.5-per cent average for the European Union. Hungary spends 23 per cent of total health care expenditure on pharmaceuticals, compared to an average of only 14 per cent in the EU. The gap is mainly due to medicines purchased out-of-pocket by households, which accounted for 0.9 per cent of GDP in 2021, more than double the EU average (0.4 per cent). This category includes both over-the-counter medicines and the price households pay for their prescription-only medicines. The inadequate health status of the population and its limited level of adherence, structural problems in the health care system, light regulation of pharmaceutical sales representatives and the penetration of medicine advertising all contribute to high pharmaceutical expenditure in Hungary.

4.8.11 Self-reported unmet needs for medical examination (2022)

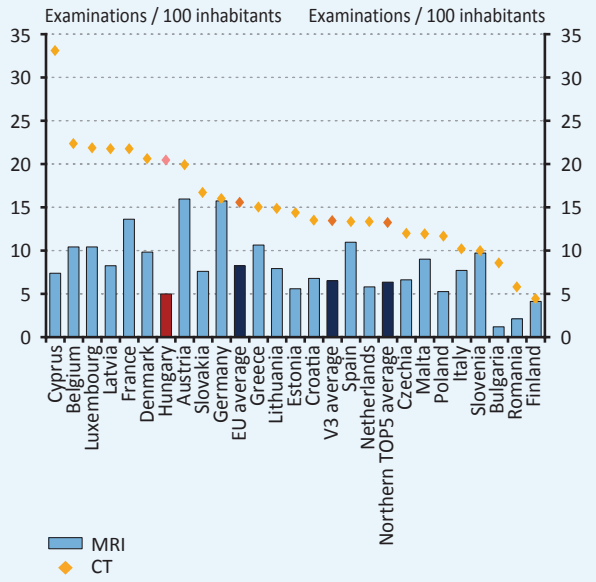


Note: The ratio of those who reported that they had unmet health care needs in the previous 12 months. Population over the age of 16 years.

Source: Eurostat

An important indicator measuring the protective function of health care systems is the level of unmet health needs, which shows what part of the population had health needs in the previous 12 months that they could not satisfy for one reason or another. In Hungary, the ratio of unmet health needs was 5.3 per cent in 2022, somewhat higher than the EU average of 4.0 per cent and the average of 4.5 per cent in the other Visegrád countries. Reasons directly associated with the health care system ('too expensive', 'too far to travel' or 'waiting lists') accounted for only 1.4 percentage points in Hungary, significantly lower than the EU average of 2.1 percentage points. However, the reasons indirectly attributable mainly to the levels of health awareness in the population (e.g. 'no time', 'fear of doctor, hospital, examination or treatment', 'wanting to wait until the problem got better on its own') together accounted for 3.9 percentage points in Hungary, compared to the EU average of 1.9 percentage points. Despite the lockdowns affecting the health care system during the pandemic, the level of unmet health needs did not change significantly in Hungary.

4.8.12 Number of CT and MRI examinations per 100 inhabitants (2021)

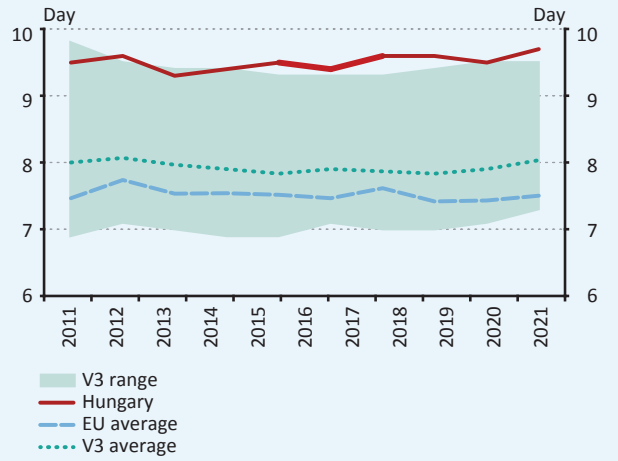


Note: Data are not available for Ireland, Portugal and Sweden. Finland 2020.

Source: Eurostat

CT and MRI examinations are among the most widely used imaging diagnostic methods, and thus the number of scans per population is an important measure of access to the health care system. In 2021, hospitals and emergency departments in Hungary performed 20.4 CT scans per 100 inhabitants, significantly more than the EU (15.6) and regional (13.5) averages. By contrast, the number of MRI examinations per capita in Hungary (5.0) is somewhat lower than the regional average (6.5) and significantly lower than the EU average (8.2). In the first year of the Covid-19 pandemic (2020), CT scan use in Hungary contracted by 5.3 percent and MRI use by 17.4 percent year-on-year, but by 2021, the number of CT scans recovered to levels above the pre-pandemic figure. Overall, the Hungarian population has an average level of access to modern diagnostic imaging tests in an EU-wide comparison, although the number of MRI scans could be increased.

4.8.13 Inpatient average length of stay

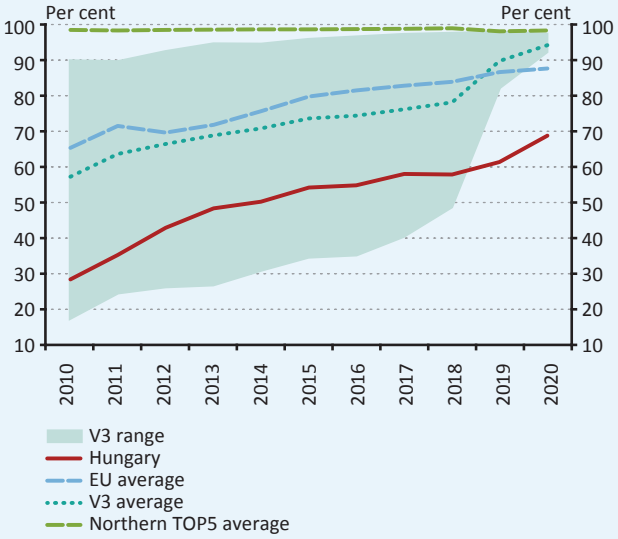


Note: No data available for Slovakia in 2013 and 2021. The Northern TOP5 average is not shown due to a lack of data.

Source: Eurostat

In 2021, the average length of hospital stay in Hungary was 9.7 days, 2.2 days more than the EU average (7.5 days) and 1.7 days more than the regional average (8.0 days). As in the EU, the Visegrád region shows a broadly stagnating trend in this indicator, but with a noticeable difference between the Czech Republic and Slovakia (both 7.3 days) and Hungary (9.7 days) and Poland (9.5 days). Chronic disease is the main driver of the average length of hospital stays in Hungary. Hungarian analyses using a somewhat different methodology indicate that the length of stay in hospital per case was 4.8 days in 2020 in active care and 32.5 days in chronic care (NEAK Statistical Yearbook 2020). This suggests that there is inadequate cooperation between the social and health care systems in Hungary, so that elderly patients with chronic diseases are cared for in the health care system even though their condition would not necessarily require this. To tackle this problem, the government started to transfer chronic care departments to the social care system in 2022.

4.8.14 Ratio of cataract surgery performed in same-day surgery and outpatient care



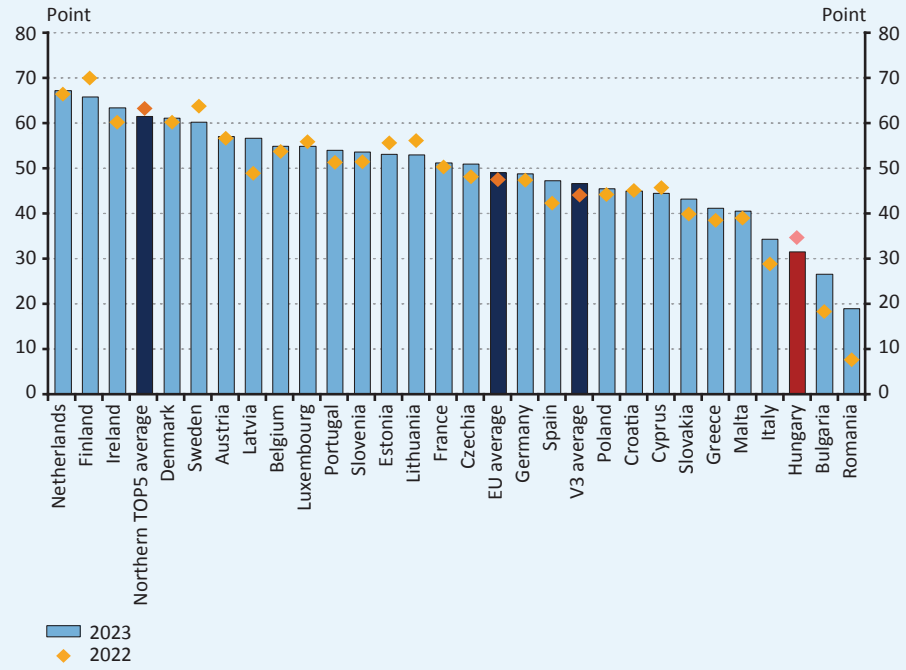
Source: Eurostat

Cataract surgeries are among the most common surgeries performed in developed countries, where there is no technical barrier to performing the surgery without a hospital stay. In Hungary, 69 per cent of cataract surgeries were performed in a same-day care setting in 2020, 40 percentage points higher than in 2010. Poland had the lowest rate of same-day care surgeries among the Visegrád countries until 2018 (49 per cent), but by 2020 it managed to increase its rate to 92 per cent by referring patients from hospitals to same-day care facilities. In Slovakia (93 per cent) and the Czech Republic (98 per cent), the majority of operations were already performed in this way. The expansion of same-day care represents a significant efficiency reserve in the Hungarian care system, which could also contribute to reducing hospitalisation.

4.9 KNOWLEDGE-BASED SOCIETY

Education has a significant impact on a country's economic performance and competitiveness via the quality and productivity of the available workforce. Measuring the effectiveness of the educational system is not easy: by the time students earn a university degree, they will have received at least 18 years of education (from kindergarten onwards), and it is difficult to clearly define the exact added value of each level of education. In 2023, Hungary ranked 25th out of the 27 EU Member States in the area *Knowledge-based society*, with 31.5 points. Compared to the previous year, Hungary fell 3.1 points in its score and dropped by 1 place in the ranking. The Hungarian score remains well below the regional (46.5 points) and EU (49.0 points) averages. The main contributors to the decline in the national score were a fall in the number of people with STEM qualifications after the previous year's peak, and weaker results in the PIRLS tests.

Chart 4.9
Results of MNB Competitiveness Programme at the area of the Knowledge-based society in the Member States of the EU



Source: MNB

International tests measuring the effectiveness of the educational system show that Hungarian students learn the expected curriculum at the same time, but in the case of examples taken from real-life they are less able to use this knowledge to an adequate degree. The TIMSS and PIRLS tests completed by 4th graders focus primarily on testing the material learned. In these assessments, Hungarian students scored above the regional and EU averages. By contrast, in the PISA tests on the real-life application of the curriculum, Hungarian results indicate that there is still room for improvement compared to both the regional and EU averages. The performance of Hungarian students in the latest PISA 2022 tests showed a deterioration in mathematics and reading comprehension, while performance in science has improved since the 2018 tests. The averages of the OECD, EU and other Visegrád countries deteriorated more than Hungary's in all three areas, bringing Hungary closer to the international averages than in the previous tests. The results of the PISA tests confirmed the earlier assumption that the Covid-19 pandemic and the related lockdowns had worsened the academic performance of students worldwide. In the case of Hungary, the socio-economic status of parents continues to play a crucial role in outcomes.

In 2020, Hungary spent 3.7 per cent of GDP on education, significantly less than the 4.5-per cent average in both the other Visegrád countries and the European Union. Public spending in Hungary is 3.0 per cent, which is also lower than the regional (3.9 per cent) and EU (4.0 per cent) averages, while private spending is higher in Hungary (0.7 per cent) than the international averages. Teaching is less well paid in Hungary than other professions requiring tertiary education.

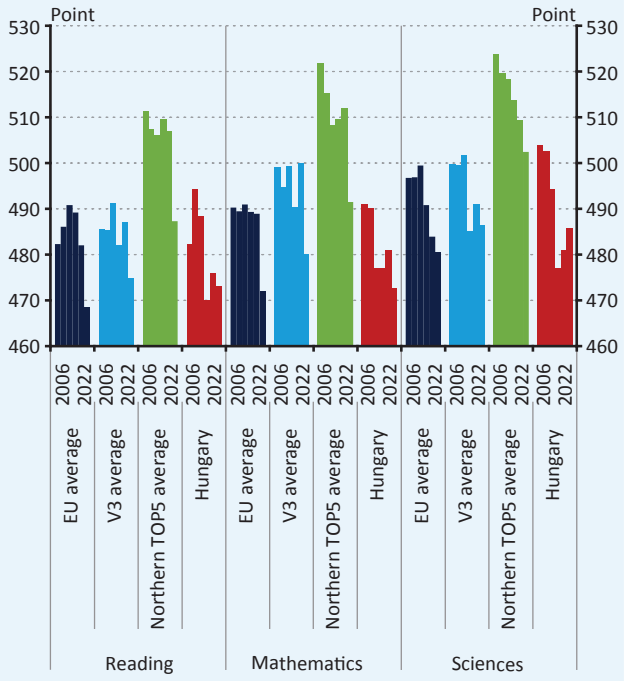
The average salary in general education is 55–62 per cent of the earnings in other sectors requiring tertiary qualifications; this is the lowest rate among the OECD-member EU countries.

Hungary's rate of early school leaving without qualifications is more than double the average in the other Visegrád countries, and the proportion of young people in tertiary education and with tertiary qualifications is also among the lowest in the EU. 12.4 per cent of young people aged 18–24 years do not participate in further education and leave school with at most a primary-level education. Improving this indicator would be important also because young people without a secondary school leaving certificate or vocational qualification find it much harder to enter the labour market and many of them become inactive in the long term. Hungary has one of the lowest rates of tertiary education among young people in the EU. The proportion of 20–24 year olds studying in tertiary education stood at 28.4 per cent in 2021, while the share of graduates was 33 per cent in the 25–34 years age group in 2022. Having tertiary qualifications can lead to significantly higher incomes achievable on the Hungarian labour market (by almost 80 per cent compared to the average earnings of workers with secondary education). Increasing the number of students in tertiary education represents a significant source of growth and competitiveness for Hungary.

Hungarian universities are not among the world leaders in international rankings of tertiary education institutions, but the proportion of foreign students studying in Hungarian tertiary education is high compared to other EU countries. In the QS World University Ranking, which ranks 1,500 institutions globally, 141 of the top 500 universities are in EU countries. While no Hungarian university made it into this ranking, 5 institutions from V3 countries are in the top third. Although there has been an increase in the number of Hungarian universities included in the best-known ranking lists (QS, Times Higher Education, Shanghai Ranking) over the past decade, this is mainly due to the fact that the number of universities evaluated and ranked in these publications has also increased significantly. Despite this, Hungarian universities are an attractive option for international students: according to the latest figures, 13 per cent of students at Hungarian tertiary education institutions come from other countries, putting Hungary in the top third of EU countries in this respect.

The numeracy skills of Hungarian adults are above the international average, but there is significant room for improvement in foreign language skills, financial literacy and digital skills. 8 per cent of the adult population participated in lifelong learning, less than the average for the other Visegrád countries (10 per cent) and the European Union (12 per cent). Hungary has also joined the OECD's Programme for International Assessment of Adult Competences (PIAAC), which has shown that the skills of Hungarian workers (numeracy, literacy) are in line with the EU average, meaning that the lower productivity in Hungary is not attributable to a lack of basic skills. At the same time, the Hungarian population has weaker foreign language skills than both the EU and regional averages, which reduces access to knowledge-sharing channels for individual workers and represents a significant competitive disadvantage for the Hungarian economy. Another problem is that one quarter of young Hungarians and one half of the total population do not have at least basic digital skills. While there is room for improvement in the financial literacy of the Hungarian population, there are already some promising measures in this domain, which are expected to raise knowledge levels in the population in the long term.

4.9.1 Results of PISA tests

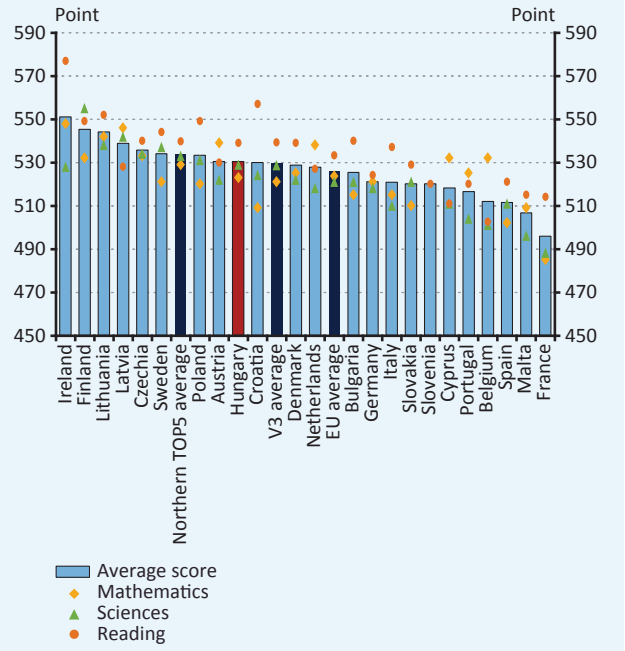


Note: Students at age of 15 years.

Source: OECD

Organised by the OECD every three years, PISA tests assess the competences of 15 year olds in three selected areas (mathematics, science, reading). In the latest tests(2022) Hungarian students performed worse than at the 2018 tests in mathematics and reading and better in science. The EU and Visegrád averages deteriorated more than Hungary's in all three areas, bringing Hungary closer to the international averages than in the last tests. In Hungary, the proportion of underachieving students in all three areas is average by international standards, and the proportion of outstanding students is also around the average. A combined analysis of education spending and PISA results suggests that the Hungarian education system is efficient at a low level of spending. However, the familial and socio-economic-cultural status of Hungarian students continues to play a crucial role in their results. Hungary had the 3rd largest gap (121 points) between students from advantaged and disadvantaged socio-economic-cultural backgrounds among EU countries. The results of the PISA tests confirmed the earlier assumption that the Covid-19 pandemic and its lockdowns had worsened the academic performance of students worldwide.

4.9.2 Results of TIMSS and PIRLS tests (2019, 2021)

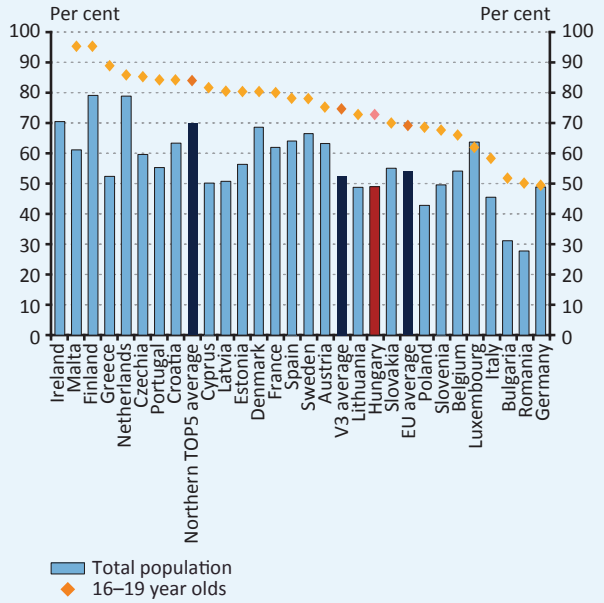


Note: Students in their fourth year of schooling, TIMSS (mathematics and science) 2019, PIRLS (reading) 2021. Estonia, Greece, Luxembourg and Romania are not included in either survey, and Slovenia is only included in the PIRLS reading comprehension survey.

Source: IEA

The TIMSS and PIRLS tests conducted by Boston College measure the academic knowledge of Year 4 (and, for a narrower subset, Year 8) students every four years. The 2019 TIMSS tested students' knowledge of mathematics and science, while the 2021 PIRLS measured reading skills. Year 4 students from Hungary scored an average of 530 points in the three areas, the 8th highest among the 23 participating EU countries, which achieved an average of 526 points. Among the Visegrád countries, the Czech Republic scored the highest (536 points), with Polish students averaging 533 and Slovak students 520. Hungarian students scored average at the EU level in mathematics (523 points), but higher in science (529 points) and reading (539 points). Compared to the 2015 TIMSS, Hungarian students' scores dropped by 6 points in mathematics and by 13 points in science in the 2019, while in the PIRLS there was a 15-point drop between 2016 and 2021. The diverging results of TIMSS and PIRLS, which focus on the checking of learning, and PISA, which aims to measure skills, suggest that Hungarian students are learning the expected curriculum, but are not able to apply what they have learned to real-life examples to the extent required.

4.9.3 Digital skills (2021)

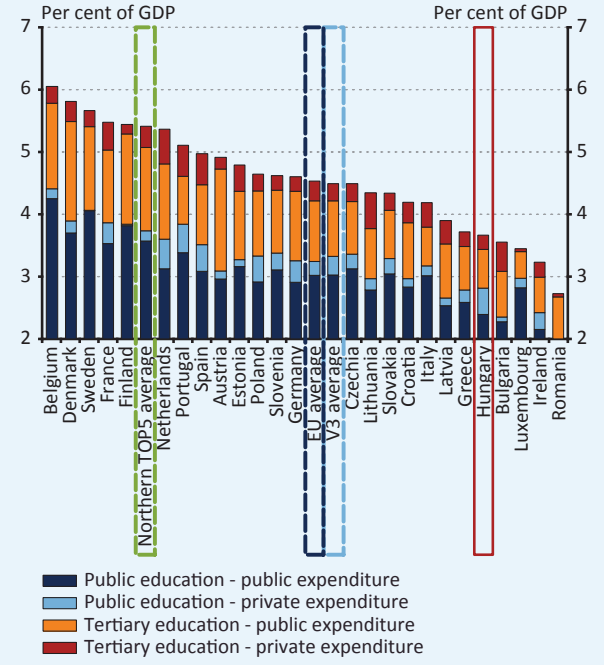


Note: Percentage of persons with at least basic digital skills. Data for Ireland is not available for the 16–19 age group.

Source: Eurostat

According to Eurostat's composite indicator measuring the level of digital skills, 73 per cent of young Hungarians aged 16–19 years have at least basic digital skills (e.g. have copied a folder on a computer, found information about a service online), which is about the same as the average for the other Visegrád countries (75 per cent) and somewhat higher than the EU average (69 per cent). Less than half (49 per cent) of the total Hungarian population have adequate digital skills, somewhat below the regional (53 per cent) and EU (54 per cent) averages. The developed Northern countries are among the European leaders in both age groups (total population: 70 per cent; 16–19 year olds: 84 per cent). Since the first tests in 2015, there has not been significant progress either in Hungary or in the EU average, suggesting that European education systems have still not been able to adapt adequately to the demands of the digital age.

4.9.4 Education expenditure as a percentage of GDP (2020)

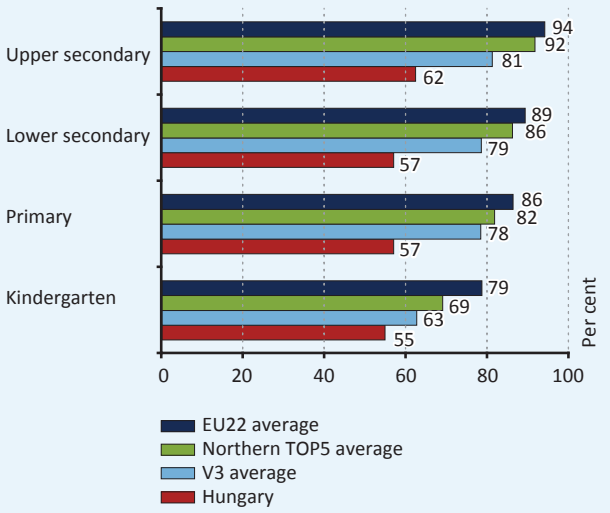


Note: Expenditures from international sources have been included in the private expenditure.

Source: OECD

In 2020, Hungary spent 3.7 per cent of GDP on education, lower than the average of 4.5 per cent for the other Visegrád countries and the EU countries. Public expenditure in Hungary amounts to 3.0 per cent, 0.9 percentage points below the regional average and 1.0 percentage point below the EU average. Hungary allocated 2.4 per cent of GDP to public education and 0.6 per cent to tertiary education. In Hungary, nearly 18 percent of all expenditure came from private sources, the 4th highest in the EU. Hungary's expenditures on tertiary education have risen significantly since 2020, but the share of private expenditure in higher education is expected to continue to rise as a result of changes in institutional models.

4.9.5 Teachers' wages as a percentage of average wage of tertiary education graduates (2022)

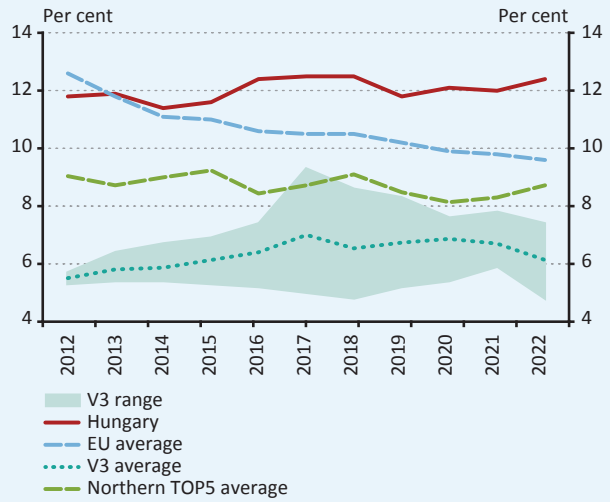


Note: As a percentage of the average wage of graduates holding tertiary education degree, employed full time throughout the year, in the 25–64 age group. The average wage of tertiary generally date from a few years earlier than teachers' salary data.

Source: OECD

Hungarian teachers' salaries were the lowest in the OECD member EU countries compared to the average salaries of tertiary graduates in 2022. The average salary of teachers is 55–62 per cent of other persons with tertiary qualifications in this country. This is below the average for the other Visegrád countries (63–81 per cent) and significantly lower than the average for EU countries, where the rate is 79–94 per cent of the average tertiary graduate salary. In Hungary, the introduction of the career path model for teachers in 2013 significantly increased teacher salaries, but after that, domestic teacher salaries did not follow the dynamic wage growth experienced in the economy. However, another cycle of major pay rises started in 2024, as a first step of which, teachers' salaries increased by more than 30 per cent on average.

4.9.6 Early leavers from education and training

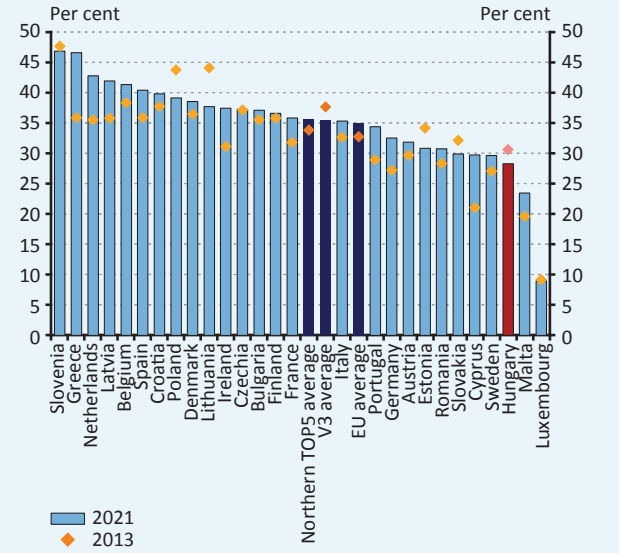


Note: The share of 18–24 year olds with primary qualifications at most and not participating in further education.

Source: Eurostat

Early school leavers are defined as young people aged 18–24 who have primary qualifications at most and are not in further education or training. In Hungary, the rate of early school leavers, without qualifications was 12.4 per cent in 2022, more than double the average for the other Visegrád countries (6.1 per cent). In its Europe 2020 strategy, the European Union set a target of 10 per cent on average, which its member states have achieved and maintained through 10 years of steady decline (9.6 per cent in 2022). By contrast, over the last 10 years the early school leaving rate in Hungary has increased from 11.8 per cent in 2012 to 12.4 per cent in 2022. The other Visegrád countries also saw an increase (from 5.5 per cent to 6.1 per cent), but the regional competitors still perform significantly better than Hungary. Young people who do not have a secondary or vocational qualification find it much harder to enter the labour market, and many of them become permanently inactive.

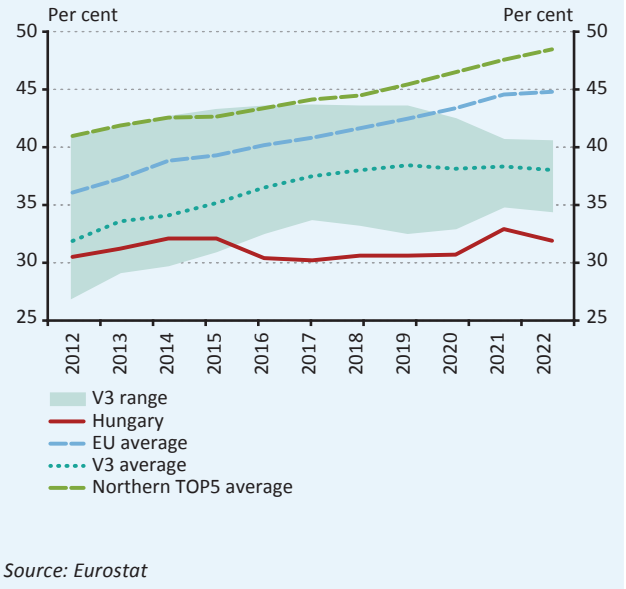
4.9.7 Tertiary education enrolment rate in the 20–24 age group (2021)



Source: Eurostat

The availability of an adequate supply of highly skilled labour is a prerequisite for a knowledge-based economy. Key to this is the ratio of young people going on to tertiary education, and also the proportion of graduates within the generation entering the labour market. In Hungary, the share of people aged 20–24 years in tertiary education contracted from 31 per cent to 26 per cent between 2013 and 2016, before starting to rise again in 2020, reaching 28.4 per cent in 2021. This rate is the 3rd lowest among EU Member States, and Hungary falls significantly short of both the EU average (35.1 per cent) and the regional average (35.5 per cent). Overall, the trends are not positive: with the exception of the Czech Republic (where it stagnated), the share of tertiary education students in the EU also decreased in all the regional countries as well in the period between 2013 and 2021. By contrast, the EU average has increased from less than 33 per cent to 35 per cent. As a result, all four Visegrád countries have slipped five or six places in the EU rankings measuring the proportion of young people participating in tertiary education.

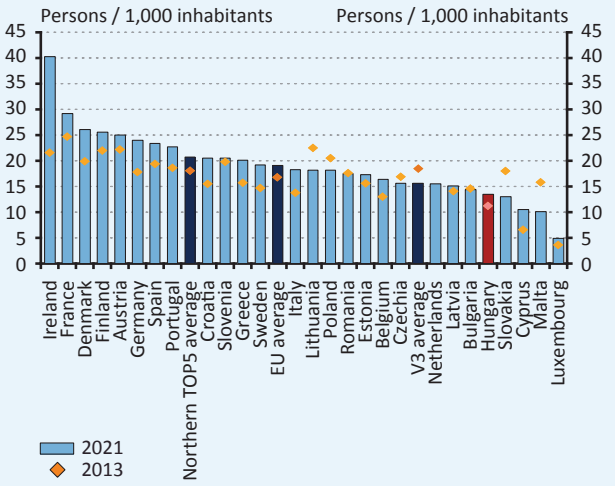
4.9.8 Tertiary educational attainment in the 25–34 age group



Source: Eurostat

In 2022, 31.9 per cent of the Hungarian population aged 25–34 years had some tertiary qualifications. The Hungarian indicator is the 3rd lowest in the EU (where the average is 44.8 per cent), and Hungary also falls significantly short of the average for the Visegrád countries (38 per cent). The share of young people with a tertiary degree rose gradually from 26 per cent to over 32 per cent between 2010 and 2015, and it was around 30 per cent between 2016 and 2020. The rate jumped to 33 per cent in 2021 (largely due to the language examination amnesty for candidates whose degrees had been withheld as they had failed to pass a foreign language test), before starting to decline again. Overall, the share of young adults entering the Hungarian labour market with tertiary qualifications has not increased significantly over the past decade, even as the EU average increased from 36.1 to 44.8 per cent between 2012 and 2022. Hungary has slipped from 17th to 25th place in the ranking of Member States.

4.9.9 Ratio of STEM graduates in the 20–29 age group (2021)

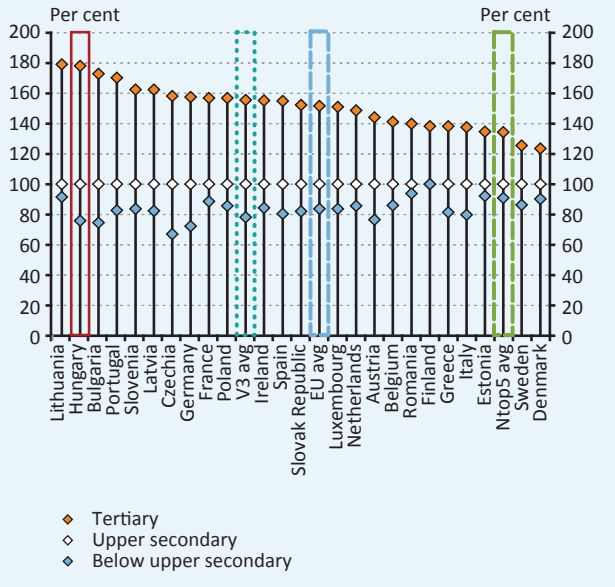


Note: STEM graduates include those who earned their degree in the fields of natural science, mathematics, statistics, infocommunication, engineering, production and construction. 2015 figures for France and 2014 data for Poland. 2021: 2020 figures for Estonia, France, Malta, Slovenia and Slovakia, 2019 data for Romania.

Source: Eurostat

Individuals with STEM qualifications represent the human resources necessary for technological progress and innovation. Increasing their number and proportion can make a significant contribution to improving companies' productivity and, in the longer term, raising the innovation performance of the economy to new levels, in terms of both quantity and quality. Hungary had 13.5 new STEM graduates in the 20–29 age group in 2021, which is significantly lower than the averages in the region (15.6) and across the EU (19.1). Overall, this is the 5th lowest figure among the EU countries. Of the V3, Poland (19.1) and the Czech Republic (15.6) outperform Hungary. In 2020, the Hungarian indicator rose to 23.5, mainly as a result of the language exam amnesty. The proportion of STEM graduates within the young generation entering the labour market is increasing slowly (it was only 11.2 in 2013), but there remains considerable room for improvement.

4.9.10 Income advantage of tertiary educational qualifications (2021)



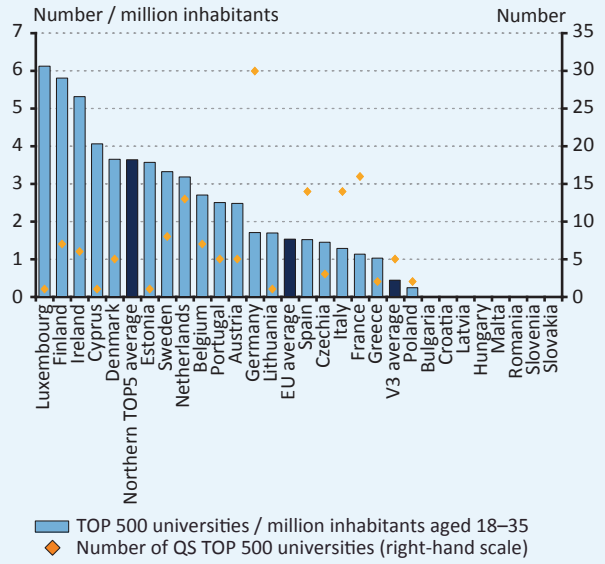
Note: Trends in average earnings by highest level of qualifications held, 25–64 age group. Secondary education=100.

Source: OECD

Those with tertiary education have better job prospects, in terms of both finding employment and the level of income reached, than those with secondary education or less.[8] In Hungary, higher education represents, on average, a wage premium of nearly 80 percent compared to the earnings of those with secondary-level education. This rate is the 2nd highest in the EU and is largely attributable to the relatively low proportion of persons with tertiary qualifications within the population. This relative wage advantage is somewhat narrower (53 per cent) among the younger (25–34) age group in the labour market. There is a correlation between educational attainment and average earnings at the other end of the scale as well: in Hungary, individuals with primary education have, on average, 24 per cent lower income than persons with secondary qualifications. This gap is also one of the widest in the EU.

[8] Source: OECD (2023): Education at a Glance.

4.9.11 Number of tertiary education institutions ranked in world's TOP 500 universities of the EU Member States (2023)

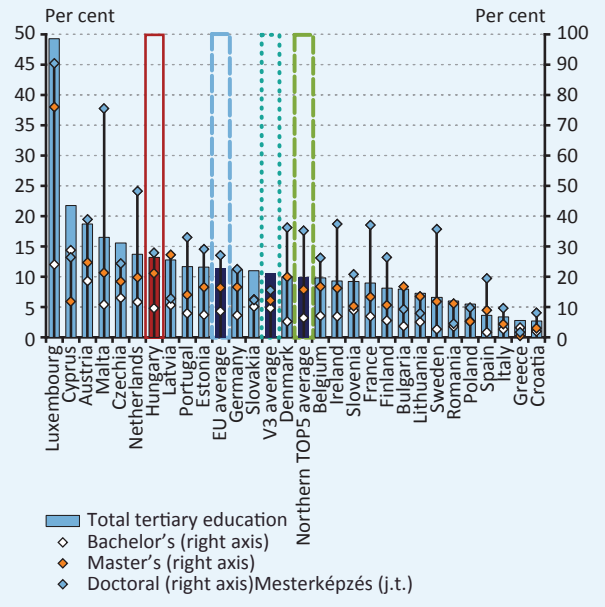


Note: Data based on QS rankings for the academic year 2023/2024. The EU members with the largest number of universities in the global top 500 are Germany (30), France (16), Italy (14) and the Netherlands (13), with 5 in the V3 and 34 in the Northern TOP5 countries.

Source: QS World University Ranking, Eurostat

Hungarian universities are not among the world leaders in international rankings of tertiary education institutions The 2023 issue of the QS World University Ranking ranks nearly 1,500 institutions from around the world, with 326 universities from the European Union making the list Of the 500 universities in the top third of the global ranking, 141 are in EU countries No Hungarian university has made it to the rankings, whereas the Czech Republic can boast 3 and Poland 2 in the top 300 The full QS list ranks 11 Hungarian universities, of which 4 (in order their rankings: the University of Szeged, the University of Debrecen, Eötvös Lóránd University and the Budapest University of Technology) are ranked between positions 600 to 750 The number of TOP 500 universities per one million inhabitants aged 18–35 years is 1.53 for the European Union Among the countries in the region, the Czech Republic is close to this level (1.45), while in Poland the ratio is 0.24 In this indicator, Luxembourg exhibits the best performance in higher education (6.12), followed by Finland (5.81) and Ireland (5.32)

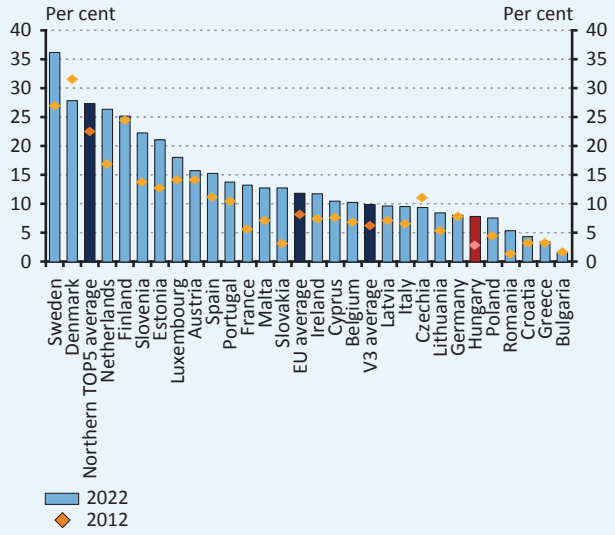
4.9.12 Ratio of international students by the level of tertiary education (2021)



Source: Eurostat

The proportion of international students within the student population is an important indicator of the international standing of tertiary education in a country. In 2021, more than 13 per cent of students studying at Hungarian universities came from another country. Nearly 10 per cent of undergraduate students were international, compared to 21 per cent of students in masters courses and nearly 28 per cent of doctoral students. Hungary is among the EU countries with the highest proportion of foreign students in tertiary education, nearly 2 percentage points ahead of the EU average (11.4 per cent) and 2.5 percentage points ahead of the V3 average. The Czech Republic (15.6 per cent) has a higher rate than Hungary, Slovakia (11.0 per cent) is level with the EU average, while Poland (5.5 per cent) has one of the lowest rates in the EU. The share of international students in Hungary was only 5 per cent in 2010, which means that there has been an increase of more than 2.5 times over the past decade.

4.9.13 Participation in lifelong learning

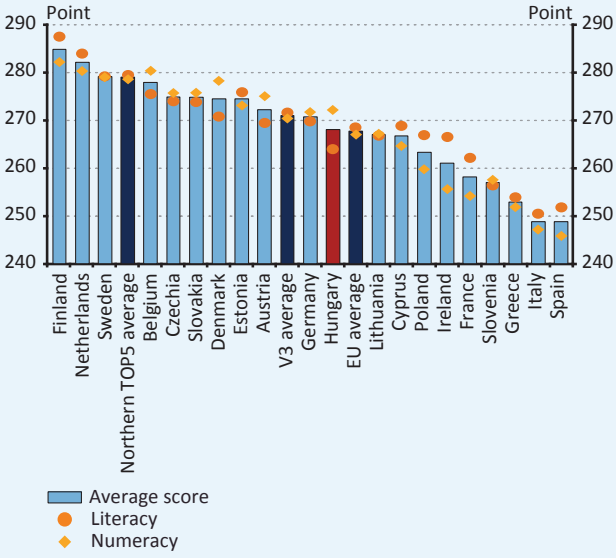


Note: In the 25–64 age group.

Source: Eurostat

Eurostat defines a lifelong learner as someone aged 25–64 years who has been in education or training in the four weeks preceding the survey. The lifelong training of workers will become increasingly essential to keep up with technological developments. In Hungary, 8 per cent of the adult population participated in lifelong learning in 2022, which is lower than the average for the other Visegrád countries (10 per cent) or the European Union (12 per cent). Compared to 2021, the Hungarian figure has increased by 2 percentage points. There are significant differences in this indicator between European countries: while the average share of people in regular training in the most developed Northern countries is 27 per cent, it is only 2 per cent in Bulgaria.

4.9.14 Results of the PIAAC test assessing adult competences (2011–2017)

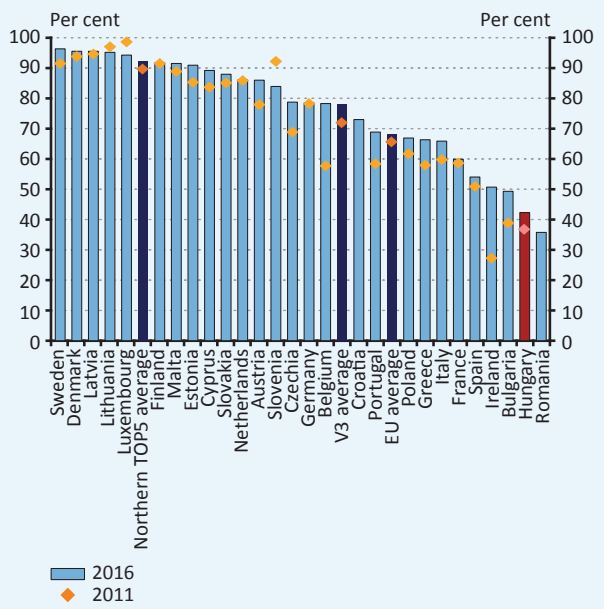


Note: In the 16–65 age group.

Source: OECD

The OECD measured the basic literacy and numeracy competences of populations aged 16–65 years in its member countries in three waves between 2011 and 2017. Its survey found that the skills of the Hungarian population were broadly in line with the average level in the region and the EU. Hungary scored 264 points in the reading comprehension test, 4 points higher than the EU average, but 8 points lower than the other Visegrád countries. In numeracy, Hungary scored 272 points, somewhat higher than the EU (268) and V3 (270) averages. It is worth noting that, in contrast to the PISA surveys measuring the skills of young people, the proportion of underachievers (i.e. those below the minimum level) in the adult population in Hungary (14 per cent) was only somewhat higher than the EU average (13 per cent). The PIAAC tests has shown that the skills of Hungarian workers are in line with the EU average, meaning that the lower productivity in Hungary is not attributable to a lack of basic skills. The next round of the PIAAC tests started in 2022, with results expected to be published in 2024.

4.9.15 Ratio of people speaking at least one foreign language

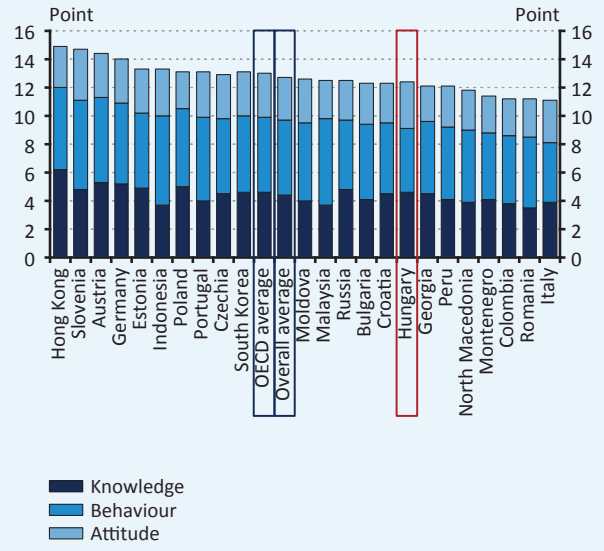


Note: In the 25–64 age group. No data available for Romania and Croatia for 2011.

Source: Eurostat

According to self-reported data, Hungary had a significant convergence gap with the EU and regional averages in the proportion of people speaking at least one foreign language in 2016. Only 42 percent of Hungarians spoke at least one foreign language, while the proportion of those speaking at least two foreign languages was less than 14 percent. By contrast, on average 68 percent of people in the EU spoke at least one foreign language, compared to 78 percent on average in the other Visegrád countries in 2016. A significant factor in the high average score for the V3 countries is that in Slovakia, partly for historical reasons, 88 percent of the population speak at least one foreign language, while 28 percent of the population speak three or more foreign languages. The inability to speak foreign languages significantly constrains the opportunities open to workers, as they have limited or no access to many channels for knowledge sharing (e.g. specialist literature, online resources). In practice, this reduces their knowledge and their ability to learn and innovate, which limits economic development.

4.9.16 Financial literacy (2020)



Note: In the 18–79 age group.

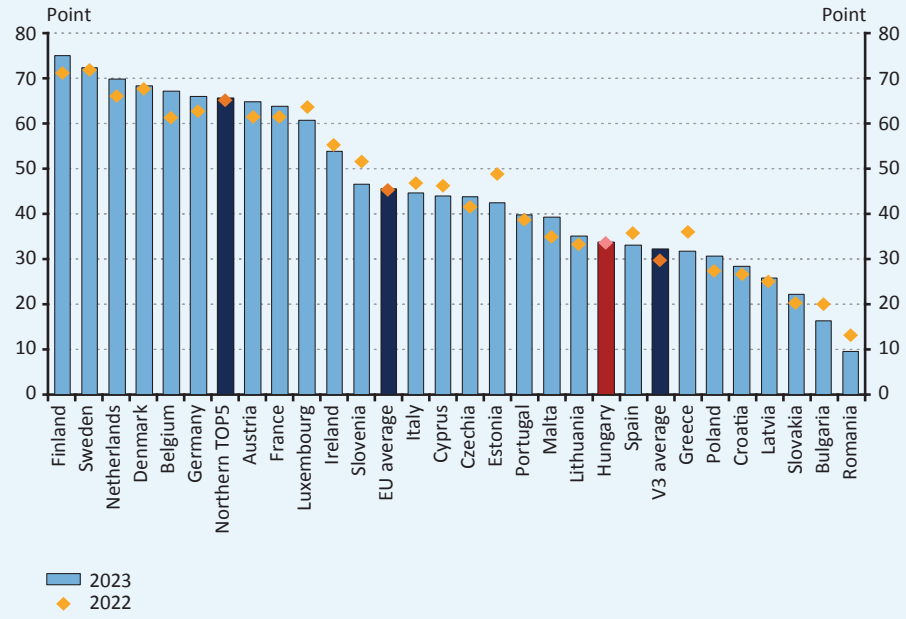
Source: OECD/INFE

In 2020, the OECD's Financial Education Network (INFE) conducted a wide-ranging test to assess financial literacy in each country. Out of the 23 countries in the test, Hungary came 14th with a score of 12.3, somewhat lower than the score of 12.5 in the previous (2014) test. Hungary is at the middle of the rankings (at 8th place) in financial knowledge and at the bottom (22nd) in financial behaviour, but at the top (2nd) in financial attitudes. This is in line with the results of the previous test. Hong Kong topped the ranking, followed by Slovenia, Austria and Germany. Even the highest scoring country (Hong Kong) scored only 14.8 out of a maximum of 21 points, while the average for the participating OECD countries was 13.0, so there is substantial room for improvement in financial literacy for all countries. Increasing financial literacy supports the development of financial opportunities, while a low level holds back growth. From September 2020 on, basic financial literacy was introduced in several school subjects, and this is expected to increase the level of knowledge of the population on the long term.

4.10 RESEARCH, DEVELOPMENT AND INNOVATION

Hungary has achieved improvements in the quantitative areas of research and development (R&D), but there remains significant room for growth in many areas of innovation and digitalisation. Harnessing these can help to improve productivity and also facilitate the transition to an intensive economic model. The next stage in the development of the Hungarian economy is the transition to a knowledge- and innovation-led growth trajectory. Hungary has made significant progress in building a knowledge-based economy over the past decade, mainly in terms of increasing financial and human resources in R&D, but it has failed to improve its relative competitiveness in terms of innovation efficiency and productivity in a comparison with other EU countries. There is a positive relationship between the development of economies and the maturity of digitalisation. Hungary's digital infrastructure may be considered mature by international standards, but significant competitiveness gaps remain in the digital structural transformation of the economy. In 2023, Hungary ranked 19th out of the 27 EU Member States in the area *Research, development and innovation*, with a score of 33.7 points. Compared to 2022, Hungary's score has improved by 0.2 points and is above the V3 average (32.2 points), but below the EU (45.5 points) and the Northern TOP5 (65.5 points). The moderate increase in Hungary's score was driven mainly by a strengthening of the country's relative position in terms of the proportion of SMEs collaborating with other companies or institutions and an increase in the number of new patents registered.

Chart 4.10
Results of MNB Competitiveness Index at the area of R&D and innovation in the Member States of the EU



Source: MNB

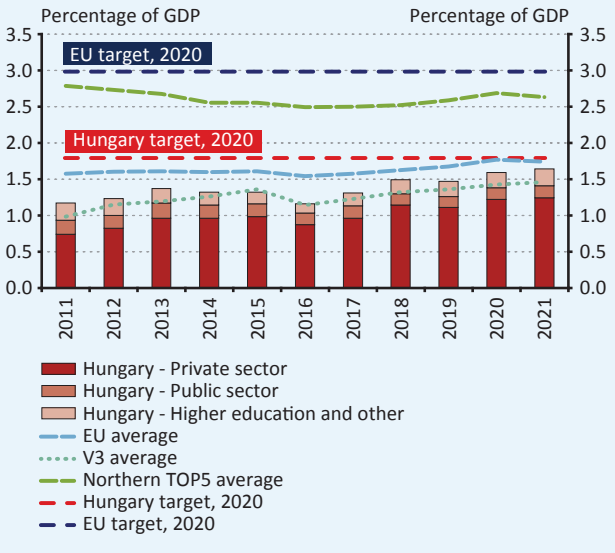
Over the last decade, Hungary has made progress in terms of the quantitative indicators of R&D expenditure and R&D employment, which are key drivers of R&D, but it has been unable to reduce its efficiency and productivity gap measured against the EU average. The share of this country's national economic resources invested in R&D as a percentage of GDP increased from 1.18 per cent in 2011 to 1.65 per cent in 2021, approaching the EU average from below. Overall, however, this still remains short of the policy target of 1.8 per cent set for 2020. The increase in resources was driven mainly by higher R&D spending in the corporate sector. As a major factor, Hungary has some of the highest levels of government subsidies for private sector R&D as a percentage of GDP anywhere in the EU. It is also positive that R&D employment increased from 0.9 per cent in 2017 to 1.3 per cent in 2021, as measured in the total national economy. However, the situation is less favourable in terms of R&D efficiency and productivity. Both the number of patents registered in Hungary per unit of R&D expenditure and the number of patents registered per million people are well below the EU and regional averages. Changes in efficiency indicators may be impacted by the fact that, despite performing their development with Hungarian researchers and in Hungarian research laboratories, large corporates in foreign ownership that conduct major

development operations in Hungary tend to register the new intellectual property rights arising from their research not in Hungary, but in the company's home country or directly with the European Patent Office.

In international surveys comparing the maturity of innovation ecosystems, Hungary has made progress in several areas, but Hungary's relative competitiveness has not improved in recent years. Hungary's overall score in the European Innovation Scoreboard is 75 per cent of the EU average. With this result, Hungary is ranked 21st in the EU. Hungary was ranked 35th in the latest Global Innovation Index of 132 countries and placed 20th in the EU. International examples show that the network resources offered by cooperation are crucial for the development of the innovation potential of the SME sector. The share of SMEs active in innovation cooperation is around 10 per cent, which is still below the EU average of 14 per cent and significantly below the average of around 19 per cent in the Northern countries, which are among the most competitive economies in terms of innovation.

The maturity of Hungary's internet infrastructure is competitive by international standards, but market participants are not exploiting this technological potential and the digital economy is lagging behind in many areas. Digitalisation is a key driver of innovation and efficiency gains, bringing the benefits of technology to businesses, households and public services on a wide scale and at relatively low cost. The widespread adoption of digital solutions can help improve productivity and competitiveness. In the field of digitalisation, Hungary is underperforming compared to the EU average and the regional countries as well according to the IMD Digital Competitiveness Ranking, and Hungary's development is significantly below that of the most sustainable Northern countries. In terms of internet penetration, Hungary is ahead of its Visegrád competitors, but still has significant room for growth in the use of digital solutions in the private sector, in the use of e-government and in the digital skills of the workforce. Among Hungarian SMEs, the adoption of digital solutions is significantly below that of large domestic corporates, which are approximating the levels seen in developed economies. The digitalisation gap of the Hungarian SME sector is also clear in an EU-wide comparison: in terms of the share of digitalised companies, Hungary is in the bottom third of the EU rankings, lagging behind the EU and regional averages, while the share of companies not digitalised at all is close to 50 per cent, which is the third worst among the member states.

4.10.1 R&D expenditure in the national economy by sector

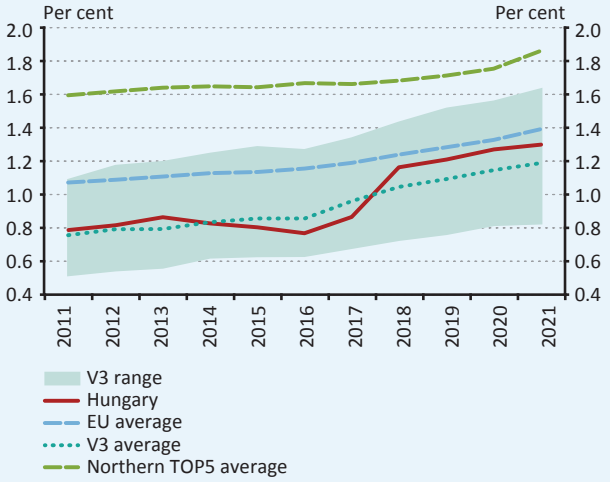


Note: As data for all EU countries are available for 2021, we used these as the basis for calculating the Competitiveness Index.

Source: Eurostat

Developed economies invest a significant share of their national income in R&D in order to expand their knowledge-based resources. The share of Hungary's national economic resources invested for this purpose rose from 1.18 per cent of GDP in 2011 to 1.65 per cent in 2021, closing in on the EU average (1.74 per cent) from below. This figure was lower than the 1.8-per cent target set in government policy for 2020 and the 2-per cent target featured in the MNB's Competitiveness Programme. In a regional comparison, Hungary is ahead of Poland (1.43 per cent) and Slovakia (0.93 per cent), but its gap with the Czech Republic (2.00 per cent) is not narrowing. The increase in the R&D intensity of the national economy has been mainly driven by an increase in R&D expenditure in the corporate sector in recent years, while R&D expenditure in higher education and government has stagnated or temporarily decreased. According to the government's R&D&I strategy for the period 2021 to 2030, Hungary's R&D expenditure is to reach 3 per cent of GDP by 2030. To achieve this, the state and higher education need to significantly increase the level of spending, which can also offset cyclical fluctuations in R&D spending by the business sector.

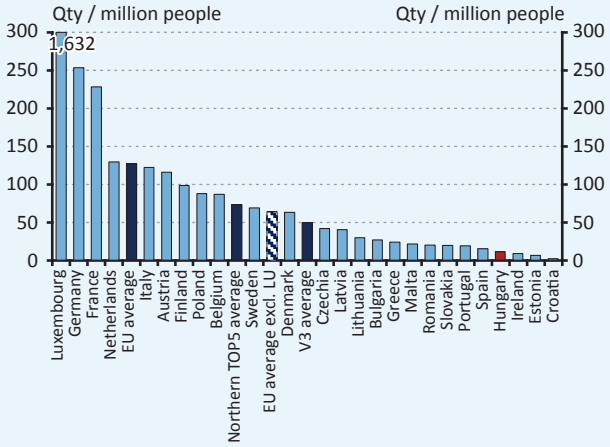
4.10.2 Research and development personnel as a proportion of the labour force



Source: Eurostat

R&D-related employment typically involves highly skilled labour and knowledge-intensive activities. The higher the share of R&D employment in an economy, the greater the weight of knowledge-based industries. In a positive trend, the share of R&D-related employment in Hungary increased from around 0.8 per cent in 2011–2017 to 1.3 per cent in 2021. Since 2018, Hungary has consistently outperformed the V3 average, ranking second behind the Czech Republic and approaching the EU average from below. However, between 2020 and 2021, the dynamics of the previous years slowed down somewhat, and Hungary failed to converge with the EU average and the gap rose moderately. Increased funding for the R&D and innovation ecosystem and higher salaries for researchers may contribute to further growth in the size of the R&D workforce.

4.10.3 Total patent grants per 1 million inhabitants (2021)

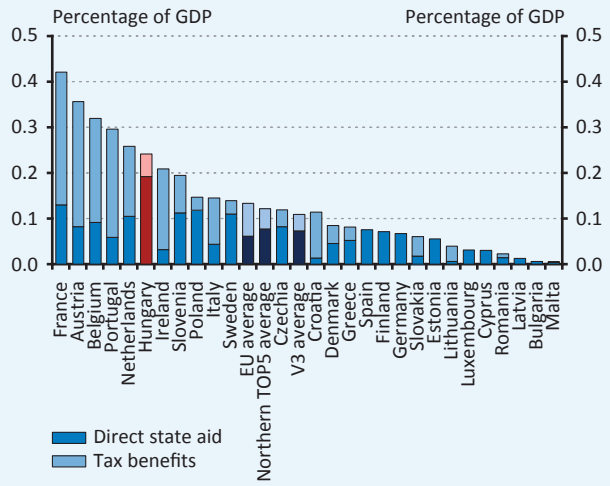


Note: No data are available for Cyprus and Slovenia. Due to the special characteristics of patent registration in that country, Luxembourg significantly distorts the EU average, and thus the EU average excluding Luxembourg is also shown.

Source: World Intellectual Property Organization, Eurostat

Developed countries are at the forefront not only in the creation of knowledge-based resources, but also in their commercial exploitation. Hungary performs particularly poorly in this area compared to the EU. The number of patents registered per million people in Hungary is 11 per year, which is substantially below the EU average (127 patents per million people, 64 patents per million people excluding Luxembourg) and the average for the region (50 patents per million people). This gap is due, firstly, to the fact that Western European countries spend more on R&D and, secondly, the fact that more highly advanced innovation ecosystems are able to exploit research and development results with greater efficiency for commercial purposes. However, the picture is further complicated by the fact that, even when they conduct development in Hungary and rely on Hungarian researchers to this end, foreign-owned companies operating here file and commercialise their new patents in their home countries. Under the János Neumann Programme (NJP), forward-looking policy steps have been taken in the field of R&D, as proposed by the MNB. According to the legislative changes adopted in 2023, SMEs, public higher education institutions and research institutes will only have to pay one quarter of patent fees, which will reduce the financial burden of acquiring and owning intellectual property rights.

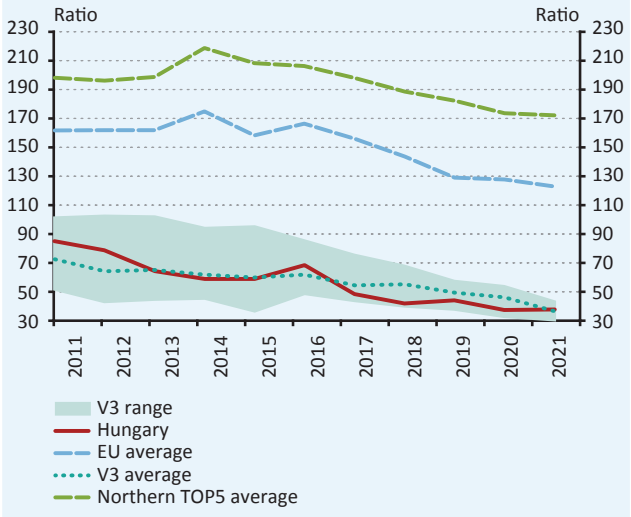
4.10.4 Direct and indirect government funding of R&D expenditure of enterprises (2020)



Source: OECD

Innovation and patenting activity can be boosted by public support to companies' R&D activities through direct incentives (targeted financial instruments) and indirect ones (mainly tax benefits). In Hungary, the level of state aid to private sector research and development (0.24 per cent of GDP in 2021) has been one of the most generous in the European Union for years. In terms of direct financial support, Hungary provides the highest share of direct transfers (almost 0.2 per cent of GDP) to companies, while business organisations can also benefit from indirect support in the form of significant discounts (corporate tax and development contribution tax allowance, social contribution tax allowance for employing researchers). This environment of subsidies is also a major factor in the increase in R&D expenditure by the corporate sector in the national economy in the period 2016–2021.

4.10.5 Efficacy of R&D expenditures

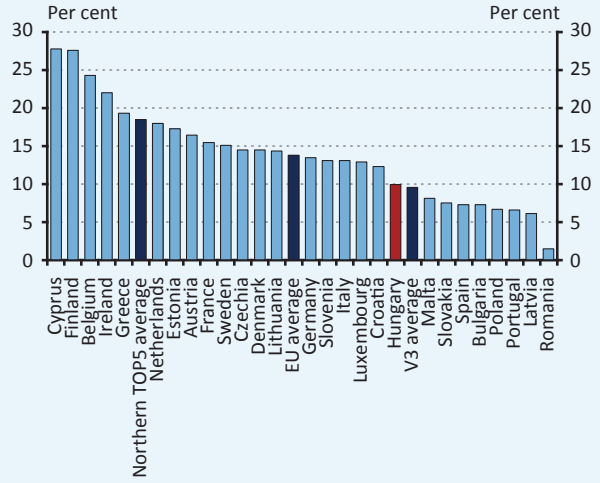


Note: Patents per capita in terms of gross domestic expenditure on R&D. EU average: arithmetic.

Source: Eurostat, World Intellectual Property Organisation, MNB

The number of patents per unit of R&D expenditure provides a measure of the efficiency of investment in research and development. A higher number of patents per unit of R&D expenditure indicates more efficient utilisation of resources. Hungary's research efficiency was above the average of the Visegrád peers until 2012, almost equal between 2013 and 2016 and then fell short of the V3 average from 2017 on. Deteriorating performance across the V3 countries brought Hungary back to the regional average in 2021. Declining R&D efficiency is a global phenomenon, caused by the increasing financial costs of the production and commercialisation of new ideas and innovations. The Hungarian indicator may be further undermined due to the fact that some foreign-owned companies do not register their research and development results in Hungary even when they conduct R&D at their Hungarian locations.

4.10.6 Share of SMEs collaborating with others in innovation (2020)

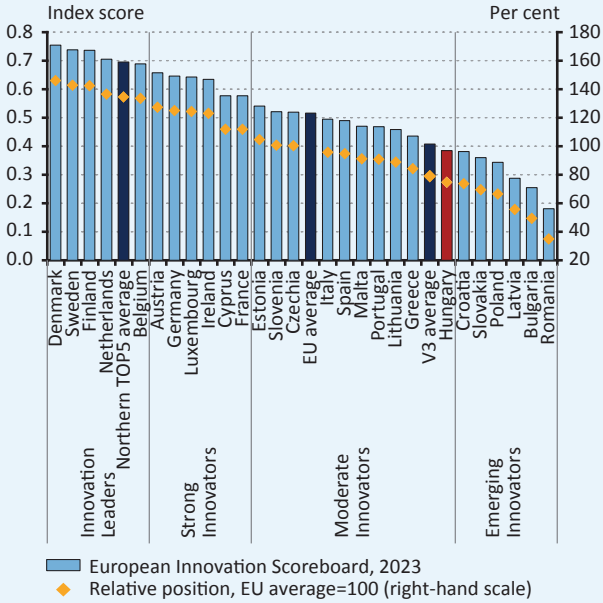


Note: In case of Luxmburg data from 2018.

Source: European Commission

Empirical research suggests that the success of advanced innovation ecosystems strongly relies on network-based resources, with the intensity and quality of the relationships determining the potential of the innovation system. The resources available to SMEs for their own development and innovation lag behind those of large companies. This resource map can be greatly expanded by collaborating with other partner companies in the value chain (e.g. suppliers, trading and sales partners), building relationships with other actors in the innovation ecosystem (higher education and research institutions, innovation policy support organisations). The share of SMEs active in innovation cooperation in Hungary rose from 6 per cent in 2012 to close to 10 per cent in 2018, but this group of companies has not grown since then. This is somewhat higher than the V3 average, but lower than the EU average of 14 per cent and well below the average of around 19 per cent for the most competitive Northern countries. The intensity of cooperation between businesses is a measure of the maturity of the SME ecosystem, which can be further enhanced by increasing the number of financial schemes supporting innovation, while strengthening entrepreneurial culture.

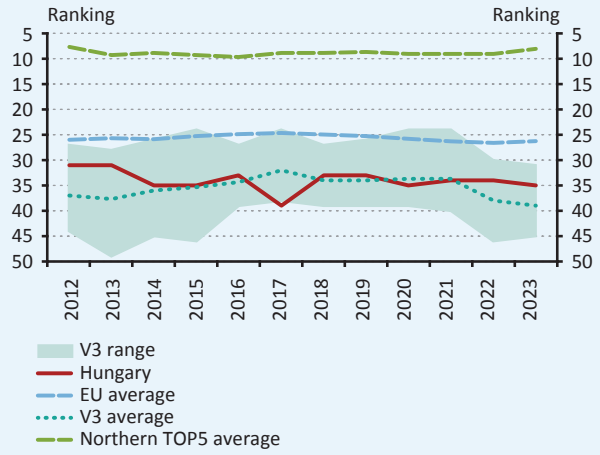
4.10.7 European Innovation Scoreboard (2023)



Source: European Commission

The European Innovation Scoreboard aims to assess and compare the maturity of innovation systems across EU countries. The Scoreboard measures the input conditions and outputs of innovation in 12 areas with a total of 32 indicators (25 indicators are statistical in nature, and 7 indicators are from the Community Innovation Survey of enterprises). In the 2023 Scoreboard, Hungary's aggregate score was 75 per cent of the EU average, placing it in 21st place among the member states, and last in the group of moderately innovative countries, according to the definitions employed for creating the Scoreboard. Among the countries in the region, the Czech Republic is ahead, while Slovakia and Poland are behind Hungary. Over the past five years, Hungary's overall index score has improved each year, but the country's relative competitiveness position has remained unchanged overall.

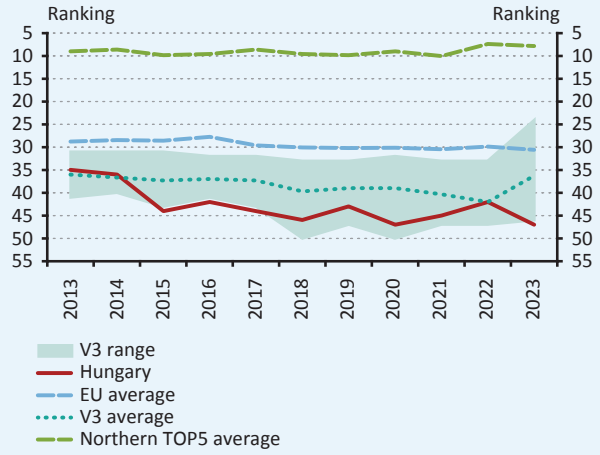
4.10.8 Global Innovation Index



Source: World Intellectual Property Organization (WIPO)

The Global Innovation Index evaluates the frameworks of national innovation systems across 132 countries worldwide and measures the innovation performance of economies using a composite index. The Index uses 80 indicators across 7 pillars (80 per cent statistical indicators, 20 per cent subjective indicators or indices adopted from other organisations). Hungary was 35th in the latest ranking, which meant that it achieved 20th place within the EU. Among the indicators examined, Hungary performs at the forefront of developed countries mainly in dimensions resulting from its open, export-oriented economic structure (FDI inflows, technology-intensive manufacturing, export complexity, high-tech exports and imports). By contrast, weaknesses are revealed in terms of the quality of innovation (science and engineering graduates, venture capital market, acquisition of intellectual property rights, entrepreneurial culture and supportive environment).

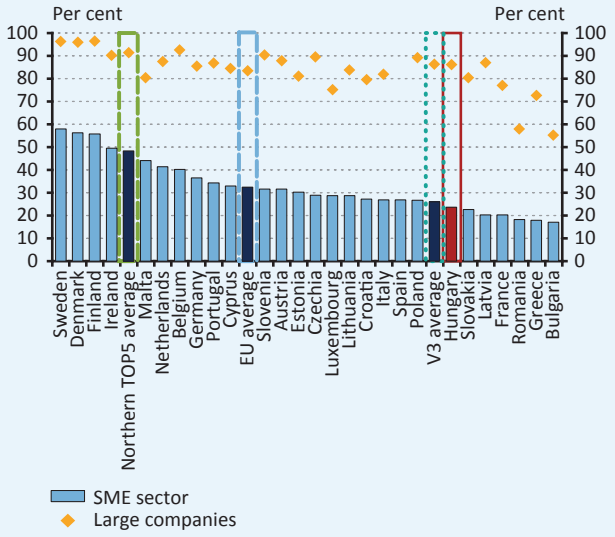
4.10.9 IMD Digital Competitiveness Ranking



Source: IMD

IMD's Digital Competitiveness Ranking measures the digital maturity and readiness of 64 developed countries across 54 indicators in three dimensions: the level of digital knowledge and skills, the development of the digital ecosystem, and readiness for a digital future. Two thirds of the indicators used for the index are based on statistical data, while the other third is based on surveys. In 2023, Hungary dropped 5 places (from 42nd a year earlier to 47th) in the global ranking. By contrast, the average of the V3 countries improved by nearly 6 places since the last survey (36th), with the Czech Republic (24th) and Poland (39th) well ahead of us, and Slovakia 1 position ahead. In the IMD index, Hungary underperforms in digital development compared to both the EU and regional averages. In an EU-wide comparison, Hungary slipped from 19th to 22nd place in 2023. In the survey, Hungary scores particularly poorly in the pillar of readiness for the digital future, mainly due to the low level of digital competences among the population. On the positive side, Hungary is in the top third of the international field in terms of digital infrastructure (mobile broadband penetration, wired internet speed).

4.10.10 Digitalisation of enterprises (2022)



Note: In data broken down into the large enterprise and SME sectors, the ratio capturing digitalised companies includes firms at the forefront of digitalisation as well as companies actively using digital technologies. For Spain, there are no data available for large companies. Without financial businesses.

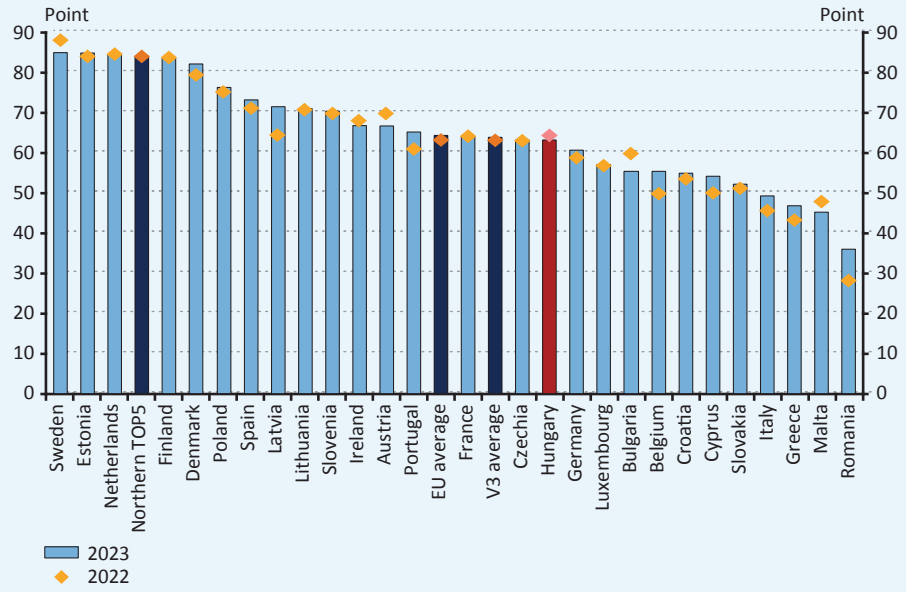
Source: Eurostat

By adapting the tools of digitalisation, such as Industry 4.0, businesses can gain a wide range of capabilities that will lead to sustainable productivity improvements. While some companies recognise these benefits, others have not yet joined this trend. The latter companies are likely to be left behind in future economic competition. This digital duality is reflected in the differences in digital maturity among countries as well as in the differences in the digital maturity of large companies and SMEs within each economy. In the Northern countries, which are leaders in digitalisation, more than 90 per cent of large enterprises and almost half of SMEs are digitally intensive businesses. In Hungary, there is a significant duality in the digitalisation of SMEs and large enterprises. The level of digitalisation among large Hungarian companies (86 per cent) is close to that of developed economies, while digitalisation in the SME sector (24 per cent) falls short, by orders of magnitude, compared to both SMEs in developed economies and large Hungarian corporates. The digital intensity of the Hungarian SME sector is below both the EU average (32 per cent) and the Visegrád average (26 per cent).

4.11 EFFICIENT GOVERNANCE

As an employer, regulator and provider of services, the state stands out among economic actors, making the efficient functioning of public administration key to sustainable convergence. The state influences the decisions of economic actors through many channels, including its regulatory activity, which has a direct impact on the business environment. In addition, maintaining a regulatory environment is a drain on resources, for example by diverting resources away from economic operators through the compulsory maintenance of bureaucracy. For this reason, the aim is for the state to operate efficiently, which means creating an optimal environment with the least distortive effects. In the area *Efficient governance*, Hungary ranked 16th among EU-27 countries, with a score of 62.9 points, down 1.1 points compared to 2022. Hungary scored somewhat lower than both the V3 (63.6) and EU (64.1) averages. The decline in Hungary's score was mainly due to the weakening of open data availability and a moderate increase in the number of people employed in public administration.

Chart 4.11
Results of the MNB Competitiveness Index at the area of the Efficient governance in the Member States of the EU

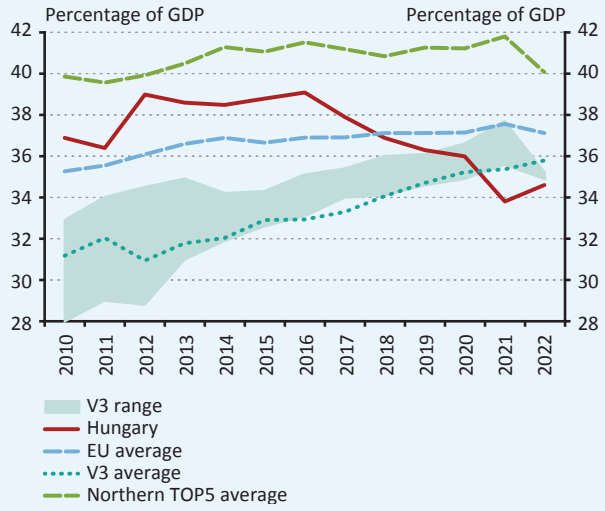


Source: MNB

The full extension of e-government, which requires further efforts in Hungary despite ongoing deployment, will support the more efficient functioning of the state. There has been special focus on e-government in Hungary recently, but further reform is needed to approximate Estonia, which is considered an international best practice. A central element of the National Digitalisation Strategy, presented in December 2022, is therefore the creation of comprehensive e-government. The indicators show a duality observable in Hungary: while in some subdomains its performance is outstanding within the EU, there remains significant room for improvement when measured by complex indicators. This may be the reason why, whereas a high percentage of the population uses online public administration, Hungary scores 3rd lowest in the UN's E-Government Development Index.

The rate of uncollected VAT in Hungary is gradually decreasing, which shows the effectiveness of the measures taken to whiten the economy, but additional digitalisation could further reduce the rate of fraud. The Hungarian tax system has undergone a fundamental transformation in the past decade or so, with the tax reform of the early 2010s shifting tax centralisation away from labour taxes towards consumption taxes. This transition and the efficiency of tax collection have also been supported by innovative digitalisation measures taken by the government, the most important of which are the online cash register system, the Electronic Public Road Trade Control System and the introduction of online invoicing. These measures have contributed to reducing the shadow economy, resulting in a dynamic increase in VAT receipts. The European Commission estimates that between 2010 and 2021, Hungary's VAT gap decreased at the 4th highest rate within the EU, with the current uncollected VAT rate standing at only 4.4 per cent, compared to an EU average of more than one and a half times of that figure. Further progress may be achieved with the introduction of draft VAT returns in early 2024, as it may further reduce the burden on economic operators.

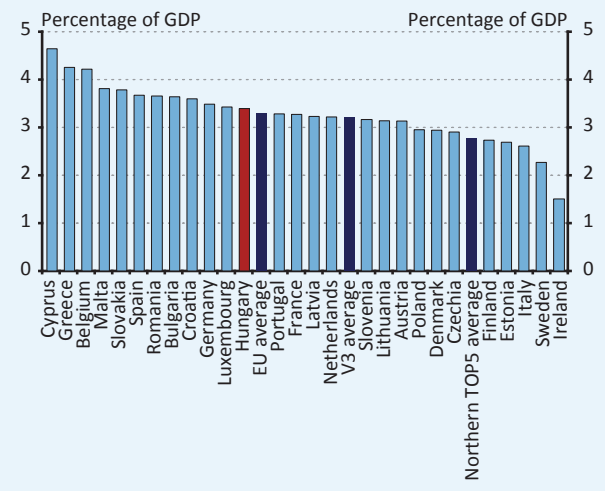
4.11.1 Tax centralisation



Source: AMECO

Tax centralisation is a widely accepted indicator of how tax and contribution receipts compare to GDP. The indicator is therefore an accurate reflection of the tax burden on the economy. On its own, however, the measure alone cannot capture the full picture, as it is a matter of value choice whether a country considers above- or below-average receipts as acceptable. Hungarian tax centralisation fell from 39.1 per cent in 2016 to 33.8 per cent in 2021, and then increased moderately, to 34.6 per cent in 2022. The Hungarian figure is still lower than the average for the Visegrád countries (35.8 per cent) and the EU as a whole (37.1 per cent). The downward trend in tax centralisation over this period is indicative of the effectiveness of the post-2010 reforms to the tax structure and aimed at reducing the shadow economy and stimulating the economic activity.

4.11.2 Public administration wage bill as a percentage of GDP (2021)

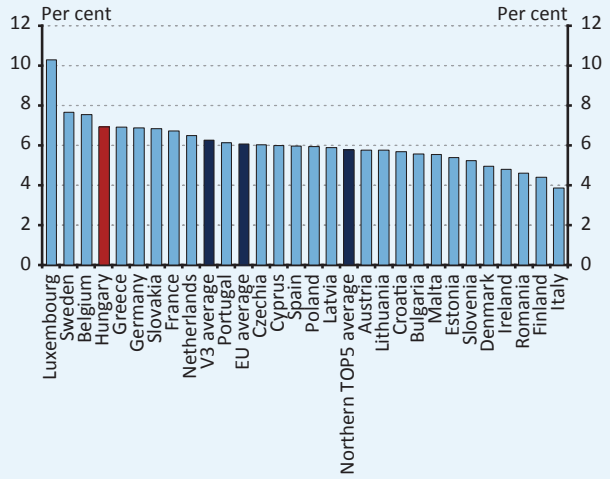


Note: The Hungarian figure does not include the estimated wage bill of fostered workers. Denmark's figure is for 2020.

Source: Eurostat, MNB

Maintaining public administration services is a key responsibility of the state and, since this is a resource-intensive activity, special attention must be paid to its cost-effectiveness. One of the main items in the cost of public administration is the wage bill, which is closely associated with the size of the bureaucracy. In Hungary, the wage bill of the public administration amounted to 3.4 per cent of GDP in 2021, only somewhat above the EU (3.3 per cent) and V3 (3.2 per cent) averages. The wage bill of public administration as a percentage of GDP varied widely across the EU. The highest labour costs were measured in Cyprus (4.6 per cent) and the lowest in Ireland (1.5 per cent). The average of the Northern TOP5 countries was 2.8 per cent, i.e. the individual values of these countries are among the lowest.

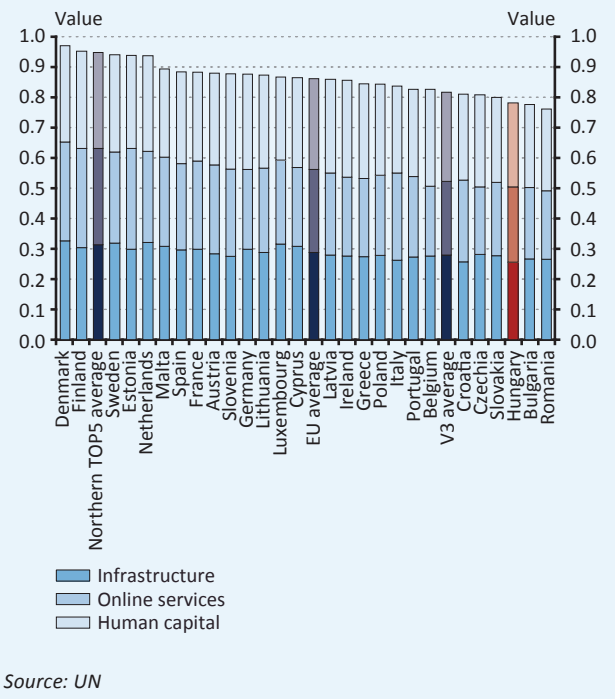
4.11.3 Public administration employment rate (2022)



Note: Excluding law enforcement and non-skilled positions.
Source: Eurostat, MNB

The state diverts a certain amount of human resource from other areas of the economy in order to maintain its public administration services. In order to improve competitiveness, it must find the optimal number of workers and enable the workforce to perform its tasks effectively. In 2022, 6.9 per cent of the total number of persons employed in Hungary worked in public administration defined in the narrowest sense. By comparison, the average for the V3 countries was 6.3 per cent, while the average for the European Union was 6.1 per cent. Compared to the Northern TOP5 countries, the gap was even greater, as Hungary had a 1.2 percentage point higher share of public administration employees. This demonstrates that above-average employment leads to above-average operating costs. For a more competitive economy, the full roll-out of e-government is desirable, which will gradually create a balance in employment levels as well.

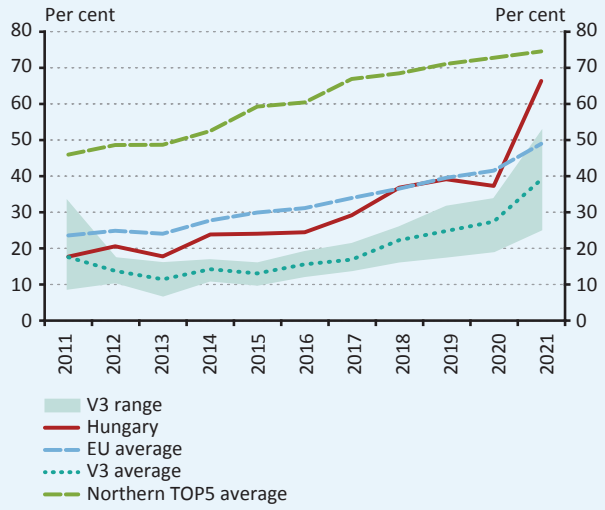
4.11.4 UN E-Government Development Index (2022)



Source: UN

A complex survey on e-government has been carried out by the United Nations (UN) regularly since 2003. The results of the survey are presented in an aggregated indicator, the E-Government Development Index (EGDI). The indicators used for ranking the countries concern three areas: online services, infrastructure and human capital. The EGDI index includes a mix of subjective and objective indicators. In the 2022 ranking, Hungary was ahead of only Romania and Bulgaria among the 27 EU countries. Hungary's overall score was 0.78, compared to an average of 0.82 for the V3 and 0.86 for the EU. It is worth emphasising that the gradual roll-out of e-government is being reflected in the survey results at a slower pace. It will take time for economic operators to start using the available services actively.

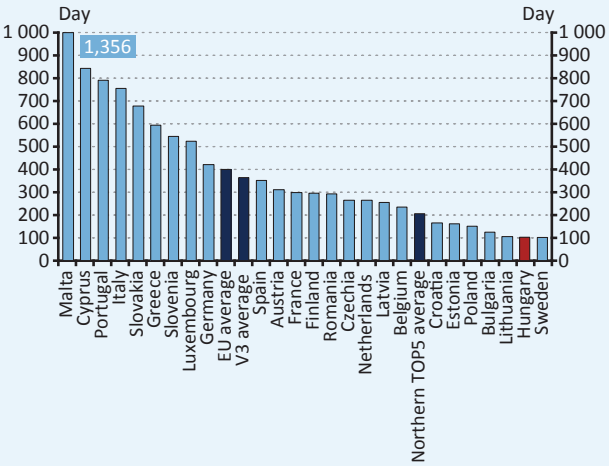
4.11.5 Public administration through the internet



Source: Eurostat

One important practical indicator of e-government is the use of the internet for public administration purposes, which shows the proportion of the population who have submitted a completed form online in the last 12 months. Over the past decade, Hungary has made significant progress in this area, with the proportion of people using the service rising from 18 per cent to 66 per cent between 2011 and 2021. The 48-percentage-point rise seen over this period is unprecedented elsewhere in the EU. The fact that Hungary has been able to break away from the EU average in this indicator and is now very close to the average of the Northern TOP5 countries is a significant improvement. The substantial improvement in Hungary's performance between 2020 and 2021 suggests that the Hungarian population has adapted better to the crisis caused by the Covid-19 pandemic than other countries. The EU-DESI ranking published in 2023 confirms that the growth in online administration is not a one-off event.

4.11.6 Time needed to resolve administrative cases in the first instance (2021)

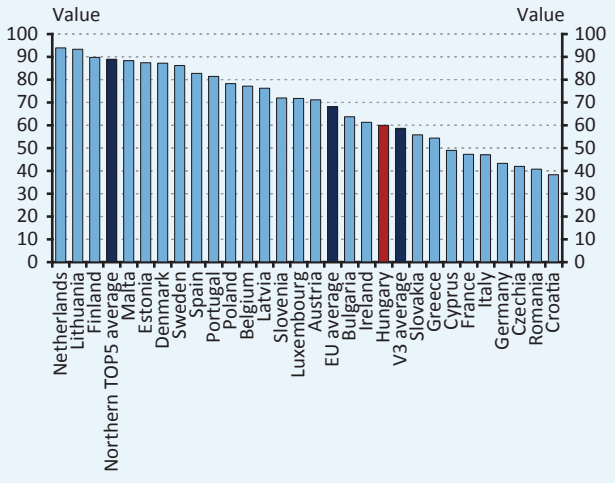


Note: No data available for Denmark and Ireland.

Source: European Commission

Justice is a key pillar within public administration, and the databases available on the courts help measure the efficiency of the judicial system. The European Commission regularly publishes its Justice Scoreboard, one of the main indicators of which is the time taken to reach a first-instance judgement in public administration cases. Data for 2021 indicate that Hungary was the 2nd best performer in the European Union in this respect. On average, only 103 days were needed to obtain a judgement of first instance, compared to an average of 400 and 365 days in the EU and V3 countries, respectively. This shows that the Hungarian judicial system is 3 to 4 times faster in public administration cases than the countries that are its main benchmarks. Such established practice gives Hungary a competitive advantage, which is essential to achieve sustainable convergence.

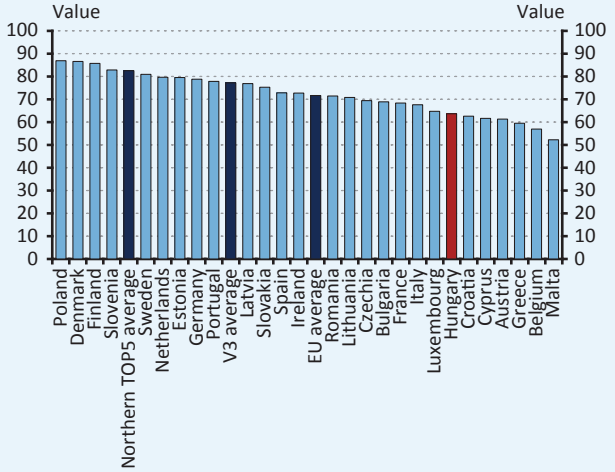
4.11.7 Automatic form filling (2023)



Source: European Commission

By reducing the time needed to complete paperwork, e-government can also support competitiveness, as pre-loaded customer data are automatically displayed by systems This is quantified by the EU-DESI indicator on the automatic completion of forms This indicator measures the prevalence of previously entered data in electronic forms in different key life situations Hungary scored 60 on a scale of 0 to 100, which is below the EU average of 68.2, but above the V3 average of 58.7 The best performers in the European Union (Netherlands and Lithuania) achieved scores of 93 and 94, which means that no external intervention is in fact needed to complete a form.

4.11.8 Open access to data (2022)

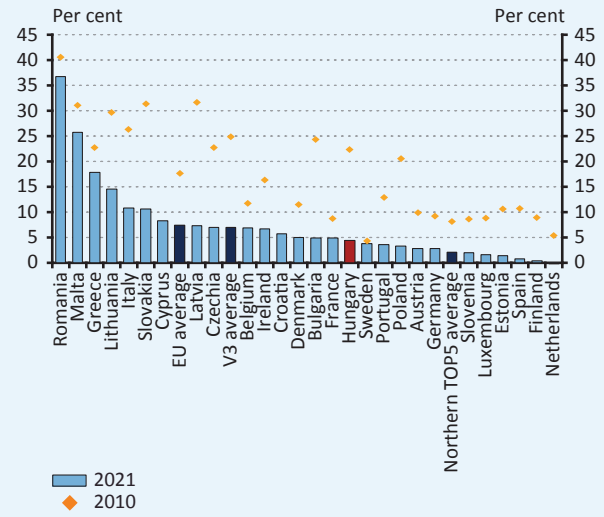


Note: The degree of data availability is rated in terms of accessibility and coverage on a scale of 0 to 100.

Source: Open Data Watch

To assess the competitiveness position of countries, it is essential to have the right data to support the authenticity of measured data The Open Data Availability indicator, published by Open Data Watch, quantifies the extent of availability and coverage of the official statistical information On a scale of 0 to 100, Hungary achieved 63.7, while the EU average was 71.7 and the V3 average 77.3 The positive average performance of the Visegrád countries was boosted by the fact that Poland scored the highest of all the countries presented (87) With an overall performance of 64 points, Hungary scored better in accessibility (67) and worse in coverage (60) Further improvement is needed in both areas, however, and this may indirectly contribute to improving the country's competitive position as well

4.11.9 Proportion of uncollected VAT



Note: Data not available for Cyprus and Croatia.

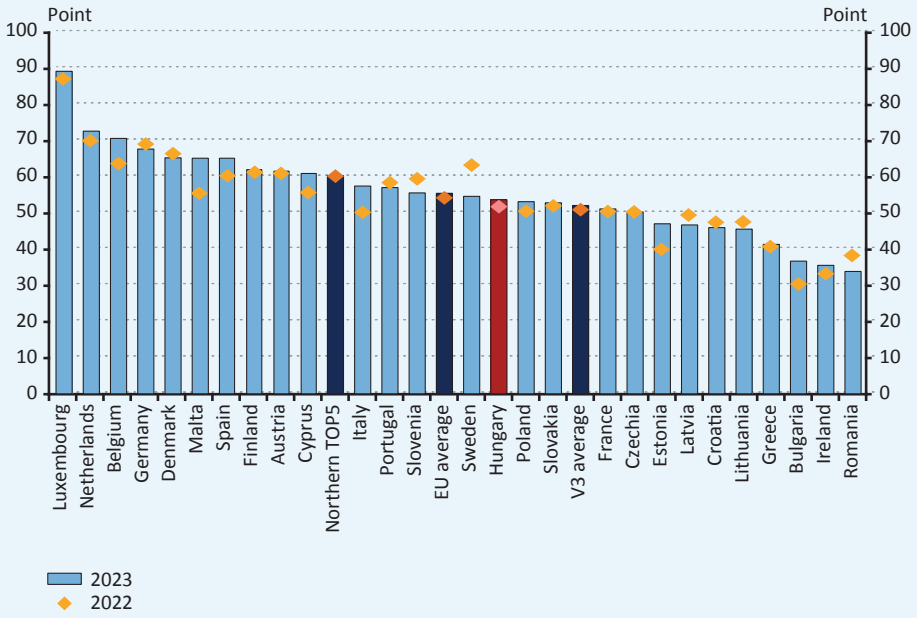
Source: European Commission

The uncollected VAT ratio can be expressed from the amount of VAT actually collected compared to the theoretically possible VAT receipts. In the last decade, Hungary has introduced several key measures to reduce the shadow economy. The online cash register system, EKÁER and online invoicing have all lowered the amount of uncollected VAT. According to the latest estimate by the European Commission, the Hungarian VAT gap was only 4.4 per cent in 2021. This compares with an EU average of 7.4 per cent and a V3 average of 7 per cent. The VAT gap in Hungary fell by 17.9 percentage points between 2010 and 2021, making Hungary the 4th best performer behind Latvia, Slovakia and Bulgaria.

4.12 MODERN INFRASTRUCTURE

High-quality traditional and modern infrastructures are key to Hungary's long-term sustainable convergence. Infrastructure development attracts investment to develop the economy, reduces transportation costs and also helps to increase labour mobility within the country. As data may be the main resource of the 21st century, the fast and secure transmission of such is becoming a measure of competitiveness. Therefore, the widespread deployment of state-of-the-art information security and internet technology solutions is critical. The state has a key role to play in developing a competitive infrastructure. In the area *Modern infrastructure*, Hungary ranked 15th among EU-27 countries with 53.5 points. Compared to 2022, Hungary's performance increased by 2.0 points. Hungary scores higher than the average of the V3 countries (51.9 points), but lower than the average of the EU countries (55.3 points) and the Northern TOP5 (60.1 points). The rise in the score was mainly driven by an improvement in Hungary's relative position in terms of energy loss across the electricity grid and an increase in average broadband internet speeds.

Chart 4.12
Results of MNB Competitiveness Index at the area of the Modern infrastructure in the Member States of the EU

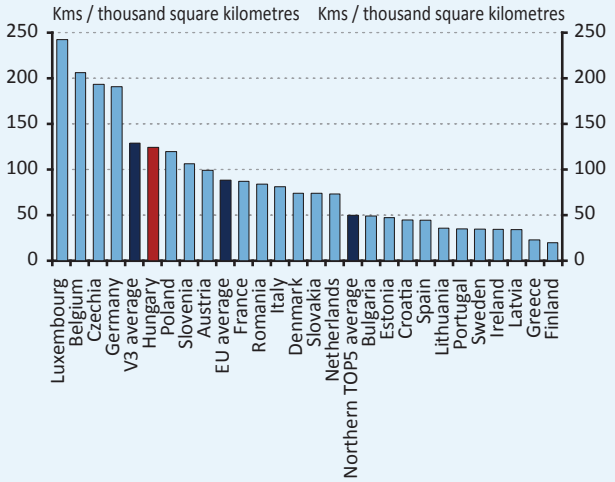


Source: MNB

The density of the Hungarian rail and road network is satisfactory, but there is room for quality improvements in several respects. The country's rail network was the 5th busiest in the EU in 2021. However, the rail network has a low proportion of high-speed, electrified and double-track lines, which limits the speed, comfort and thus the attractiveness of this mode of transport. Within the road network, the density of express roads matches the EU average, but elsewhere in the road network there are major quality problems with road surfaces, and almost half of the nation's roads are in poor condition. Traffic congestion is a problem in major cities. In 2022, the average time lost due to congestion in Budapest was 20 minutes per day, back to pre-pandemic levels. This loss of time is the 6th highest among EU capitals and results in a loss of around 1 per cent of the capital's value added and deterioration in the health of the workforce.

Hungary leads the EU in terms of internet infrastructure speed and fixed-line internet penetration, but there is still opportunity for improving competitiveness in terms of 5G technology and mobile internet subscriptions. Hungary is in the top of the EU leaderboard in terms of broadband speeds and fixed broadband penetration. The former is 55 and 35 megabits per second higher than the Visegrád and EU averages, respectively, while the latter is almost two thirds higher than the Visegrád average and around one third higher than the EU average. However, after an initial boost, 5G services have expanded at a more moderate pace than in other EU countries over the past two years. In 2023, Hungary was ranked 21st among the 27 EU Member States in terms of 5G coverage and 21st in terms of the number of 5G-enabled frequencies licensed and deployed by operators. In addition to 5G infrastructure, there is room for growth also in the prevalence of mobile internet subscriptions in the population, which is the 2nd lowest in the EU. In addition, 7 per cent of the electricity fed into the Hungarian grid is accounted for as net losses, which matches the EU average of 7 per cent, but is somewhat higher than the Visegrád average of 6 per cent.

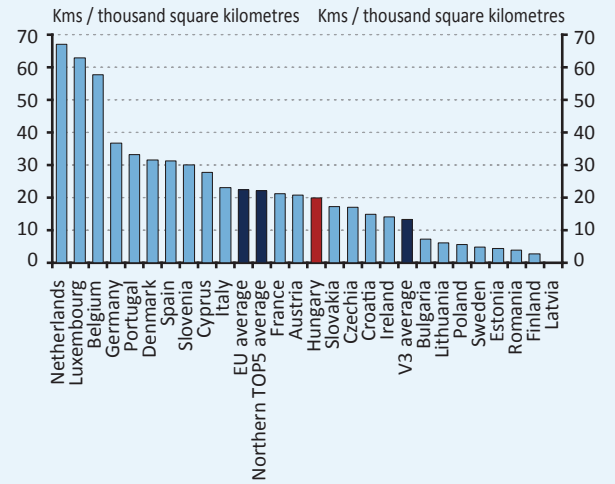
4.12.1 Density of the railway network (2021)



Note: There is no data available for Cyprus and Malta.
Source: Eurostat, World Bank

The density of the rail network is a quantitative characteristic of the fixed rail infrastructure. The Hungarian rail network is the 5th most dense in the European Union, coming in ahead, for instance, of the national coverage of the Austrian, French and Danish rail networks, as well as the EU average. However, the multiplicity of railway lines is a competitive advantage only if the quality of the tracks is suitable for fast and reliable transport and the management of the lines takes into account the location of densely populated areas and their function. It is also essential for rail competitiveness that trackside infrastructure provide convenient and attractive travel conditions.

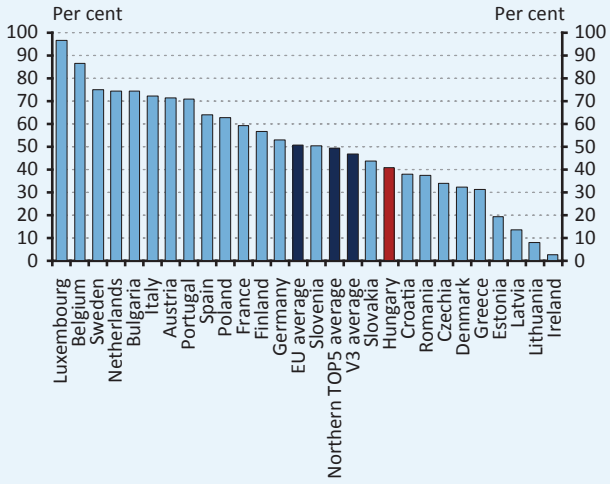
4.12.2 Density of the motorway network (2021)



Note: There is no data available for Greece and Malta.
Source: Eurostat, World Bank

The density of the motorway network is a quantitative characteristic of road infrastructure. In Hungary, the density of motorways is one and a half times higher than in the other Visegrád countries, which offer a degree of coverage across the country that is similar to the EU average. Since 2010, the length of motorways in Hungary has increased by around 26 per cent. The government has set the objective of ensuring that the motorway network can be reached in less than half an hour from any settlement in Hungary, connect cities with county rights to the motorway network and have motorways reaching the national border. The expansion of well-routed motorways attracts investment to develop the economy and speeds up the movement of people and goods.

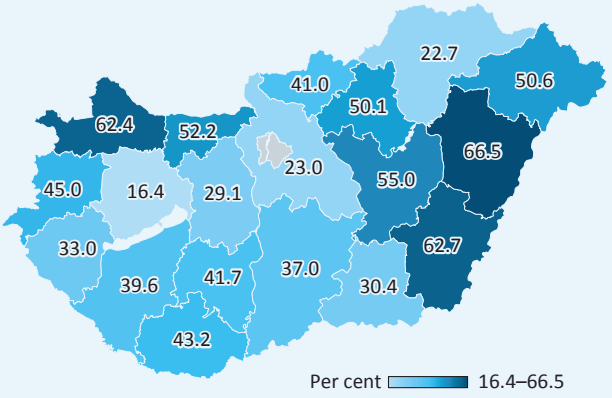
4.12.3 Ratio of electrified railway lines (2021)



Note: There is no data available for Cyprus and Malta.
Source: Eurostat

In addition to the speed of the railway lines, one of the quality criteria of the rail network is the degree of electrification. 41 per cent of the Hungarian railway track is suitable for electric locomotives, which is 10 percentage points below the EU average and 6 percentage points below the V3 average. In Sweden and the Netherlands, three quarters of the railways are electrified. Electrified railway lines allow higher track speeds, which reduce journey times for transportation and commuting, making rail transport more competitive versus road transport, which still generates much more environmental pollution. Several railway development projects have been launched in recent years with the aim of reaching track speeds of 160 km per hour, the increase in the number of electrified railway lines and the construction of new high-speed rail lines (Budapest-Vienna, Budapest-Belgrade, Budapest-Cluj-Napoca, Budapest-Warsaw) could, in the longer term, facilitate closer connections between the major cities of the Carpathian Basin and partly replace the more polluting short-distance air services.

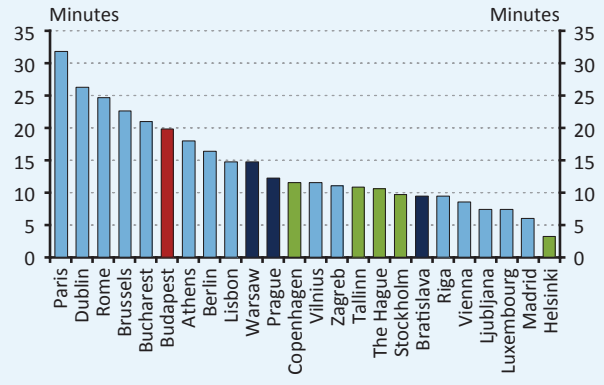
4.12.4 Roads of substandard surface as a ratio of the total road network (2022)



Source: Magyar Közút (Hungarian Public Roads Co.)

In Hungary, 42 per cent of roads are in poor condition (as defined by the Hungarian Public Roads Company). The best-quality roads are in the counties Veszprém, Borsod-Abaúj-Zemplén and Pest. The worst road conditions are seen in the counties Hajdú-Bihar, Békés and Győr-Moson-Sopron, but roads need upgrading in all regions of this country. Infrastructure development and improved accessibility makes it easier to get goods to their destinations, resulting in better market access and increased price competition. Better road surface quality may contribute to increased labour mobility through reduced travel times, which can also improve economic productivity.

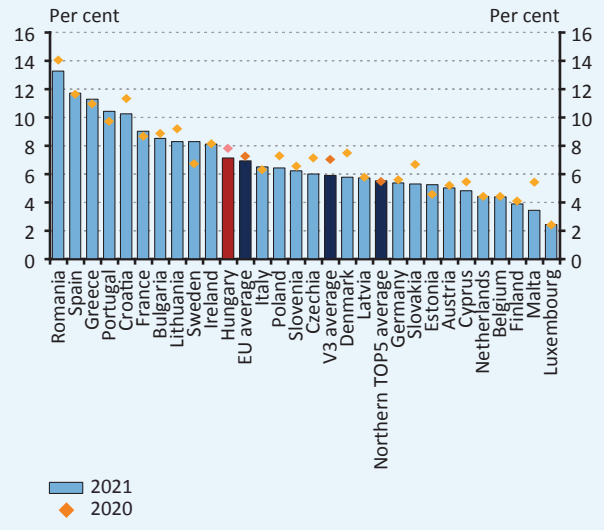
4.12.5 Average daily time lost in traffic congestion (2022)



Source: INRIX

Traffic congestion causes losses of useful time that would otherwise be spent on working or leisure. Data for 2022 indicate that regular drivers lost an average of 20 minutes a day to traffic congestion in Budapest once the economy reopened and recovered after the pandemic. Time spent in traffic congestion may result in a loss of at least 1 per cent of the annual added value generated in the capital. The average time lost in traffic jams per year in the Hungarian capital was the 23rd highest among 1,000 ranked cities in 2022, according to calculations by transport and mobility consultancy INRIX. This is a modest improvement on the previous year's ranking of 15th. In all the Visegrád and the most sustainable EU capitals in northern Europe, congestion has resulted in less travel time growth than in Hungary, which shows the need for congestion improvements in the Budapest metropolitan area. TomTom, a company that analyses traffic data and produces innovative traffic management technologies, estimates time lost due to congestion at 22 minutes per day for the Hungarian capital in 2022, 9 minutes less than in 2021; accordingly, TomTom also confirms the improvement achieved in this respect.

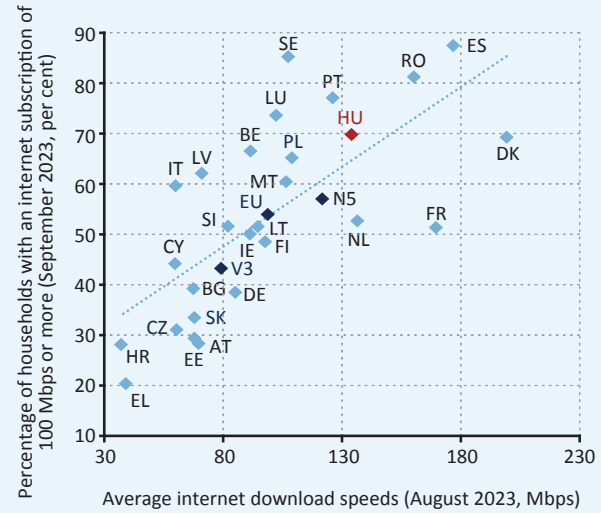
4.12.6 Electricity loss across the entire electricity network



Source: Eurostat, MNB calculation

The reliability of the electricity network can be characterised by the ratio of loss across the network versus final electricity consumption. Its value captures both technical loss (dependent on the condition of the network condition) and non-technical (external) electricity loss. A higher value indicates a less modern electricity network. About 7 per cent of the electricity fed into the Hungarian electricity grid is not used, i.e. it is accounted for as a net loss. The domestic rate is in line with the EU average, which is also close to 7 per cent, but somewhat higher than the average of 6 per cent in the other Visegrád countries. Although Hungary tends to be one of the regional countries with higher grid losses, it was able to reduce its electricity losses at the 9th highest rate from 2020 to 2021. Possible reasons for Hungary's grid losses above the Visegrád average include the incomplete or outdated insulation of the electricity network. Upgrading the capacity of the electricity grid and further reducing grid outages can contribute to the stable integration of weather-dependent renewable energy power plants into the electricity grid.

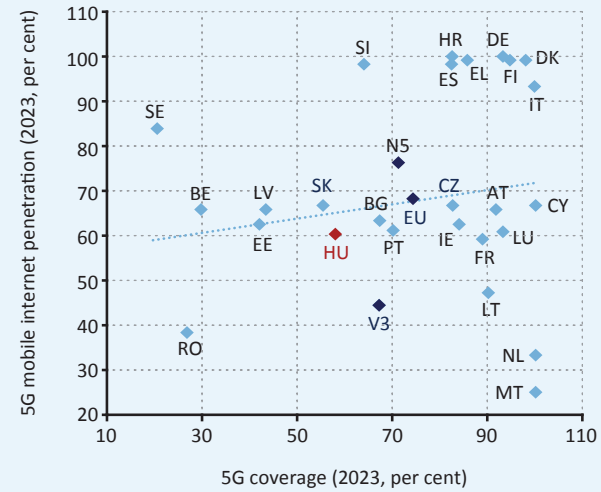
4.12.7 Broadband internet speed and penetration (2023)



Source: European Commission, Speedtest

Hungary is among the top countries in the EU leaderboard in terms of fixed broadband speeds and penetration. The average internet download speed in Hungary is 55 megabits per second faster than in the rest of the Visegrád region, 35 megabits per second faster than the EU average and 12 megabits per second faster than in the Northern TOP5 countries. In a closely associated fact, the proportion of Hungarian households with an internet subscription of at least 100 megabits per second is 70 per cent, the 6th highest in the EU. Compared to 2021, the indicator has increased by around 14 percentage points, which may have been driven in part by the pandemic. Hungary ranks 2nd in the EU in terms of the share of households (30 per cent) with an internet speed of at least 1 gigabit per second. The fast internet widely available in Hungarian households is a technological enabler of the spread of digital solutions to the population and the use of e-government. By contrast, the number of mobile internet subscriptions versus the total population was the lowest in Hungary among EU Member States in 2022 (85 subscriptions per 100 people compared to the EU average of 118 and the V3 average of 139). Fast internet also helps businesses to do business, making them more competitive.

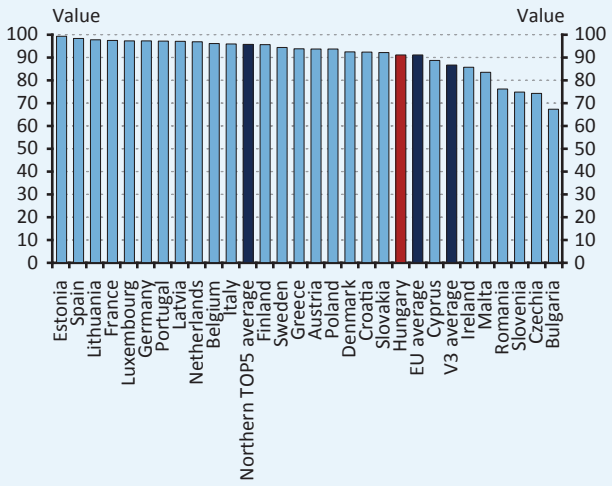
4.12.8 5G coverage and mobile internet readiness (2023)



Source: European Commission

5G coverage, which shows the proportion of households with access to commercial 5G services, was 57.9 per cent in 2023 in Hungary, a significant improvement (by 40 percentage points) compared to 2022. The majority of EU countries also made significant progress in the period under review, and therefore Hungary moved up one place, to 21st, in the ranking of the 27 Member States. 5G technology facilitates the deployment of the Internet of Things (IoT) in enterprises, which can significantly increase productivity, and therefore the early provision of full 5G coverage to industrial estates operating in Hungary and to Hungarian households offers a competitive advantage. 5G mobile internet readiness shows what proportion of a country's frequencies suitable for 5G services are licensed to, and commercialised by, the operators. Hungary dropped from 16th in 2022 to 21st in 2023 in this indicator in an EU-wide comparison, as its 5G readiness has not changed since 2020; several countries have overtaken Hungary in this domain. Thus, even in 2023, the technology was only operating on 60 per cent of the total eligible frequencies, lower than the EU and Northern TOP5 averages, although higher than the V3 average.

4.12.9 Global Cybersecurity Index (2020)



Note: A composite index of 25 indicators where 100 is the best and 0 is the weakest achievable result.

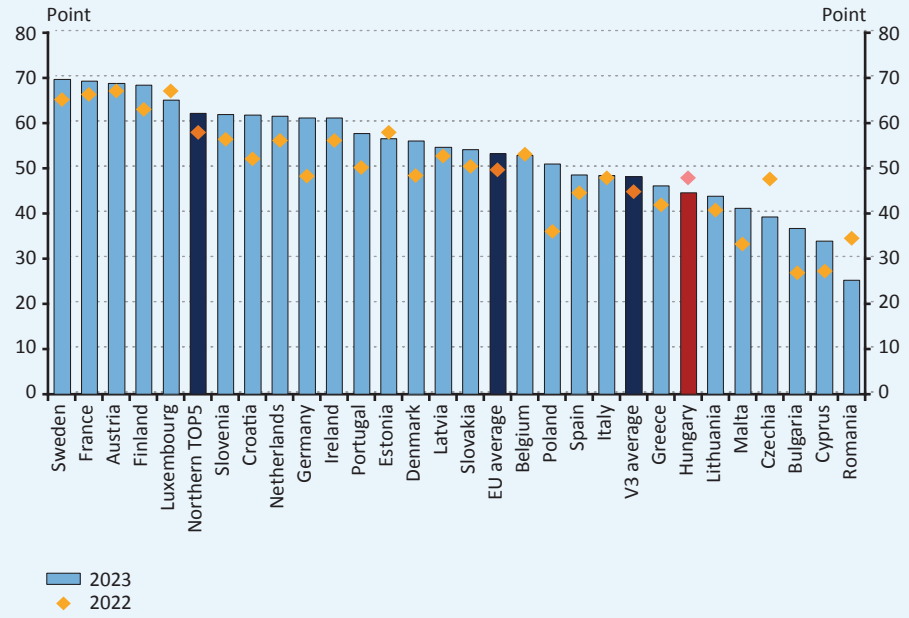
Source: International Telecommunication Union

The operation of a modern telecoms infrastructure demands a secure environment. The degree of security of that environment is measured by the Global Cybersecurity Index of the International Telecommunication Union. Hungary's cybersecurity exceeds the average of the other Visegrád countries and, to a lesser extent, the EU average as well, but falls short of the developed countries in Northern and Western Europe. Estonia tops the ranking among EU Member States. Hungary's strengths in terms of information security include cooperation with partners, raising public awareness and building capacities, as well as Hungary's legal and regulatory environment. There is a competitiveness gap in the technological (IT and software) development of information security, however. The National Cyber-Security Center of Hungary has been created to centralise the system of state and municipal entities responsible for information security; nevertheless, as can be seen in the examples of Slovakia and the Czech Republic, there is still opportunity for a breakthrough in developing and supporting the Hungarian information security software industry.

4.13 COMPETITIVE ENERGY USE

By developing a green and domestically-focused energy mix and reducing the share of net energy imports, the government can reduce Hungary's energy dependency. Making energy use more environmentally sustainable can facilitate the green transition and help decarbonise Hungary's economy. Investments in renewable and nuclear energy reduce energy dependence and environmental impact, and also improve the external balance of the economy by lowering import costs. The long-term sustainability of energy management depends on striking a balance between environmental protection, security of supply and affordability. A coordinated and systemic energy policy that ensures delivery on climate protection goals, strengthens the country's security of supply and keeps energy prices affordable can facilitate the achievement of these goals. In the area *Competitive energy use*, Hungary ranked 21st among the EU-27 countries, with a score of 44.3 points. Compared to 2022, Hungary's performance decreased by 3.3 points. Hungary scores below the average of the V3 countries (47.8 points), the EU average (53.0 points) and the average of the Northern TOP5 countries (61.8 points). The fall in Hungary's score was mainly due to the increase in electricity and gas prices for industrial consumers.

Chart 4.13
Results of MNB Competitiveness Index at the area of the Competitive energy use in the Member States of the EU



Source: MNB

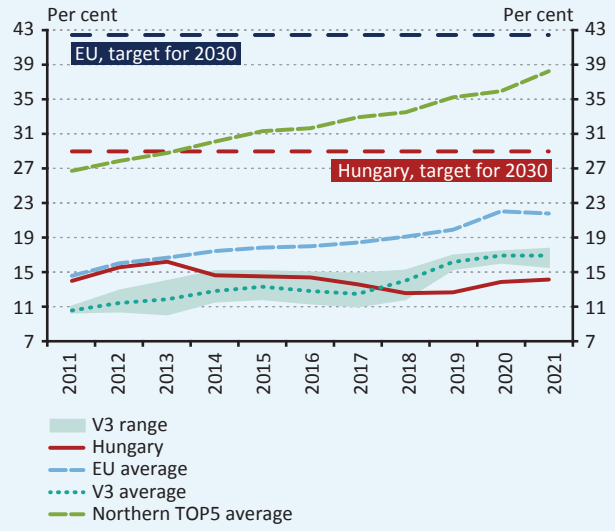
The energy dependency of the Hungarian economy remains high by regional standards, reinforced by a domestic economic structure that is more energy-intensive than the EU average. The net energy import index, which captures energy dependence, had been rising in recent years in Hungary but fell somewhat in 2022 due to the energy crisis triggered by the Russia-Ukraine war. Nevertheless, Hungarian energy imports are still somewhat above the EU average and remain significantly higher than the average for the Visegrád and Northern TOP5 countries. Although decreasing, the energy intensity of the Hungarian economy, i.e. the energy demand per unit of output was still 1.7 times the EU average in 2022. Further improvements in energy efficiency and the expansion of domestic green energy production within the energy mix could have a stabilising effect on the current account balance.

The share of renewable energy sources within Hungary's total energy use declined between 2014 and 2018; this trend stopped in 2019 and a slow increase started in 2020 as solar parks were installed. 87 per cent of the 2030 target of 6,000 MW of installed solar capacity (i.e. more than 5,200 MW) had already been built by September 2023. In addition to the further expansion of solar parks, there remains a significant competitiveness reserve in the spread of environmentally friendly forms of energy other than solar, as the domestic renewable energy share is still the 6th lowest in the EU and around 70 per cent of that share comes from firewood, which is renewable but polluting. The government has set a target of 29 per cent renewable energy by 2030 in the National Energy and Climate Plan, revised in 2023, which is significantly

below the EU's 42.5 per cent commitment. In addition to expanding capacities, addressing renewable energy storage issues and developing the network infrastructure is essential to meet these targets.

While the Hungarian residential energy price remained one of the lowest in the EU during the energy crisis starting in 2021 H2, domestic industrial gas and electricity prices exceeded the EU average by 80 per cent and 65 per cent, respectively. Between 2011 and 2014, household electricity and gas prices in Hungary were gradually reduced to below the Visegrád region average and then even below the EU-wide average as a result of a series of statutory price cuts. During the energy crisis of 2022, keeping utility cost reduction terms in place up to average consumption levels meant that Hungarian household gas prices increased by only 5 per cent and electricity prices by 8 per cent compared to 2021. In the EU, meanwhile, the former increased by an average of around 60 per cent and the latter by around one quarter. Similar to household prices, industrial electricity and gas prices decreased between 2013 and 2017, although they never fell below the EU and Northern TOP5 averages; from 2018, electricity prices started to increase in line with developments on the exchange markets. As a result of the energy crisis unfolding from 2021 H2, Hungarian **industrial** gas prices increased 3.4 times in 2022, while electricity prices increased 2.3 times in PPS terms. The increase in Hungarian gas prices was around 50 per cent higher than the EU average, while the increase in household electricity prices was around 40 per cent higher. Factors included energy production prices that were higher in Hungary than the EU average from 2022 H2 and the fact that the majority of SMEs took out fixed-price electricity contracts, the costs of which were higher than under flexible-priced contracts from 2022 H2. In the long term, pricing that encourages renewable sources instead of fossil fuels may both support the companies and strengthen the competitiveness of the energy market, while also promoting green transition.

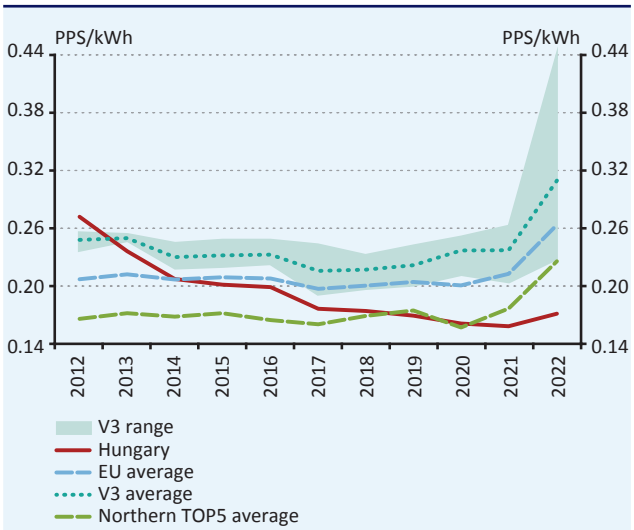
4.13.1 Use of renewable energy sources



Source: Eurostat

Renewable energy sources account for a lower share of total energy use in Hungary than the EU-wide and Visegrád averages. The share of renewable energy in Hungary was just above 14 per cent in 2021, the 6th lowest in the European Union. The renewable energy ratio declined between 2013–2018 due to a decrease in the use of firewood, which is accounted for as renewable biomass. This decline in the indicator stopped in 2019, mainly due to the expansion of installed solar capacity, and then the indicator started to increase from 2020. As of September 2023, installed solar capacity exceeded 5,200 MW; this is approximately 87 per cent of the 6,000 MW target for 2030. On the downside, about 70 per cent of Hungarian renewable energy use comes from biomass and therein firewood, which pollutes the environment. The government wants to increase the share of renewable energy to 29 per cent in Hungary by 2030. This national target of 29 per cent is lower, however, than the EU's minimum target of 42.5 per cent by 2030. In addition to its expansion, the structure of renewable energy production is also an important consideration; there is opportunity for improved safety and sustainability in the use of other renewable energy sources (geothermal, wind) in addition to solar power. The expansion of renewable energy sources requires not only the expansion of domestic generation capacity, but also innovative and environmentally friendly solutions for storage and the technical upgrading of the electricity grid.

4.13.2 Electricity price for households

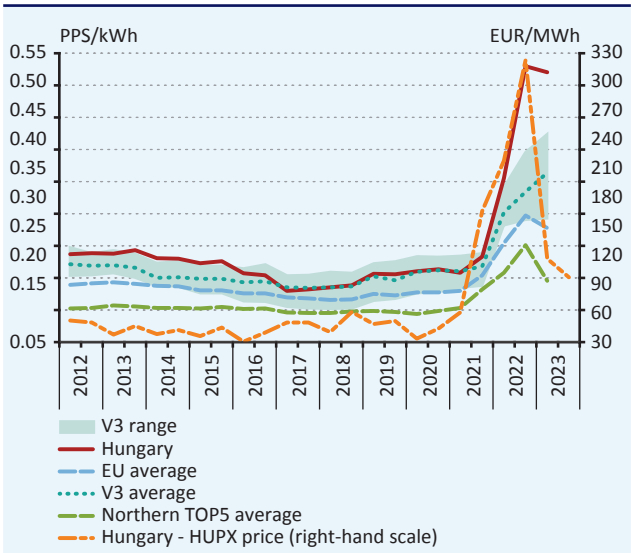


Note: Between 2500 and 5000 kWh for household consumers, with all taxes and other levies.

Source: Eurostat

The price of electricity in Hungary (for households, including taxes and other charges, measured at purchasing power parity) fell below the Visegrád average in the period between 2012 and 2014 as a result of a series of cuts to the regulated price, which has been below the EU average since 2015. Although electricity prices on the electricity exchanges rose to unprecedented highs from 2021 H2, the maintenance of the utility cost reduction terms for households with consumption at or below the average meant that Hungarian consumers experienced an average increase in electricity prices of only 8 per cent from 2021 to 2022. Meanwhile, household electricity prices increased by about one quarter on average in the EU. As a result, the Hungarian price remains significantly (37 per cent) lower compared to 2010. According to an international price comparison by the Hungarian Energy and Public Utility Regulatory Authority, the price of residential electricity in Budapest, measured at purchasing power parity, was the 2nd lowest in the EU for volumes up to average consumption in July 2023, and the 4th lowest at 120 per cent of average consumption.

4.13.3 Electricity prices for industrial consumers

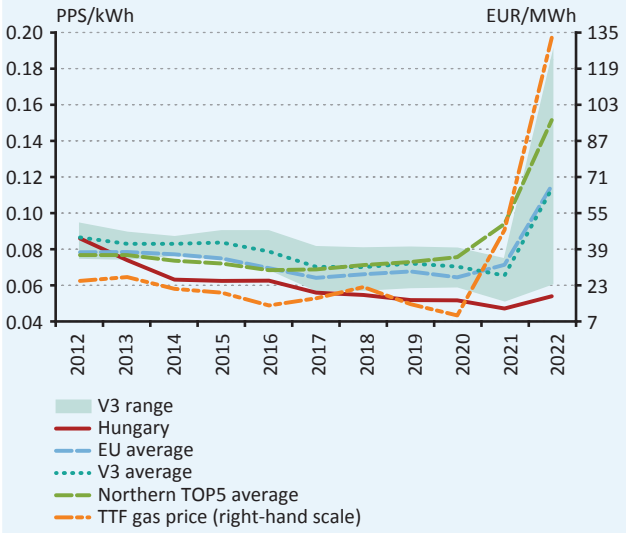


Note: 2000 és 20000 MWh közötti ipari fogyasztók számára, minden adóval és egyéb teherrel, PPS/kWh-ban.

Source: Eurostat, HUPX, MNB

While electricity is supplied to households in the form of a universal service, free market supply results in more diversified electricity prices for businesses. Hungarian industrial electricity prices (including taxes and other charges, measured at purchasing power parity) decreased to the average level of prices in other Visegrád countries between 2013 and 2017 and remained broadly stable until 2021. From 2021 H2 on, electricity prices on the exchange markets started to increase and peaked at historic levels in 2022. The price rise was driven by the resurgence in energy demand following the Covid-19 pandemic and the war between Russia and Ukraine. On the Hungarian electricity exchange (HUPX), the average price per megawatt-hour of electricity on the day-ahead market was EUR 272 in 2022, falling to EUR 107 per megawatt-hour in 2023. Measured at purchasing power parity, Hungarian industrial electricity prices in 2022 were on average 2.3 times higher than in 2021, an increase that was 40 per cent steeper than across the EU as a whole and for the Visegrád peers. Electricity prices for non-household consumers in Hungary fell only moderately on average in 2023 H1, remaining at one and a half times the average for the Visegrád competitors and twice the level of EU Member States in purchasing power parity terms. The higher rate of price increase is attributable to Hungarian production prices being above the EU average and the prevalence of fixed-price electricity purchase contracts for small and medium consumers, which follow the stabilisation of energy markets only in the longer term and thus offer less favourable conditions in the current situation than the more flexible types contract.

4.13.4 Gas prices for households

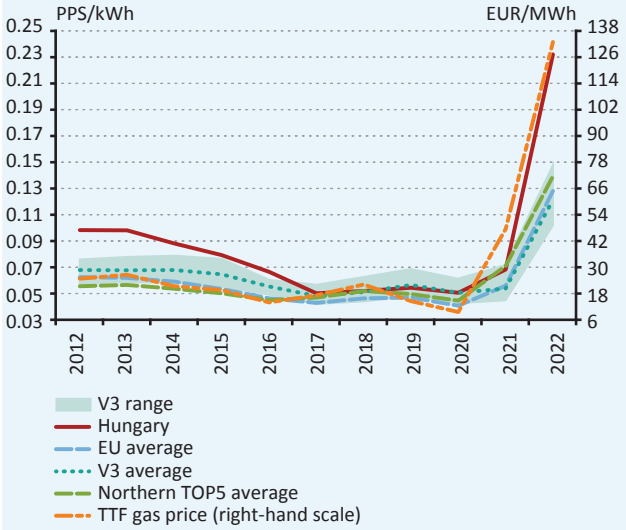


Note: Between 20 and 200 GJ for household consumers, with all taxes and other levies. EU average does not include Cyprus, Finland and Malta, North TOP5 does not include Finland. The TTF gas price represents the 1-month future gas price of the Dutch gas exchange.

Source: Eurostat, Bloomberg

The price of household gas (for Hungarian households, taxes and other charges included, at purchasing power parity) in Hungary fell by 34 per cent between 2011 and 2014 as a result of a series of cuts to regulated prices. As a result, gas prices for households have been lower than the Visegrád and EU averages since 2013. Despite the energy crisis in 2021–2022, the average household natural gas price increased by only 5 per cent in PPS terms, despite a 14-fold increase in the price of natural gas on the exchange market from 2020 to 2022. According to an international price comparison by the Hungarian Energy Authority, the price of household gas in Budapest, measured at purchasing power parity, was the lowest in the EU for volumes up to average consumption in July 2023, and the 6th lowest at 120 per cent of average consumption. However, in order to take into account energy security and sustainability, it is essential that in the medium term, gas consumption is complemented with, or gradually replaced by, more environmentally friendly alternatives (e.g. heat pumps, geothermal district heating), thus also helping to reduce Hungary's energy dependence.

4.13.5 Gas prices for industrial consumers

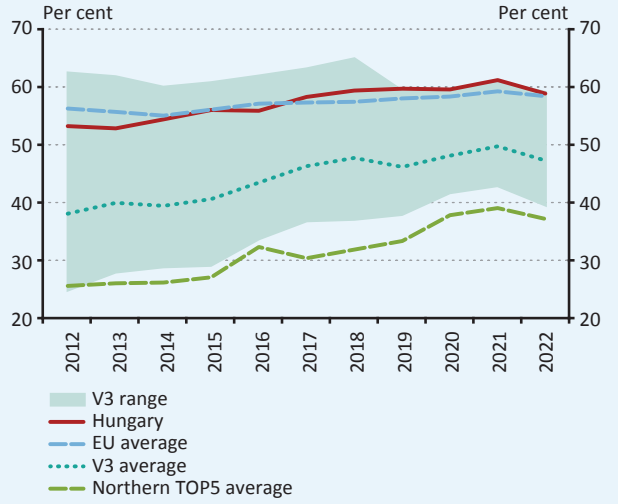


Note: Between 10 000 and 100 000 GJ for household consumers, with all taxes and other levies. EU average does not include Cyprus and Malta. The TTF gas price represents the 1-month future gas price of the Dutch gas exchange.

Source: Eurostat, Bloomberg

As with household gas prices, the price of gas (including taxes and other charges, at purchasing power parity) for industrial (i.e. business) consumers fell between 2013 and 2017 as a result of global market developments and caught up with the average price level in the Visegrád area. The energy crisis unfolding from 2021 H2 onwards created a different situation both globally and within Hungary. In 2021, the average gas price paid by companies in the EU and in Hungary increased by around 35 per cent compared to 2020; by contrast, there was only a 7-per cent price increase in the Visegrád region. Then, in 2022, Hungarian **industrial** gas prices increased to 3.4 times their 2021 level, while EU and Visegrád prices increased to only 2.3 times their 2021 level. Especially in the SME sector, the contracts of some companies in Hungary set higher contract prices than the EU average. The gradual reduction of Hungary's dependence on natural gas is imperative, and boosting the capacity of alternative energy sources (e.g. green hydrogen, geothermal energy) can support this process.

4.13.6 Energy dependency of the economy

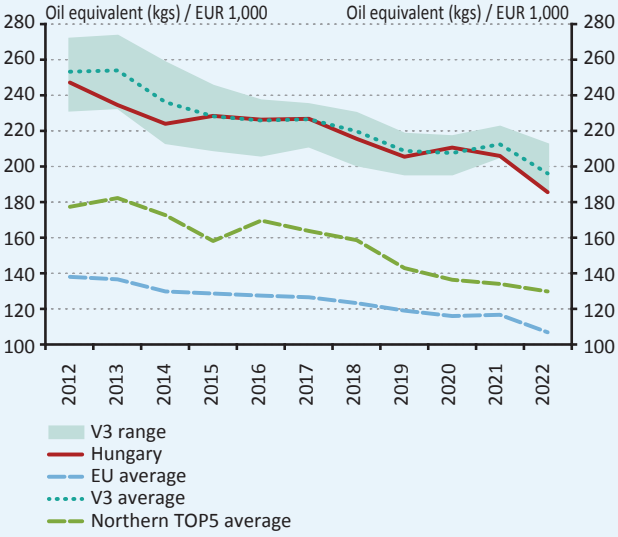


Note: Ratio of net energy imports adjusted for changes in inventories to total energy use.

Source: Eurostat, MNB calculation

The ratio of net energy imports to total energy use measures the energy dependence of countries. The net energy import index had been rising in recent years in Hungary, but fell somewhat in 2022 due to the energy crisis triggered by the Russia-Ukraine war. At 59 per cent, net energy imports maybe only somewhat higher than the EU average, but they are still significantly above the average for the Visegrád and Northern TOP5 countries. Hungary's one-sided energy dependence is a challenge: between 2016 and 2022, around 70 per cent of the country's energy imports came from a single source, Russia. Reducing net energy imports also reduces a country's energy dependence, which in turn increases its economic independence and competitiveness. Further reducing energy dependence would increase Hungary's energy security. The use of domestic sources of renewable and nuclear energy reduces energy dependence and environmental impact, and improves external balances.

4.13.7 Energy intensity of the economy



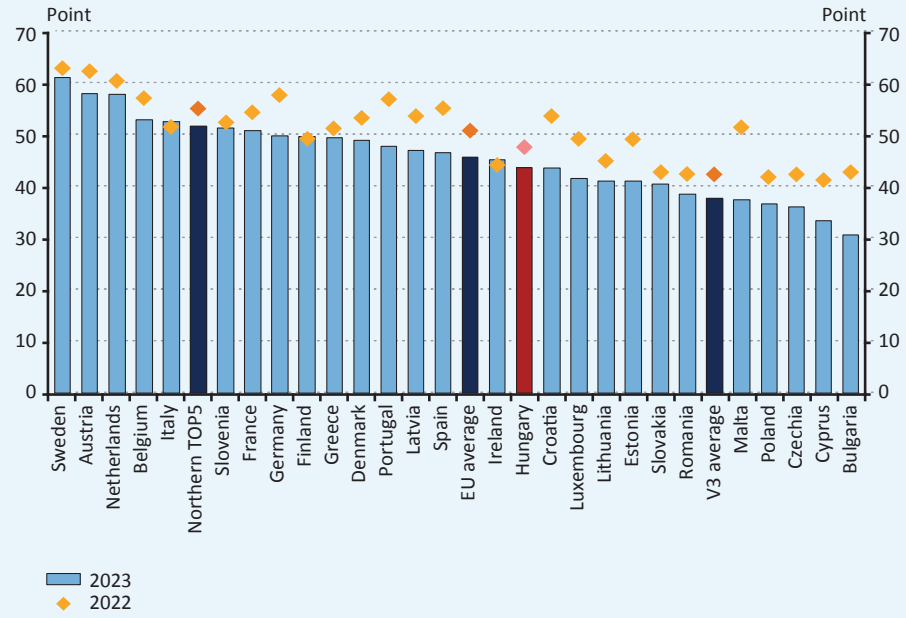
Source: Eurostat

The energy intensity of the economy shows how much energy is used per unit of economic output. Hungary's energy intensity has been on a downward trend over the past decade, but remains well above the EU average, exceeding it by 1.7 times in 2022. As a result of the energy crisis caused by the Russia-Ukraine war, Hungary's indicator fell more steeply in 2022 (by almost 10 per cent) than in previous years and also than the averages for the EU as a whole and the Visegrád countries. Energy that is the cheapest and the least costly for both companies and the national economy is energy that is neither produced nor consumed, so increasing investment in energy efficiency offers competitive advantages for the domestic economy.

4.14 GREEN ECONOMY

Without transitioning to a green and circular economy, there can be no sustainable convergence. In the context of social and economic development, only what is sustainable in the long term can be competitive, and vice-versa. It is therefore of the utmost importance that Hungary does not exploit the natural resources available, such as water, air and land, but rather manages them efficiently and sparingly. Keeping the global average temperature rise well below 2°C compared to pre-industrial levels will require a major effort both in Hungary and globally. This lengthy process has begun already, for example with the adoption of the Green (New) Deal in Europe and the US, or the adoption of Hungary's Climate and Nature Action Plan; nevertheless, further efforts are needed. This could include increasing the volume and share of green investments, greening the taxes on consumption and increasing spending on environmental protection. Hungary is ranked 16th in the area *Green economy* in 2023, with a score of 43.8, ahead of the other Visegrád countries (37.9), but below both the EU average (45.8) and the Northern TOP5 (51.9). Compared to 2022, Hungary's score decreased by 3.9 points, mainly due to a decrease in the amount of irrigable land and a drop in environmental tax revenues.

Chart 4.14
Results of MNB Competitiveness Index at the area of the Green economy in the Member States of the EU



Source: MNB

Hungary's carbon dioxide emissions per capita and per unit of output are lower than the regional and EU averages, but its air pollution is the 9th highest in the EU. In Hungary, net greenhouse gas emissions have fallen by 32 per cent over the past three decades, more than the EU average, while per capita carbon dioxide emissions have also contracted overall since the regime change. Greenhouse gas emissions were at their lowest in 2014 compared to 1990, when a contraction of nearly 40 per cent was measured; since then, the rate of emissions cuts gradually declined in Hungary in the second half of the 2010s. In order to join the rest of the European Union in reducing greenhouse gas emissions by at least 55 per cent by 2030 compared to 1990 levels and to become climate neutral by 2050, Hungary must strive to optimise production processes in the country and achieve even lower carbon emissions. This would also reduce the population's exposure to air pollution, which remains above the EU average.

Although Hungary overuses the resources available in its territory, its ecological balance is the 9th best in the European Union. Hungary's ecological balance improved in the 2000s, but has worsened again in recent years, with more than 14 million global hectares of environmental assets overexploited in 2019. On the positive side, Hungary's ecological deficit has decreased compared to the decades before the regime change. At the global level, humanity would currently need an environmental resource equivalent to 1.7 Earths to sustain current world consumption. In 2023, Earth will have exceeded its annual biocapacity on 2 August (Earth Overshoot Day), which in 1990 was two and a half months later, on 18

October; this means that economic growth is taking place at the expense of an over-exploitation of available resources. The regenerative goods needed to meet Hungary's resource demand for 2023 were already exhausted on 30 May.

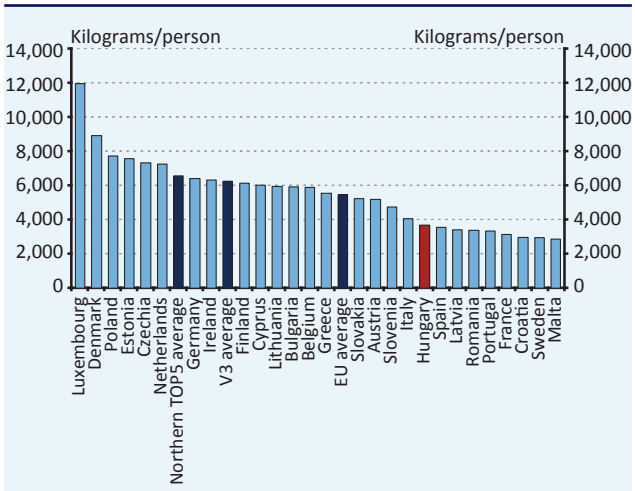
Recycling as much waste as possible is an important part of a circular economy, but efforts must also be made to reduce waste and pollutants. A positive trend in Hungary is that the proportion of recycled waste has increased very significantly over the last decade, although further efforts are still needed. In 2021, the recycling rate of municipal waste in Hungary was 35 per cent, while the Northern TOP5 and Visegrád countries achieved recycling rates 10 percentage points higher.

Climate change will greatly increase the importance of responsible management of Hungary's land and water. Hungary has the 6th lowest proportion of wooded and forested areas in the European Union, which is also due to its geographical characteristics; increasing the proportion of forested areas would, however, have benefits such as improving the capacity of the natural environment to absorb carbon dioxide. There is potential for improvement in irrigation infrastructure as well, as only 4.8 per cent of agricultural land is currently suitable for irrigation, compared to an EU average of 13.5 per cent. In order to increase the resilience of agriculture to climate change, there is a need to expand irrigation infrastructure and manage water more efficiently. The proportion of Hungarian households connected to the sewerage network is relatively high (97 per cent), but only 84 per cent of the population has access to a higher level of wastewater filtration and treatment. The higher proportion of water going into the sewage network that is treated, the more it can be recycled, and this, in turn, supports sustainable convergence.

Environmental tax revenues and expenditure as a percentage of GDP are both lower than the EU and Visegrád competitors' averages. In Hungary, environmental tax revenues and expenditures as a share of GDP have declined in recent years and both indicators currently fall short of the averages of the EU and the Visegrád peers, leaving room for improvement. The Hungarian government issued its first green bond in 2020, which was followed by several corporate issues. The share of green government bonds in total government bond issuance reached 3.5 per cent in 2023 H1, making Hungary one of the frontrunners in Europe. The MNB's commitment to green objectives is demonstrated by the fact that, from 2 August 2021, it has been the first European central bank to have a green mandate. The MNB therefore continues in its efforts to place the domestic financial system, and through it the entire economy, on a climate-friendly trajectory.

Sustainability

4.14.1 Carbon dioxide emissions per capita (2021)

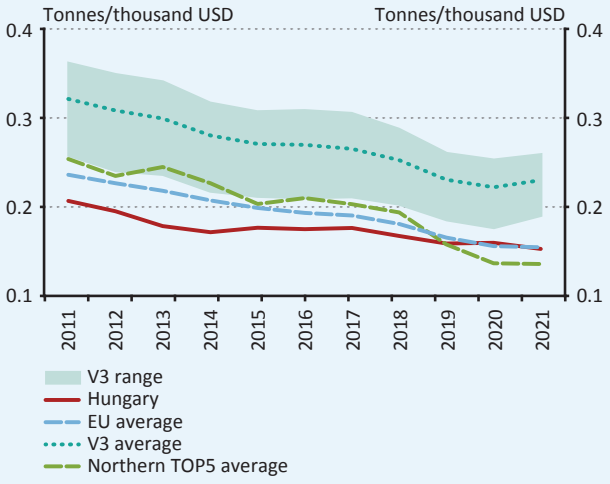


Note: Based on carbon emissions measured under the national accounts system.

Source: Eurostat

Between 1990 and 2021, Hungary's net greenhouse gas emissions contracted by 32 per cent, which is more than the EU average. Per capita carbon dioxide emissions have also contracted overall since the regime change. After rising between 2014 and 2018, the indicator has fallen overall over the last three years. At the moment, CO_2 emission per capita is around 3,700 kilograms in Hungary, equal to two thirds of the EU average and almost 60 per cent of the averages of the Visegrád and Northern TOP5 countries. By 2050, the gradual decarbonisation of the economy would not only help protect the environment, but also promote the spread of new technologies and industries representing higher value added, thus contributing to sustainable convergence.

4.14.2 Carbon dioxide emissions per unit of output

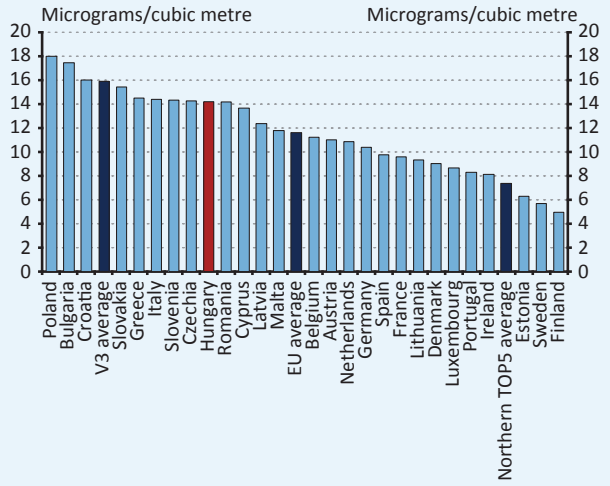


Note: GDP value calculated at purchasing power parity and constant prices.

Source: OECD, MNB calculation

Carbon dioxide emissions per unit of output is one of the key measures of ecological efficiency. As in most EU countries, the indicator has been on a downward trend in Hungary over the last three decades. In 2021, the Hungarian indicator was in line with the EU average and lower than all three Visegrád peers. Among the V3, Poland and the Czech Republic have among the highest carbon intensities in the EU. Between 2016 and 2021, the carbon intensity of the most developed Northern countries fell by more than one third, but Hungary only improved by 13 percentage points, so that, by 2021, its domestic production carbon emissions exceeded the averages of the Northern countries and the Netherlands. Primarily, increasing the number and efficiency of green investments can help create economic value at lower greenhouse gas emission levels.

4.14.3 Pollutants in the air (2020)

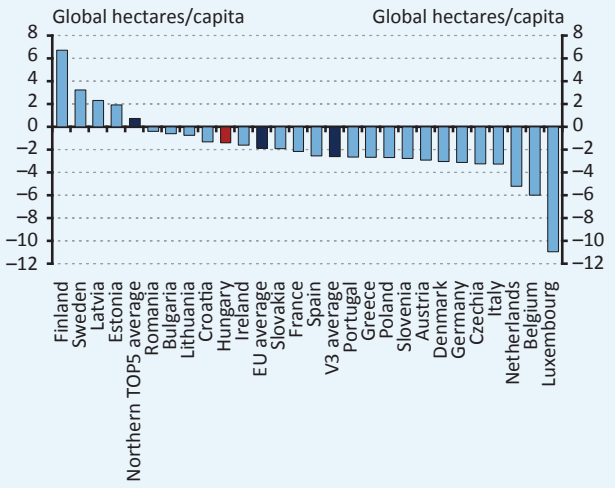


Note: The chart shows the concentration of particles smaller than 2.5 microns in the air.

Source: OECD

The Hungarian population's exposure to particulate air pollution is above the EU average. Currently, Hungary has the 9th highest average concentration of air pollutants of less than 2.5 microns per cubic metre (14.2 micrograms per cubic metre). Airborne pollutants smaller than 2.5 microns are not cleared from the lungs after inhalation, so long-term exposure poses a serious health risk. Higher levels of air pollution also have a negative impact on economic productivity due to the deteriorating health of the workforce. The main sources of air pollution are transport emissions, the use of solid fuels and waste to heat homes, so reducing these could decrease pollution levels.

4.14.4 Ecological balance (2019)

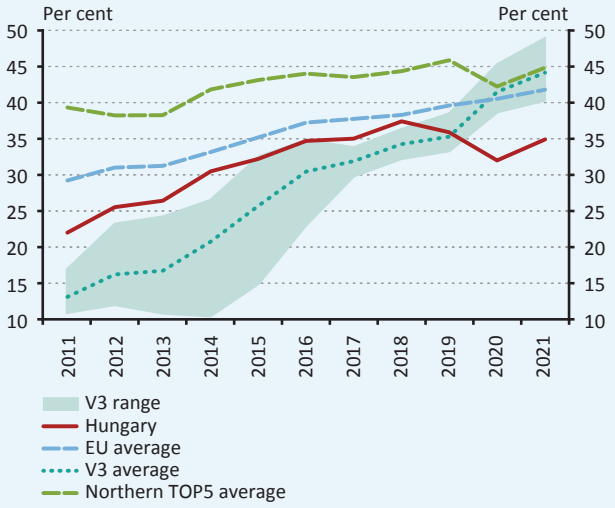


Note: Ecological balance is calculated by subtracting the ecological footprint of a country from its biocapacity. A deficit is defined as the ecological footprint exceeding the available biocapacity.

Source: Global Footprint Network, MNB calculation

Ecological balance reflects how much of the natural resources available in a country (biocapacity) are used (ecological footprint). Countries with consumption in excess of their biocapacity exhibit an ecological deficit. Like most other countries on the planet, Hungary has consistently exceeded the carrying capacity of its land over the past 50 years, operating at an ecological deficit. In 2019, only four countries in the EU achieved an ecological surplus. Hungary's ecological balance has worsened in recent years, and in 2019 it was -1.4 global hectares per capita, which is still better than both the EU and the Visegrád averages (-1.9 and -2.7 global hectares per capita, respectively). The balance of the Northern TOP5 countries is positive (0.7), with a significant contribution from Finland, which has the largest surplus in the EU.

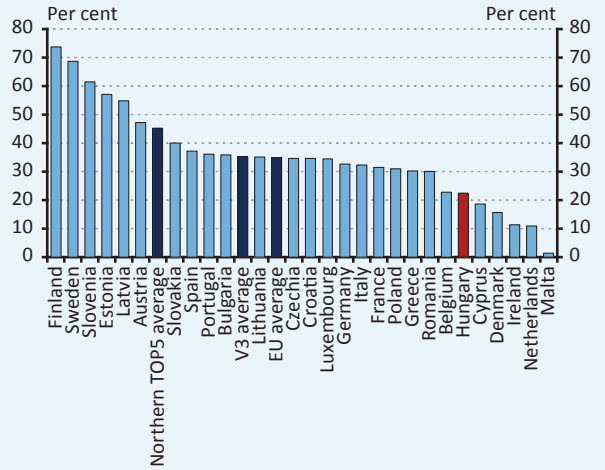
4.14.5 Recycling rate of municipal waste



Source: Eurostat

Waste management is important as it can make resource use more efficient and decrease resource intensity. Hungary has made significant progress in the rate of recycling of municipal waste over the last decade. While in 2011 the recycling rate stood at 22 per cent, in 2018 it was 37.4 per cent. After a temporary decrease from 2020 to 2021, the recycling rate increased again, reaching 35 per cent in 2021. With this figure, Hungary lags behind its competitors, as the average for the Northern TOP5 and the V3 is close to 45 per cent, while the EU average is 42 per cent. Further increasing the recycling rate is expedient in order to avoid wasting resources. This may be helped by the fact that, in 2023, the waste management system was fundamentally transformed in Hungary, with a concessionaire taking over the central role from the state.

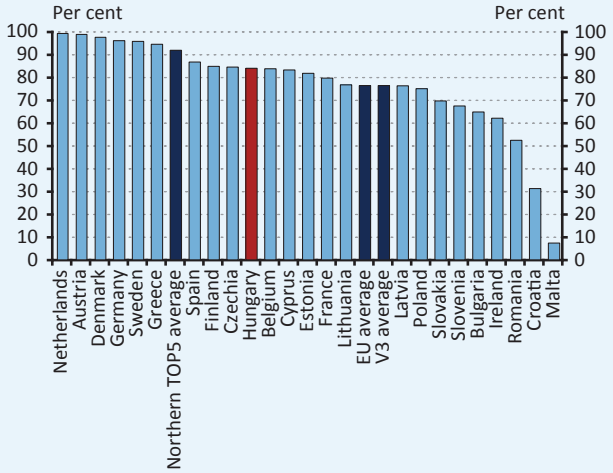
4.14.6 Forested and wooded areas as a proportion of total country size (2020)



Source: Eurostat

Forests play a very important role in mitigating climate change, including their ability to capture and store large amounts of carbon dioxide and their beneficial effects on air and water quality. They also reduce the harmful effects of soil erosion. Forests cover only 22.5 per cent of the total area of Hungary, which is the 6th lowest figure in the European Union. This compares unfavourably to an average of 35 per cent for the Visegrád countries and the EU member states, while the Northern TOP5 countries, due in part to their geographical location and characteristics, stand at45 per cent. From a sustainability perspective, it would be important to increase the proportion of forested and wooded areas and bring them closer to the EU average.

4.14.7 Proportion of households connected to a wastewater treatment plant (2021)

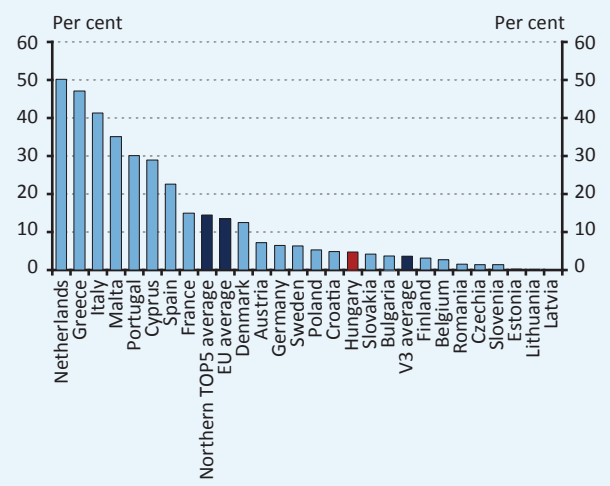


Note: Installations using at least secondary treatment are taken into account. Data are not available for Luxembourg, Italy and Portugal. Data for Bulgaria, Cyprus, France, Germany, Spain, Sweden and Spain are available for earlier years.

Source: Eurostat

Although the connection of households to the wastewater network is an important indicator, sustainable convergence also requires taking into account the capacity to treat wastewater in the network. This value, which is one of the UN SDG indicators, shows on a three-point scale the rate of at least secondary treatment, i.e. more extensive filtration and purification of wastewater. 84 per cent of households were connected to such a network, which places Hungary 10th in the EU rankings. The domestic indicator is below the Northern TOP5 average of 92 per cent, but above the EU and Visegrád figures of close to 77 per cent. It is worth noting that the proportion of Hungarian residents connected to the network is close to 97 per cent, so a significant proportion (13 per cent) do not currently benefit from adequate treatment.

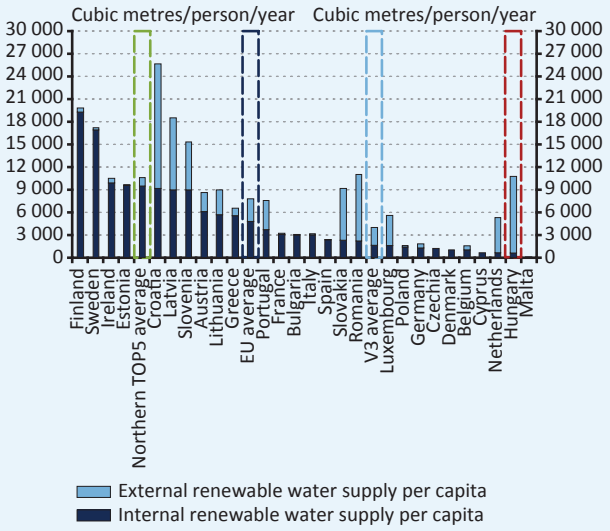
4.14.8 Irrigated land size versus total area of cultivated agricultural land (2020)



Note: No data for Ireland and Luxembourg.
Source: FAO

Climate change is driving a dramatic alteration of Hungary's climate as well, drastically changing the distribution and intensity of precipitation, which demands an appropriate response in water management. It is necessary to provide the highest possible proportion of agricultural land with adequate irrigation infrastructure in order to ensure that agricultural productivity is not compromised. According to the UN Food and Agriculture Organization (FAO), 4.8 per cent of cultivated land was suitable for irrigation in Hungary in 2020. The share of irrigated land in Hungary is higher than the V3 average (3.7 per cent), but below the EU average of 13.5 per cent. It is important to point out that almost 60 per cent of irrigable land is in fact irrigated in Hungary, but this indicator is highly sensitive to changes in rainfall.

4.14.9 Per capita internal and external renewable water supply (2020)

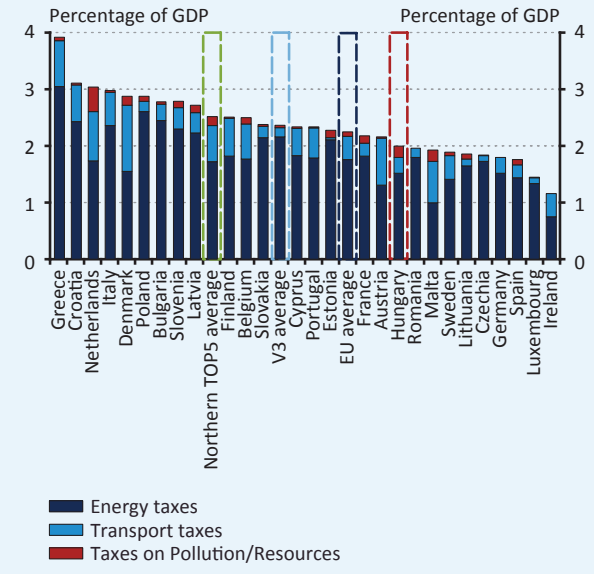


Source: FAO

There are fundamentally two main sources of renewable water in a country, internal and external renewable water. Internal water resources are the runoff of precipitation after evaporation, while external water resources are external inflows of rivers. Hungary is characterised by a certain duality in this respect. While its external water supply per capita is the 2nd highest in the EU, its internal water supply is the 2nd lowest. As more water leaves Hungary through rivers than comes in, it is particularly important to put more emphasis on the retention of rainfall. This is especially important because a per capita internal renewable water supply of 621 cubic metres per year in Hungary contrasts with a V3 average of 1,651 cubic metres and an EU average of 4,799 cubic metres. Finland and Sweden are in the best position in terms of this indicator, with an internal water reserve of more than 17,000 cubic metres.

Green finance

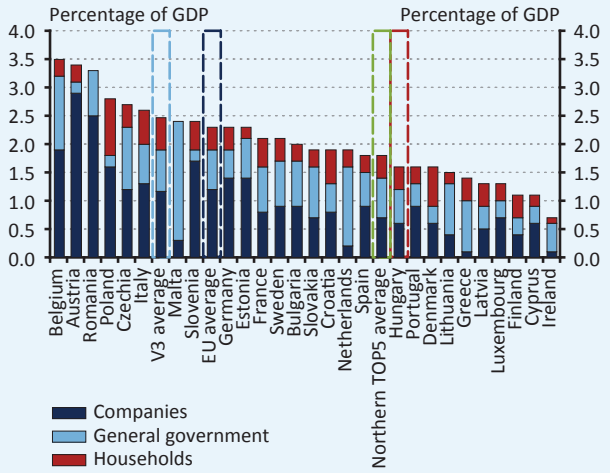
4.14.10 Environmental tax revenues as a percentage of GDP (2021)



Source: Eurostat

Environmental taxes as a percentage of GDP have been on a downward trend in Hungary since the mid-2000s. In 2021, the indicator stood at 2.0 per cent, lower than the EU average (2.2 per cent), the Visegrád average (2.4 per cent) and the Northern TOP5 average (2.5 per cent). As elsewhere in the EU, energy taxes (e.g. on fuels) account for the largest share of environmental taxes in Hungary (1.5 per cent of GDP), although even this is somewhat lower than the EU average of 1.8 per cent. Transport taxes (e.g. road tolls, registration tax) account for 0.3 per cent of GDP in Hungary, which is among the lowest in the EU. At 0.2 per cent of GDP, the level of environmental taxes (the most targeted type of tax in terms of environmental protection) is the second highest in the European Union after the Netherlands, however. This latter type of tax is designed to make the biggest polluters in the economy pay for the use of public goods such as clean air and water.

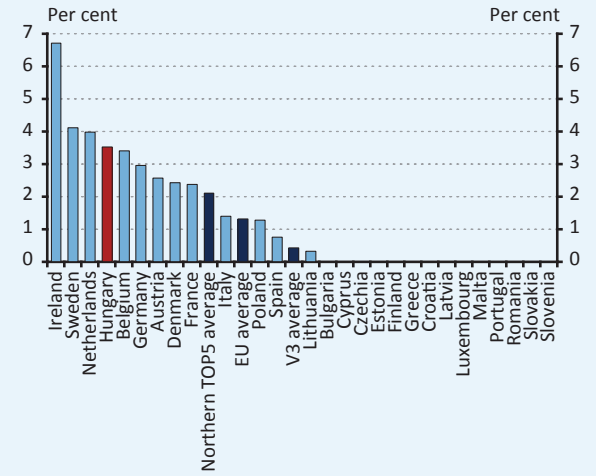
4.14.11 National expenditure on environmental protection as a percentage of GDP (2020)



Source: Eurostat

Environmental expenditure as a percentage of GDP has been falling in Hungary in recent years, and accounted for 1.6 per cent of GDP in 2020. The Hungarian indicator is lower than the Visegrád and EU averages (2.5 and 2.3 per cent, respectively), and lags behind the most developed Northern countries (1.8 per cent) by a narrower margin. In 2020, companies and the government accounted for an equal share of domestic environmental expenditure (0.6 per cent of GDP each), while households accounted for 0.4 per cent. In 2020, corporate environmental protection expenditure averages were higher the European Union and the other Visegrád countries than in Hungary. Belgium has the highest environmental spending in the EU, with Romania, Poland and the Czech Republic also characterised by high indicators.

4.14.12 Share of green bonds in sovereign issuances (30.06.2023)



Note: The dataset includes sovereign issuances only.

Source: Bloomberg; MNB calculation based on ÁKK figures for Hungary

Several European countries have been issuing green government bonds since the second half of the 2010s; in 2020, Hungary entered the international market by issuing green bonds in euros and Japanese yen. Since 2021, green government bonds denominated in Chinese yuan have been issued in addition to the above currencies, and regular HUF-denominated green government bond auctions with 10-year and 30-year maturities were also held. The share of green government bonds in total government bond issuance thus reached 3.5 per cent, making Hungary one of the frontrunners in Europe. The continued greening of financial markets and the commitment of the government and the MNB to sustainability promise a further expansion in these instruments in the years ahead.

Albert Szent-Györgyi

(Budapest, 16 September 1893 – Woods Hole, Massachusetts, 22 October 1986)

Albert Szent-Györgyi, Nobel Prize winner Hungarian physician, biochemist.

Between 1904 and 1911 he attended the Presbyterian Secondary Grammar School in Lónyay Street, then continued his studies at the Medical Faculty of the Budapest University. He participated in World War I as a medical officer on the Eastern Front. Risking his life, he helped to rescue the wounded, for which he received the Silver Medal for Valour. After World War I he continued his studies in Bratislava, Prague, Berlin, Leiden and Groningen in the fields of biology, physiology, pharmacology, bacteriology and then physics and chemistry.

During his studies, he identified a new material in the adrenal of animals; later he succeeded in extracting the same material from cabbage and orange. The material with the molecular formula C6H8O6 was named hexuron acid. In 1927 he defended his doctoral thesis written about discovering the hexuron acid at Cambridge University, and became a doctor of chemical sciences.

On 1 October 1928 he was appointed to professor of Szeged University, where he started his research and teaching activities as a professor of the medical chemical institute in 1931. As of 1931, he dealt with the research of vitamin C, whose exact composition was still unknown. However, Szent-Györgyi proved that the hexuron acid found in the adrenal and vitamin C is the same material. Following that, he succeeded in producing significant quantity of vitamin C from green pepper. His further researches covered, inter alia, biological oxidation, the examination of certain parts of the citrate cycle, which was not completely known at that time, and the exploration of the protein chemical background of mechanical muscular movement.

In 1937 he received the Nobel Prize in Physiology or Medicine for his research related to vitamin C, ‘for his discoveries in connection with the biological combustion processes, with special reference to vitamin C and the catalysis of fumaric acid’. He offered the medal he received with the Nobel Prize to those who suffered from the Finnish war that broke out at that time. Later this medal was bought by Wilhelm Hilbert, a company director in Helsinki, who, in 1940, presented it to the Hungarian National Museum, where it is still preserved. In 1938 he became a member of the Hungarian Academy of Sciences.

In 1947 he left the country, and settled in Woods Hole, near Boston, where first he was the director of the Marine Biological Laboratory, then a professor of Dartmouth College. He devoted the last two decades of his life to cancer research. His important observation was the realisation of the role of free radicals in the development of cancer and the realisation of the radical catching role of vitamins (such as vitamin C). In 1972 he founded the National Cancer Research Foundation. In the 1960s he started to deal with politics as well. He wrote numerous articles in which he criticised the nuclear arms race, and in 1970 he also protested against the Vietnam War. In 1978 he was a member of the delegation that brought the crown jewels back to Hungary.

Albert Szent-Györgyi remained mentally and physically fit in his old age as well. He died in his home due to renal insufficiency on 22 October 1986. He was buried in the garden of his house on the shore of the Atlantic Ocean.

COMPETITIVENESS REPORT

2023

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