COMPETITIVENESS REPORT

2022

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

Albert Szent-Györgyi

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The purpose 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, then, the Competitiveness Programme, published at the beginning of 2019, in addition to a detailed analysis of the situation, also made specific proposals in the key areas of intervention to achieve the turn in competitiveness. 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 Gergely Baksay, Executive Director for Economic Analysis and Competitiveness. The Competitiveness Report was prepared by the staff of the Directorate for Fiscal and Competitiveness Analysis, the Directorate Economic Forecast and Analysis, the Directorate Financial System Analysis, the Directorate Monetary Policy and Financial Market Analysis, the Digitalisation Directorate, the Directorate Lending Incentives, the Insurance and Pension Funds Supervision Directorate, the Directorate Financial Infrastructures, 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 responsible for Monetary Policy and Financial Stability.

During the preparation of the Competitiveness Report we relied on the data available until 4 August 2022. For some of the examined indicators, until this date, data were available only for 2020; accordingly, the impacts of the coronavirus pandemic are included in the data only partially. The set of indicators included in this Report was slightly revised mainly because the World Bank's Doing Business ranking, from which a number of indicators had been used, was discontinued in the meantime.

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1 Executive Summary

The purpose of the *Competitiveness Report* of the Magyar Nemzeti Bank is to provide a comprehensive and objective picture of Hungary's competitiveness. Accordingly, the Report uses 160 indicators, 95 per cent of which are objective, to compare Hungary's competitiveness to that of EU member countries, in particular of the Visegrád region and the northern Member States, which are considered the most competitive in the EU (Denmark, Estonia, Finland, the Netherlands and Sweden). The analysis of competitiveness is of key importance for the MNB as it fundamentally determines the economy's long-term growth potential. The structural areas and factors examined in the publication, influence – both over the medium and long term – consumption of economic agents, savings and investment decisions, potential economic growth, the financial balance and, through all of these, the expected yields and price level as well as inflation. Our analysis is fundamentally based on data from 2021; however, for several indicators we have data only from earlier periods. Accordingly, the Report reflects the effect of the coronavirus pandemic in many respects, but it does not yet reflect the changes seen in 2022 (for example in the prices of energy).

Based on the 2022 MNB Competitiveness Index, ranking of Hungary improved by one position compared to the previous year, becoming the 17th among the 27 member countries of the European Union, still exceeding the average of its Visegrád competitors. At the same time, as for per capita economic development measured at purchasing power parity Hungary is the 20th in the EU, so it is somewhat more advanced in terms of competitiveness than in terms of per capita GDP.

As a result of comprehensive and profound economic reforms after 2010, Hungary progressed on a balanced convergence path in the past decade. According to experience in economic history, a long-term economic growth surplus of at least 2-3 percentage points per annum on average is essential for successful convergence to developed countries. Between 2013 and 2019, Hungary achieved an average GDP growth of 3.8 per cent, which exceeded the EU average economic growth by 2 percentage points, while the financial balance of the country also strengthened. Accordingly, the 2010 decade may be considered the most successful period of the last century in economic terms. Owing to the stable foundations achieved in the previous decade and crisis management measures taken, in spite of the coronavirus pandemic, economic development of Hungary continued to converge to the average of the European Union, increasing from 73 per cent in 2019 to 76 per cent in 2021.

For the continuation of the successful economic convergence of the past decade, the Hungarian economy needs to switch from the quantitative growth model to a qualitative one. In the 2010s, the rise in employment and the investment rate were major contributors to economic growth and the maintaining of the balance. At the same time, productivity per unit of labour and capital increased only more moderately. Looking ahead, demographic developments will limit the number of people employed, and higher financing costs will restrain the further increase in investments. Therefore, economic growth needs to increasingly rely upon a more efficient utilisation of existing resources and the raising of productivity.

Switching from the quantity-based model to a growth model driven by productivity and innovation may lead to the avoidance of the middle-income trap. Applying effective government measures, the macroeconomic situation that ensured a stable basis during the coronavirus pandemic as well as the further major reduction of taxes on labour resulted in full employment again by end-2021. While maintaining full employment and exploiting the hidden reserves of the labour market, further increase in labour productivity may result in sustainable convergence in the future. In the case of the investment rate as well, which is high in an EU comparison, a shift towards smart and sustainable investment may free up growth reserves in the domestic economy. In addition to preserving the outstanding international results achieved in high-tech exports, increasing domestic value added in exports may also add to the above.

A precondition of sustainable balanced convergence is the strengthening of the healthy and knowledge-based society. Within the EU, the fertility rate has increased to the greatest degree in Hungary since 2011, with major contributions from family support expenditures, which are outstanding in international comparison. More active support to the creation of a balance between work and family life may also contribute to the demographic turnaround and the stopping of the decline in the number of working-age people. There is also ample room for improving the health condition of the Hungarian population, with the strengthening of institutional financing in addition to the wide spreading of health awareness and prevention as potential main contributors. Labour market of the future requires the strengthening of the modern transfer of skills in public education, the simultaneous increasing of headcount and quality in higher education as well as the reinforcement of adult education, which all may add to the increase in labour productivity in the long run.

The knowledge- and technology-driven growth model may become sustainable if the transitionary period is accompanied by the wide spreading of digitalisation and a green turnaround. The Hungarian digital infrastructure is competitive in international comparison, but its utilisation conceals a convergence reserve for lack of digital skills. The development of digital skills may contribute to e-governance solutions' becoming more complex and may also facilitate the use of the latter as well as a more active use of advanced digital business solutions instead of robotisation and automation in the corporate sector, also promoting the spreading of digital and FinTech financial solutions. These developments may be catalysed by a comprehensive data reform. Digitalisation may support the green turnaround as well, allowing convergence to take place using the lowest possible amount of natural resources. Key factors of this are the energy efficiency development projects that include smart solutions as well as the ones aiming at the strengthening of circular economy. In addition to making production more sustainable, the green turnaround may also contribute to the reduction of energy dependency in Hungary, the improvement of its external balance and to a healthier environment as well.

2 Framework of the Competitiveness Report

2.1 PURPOSE OF THE COMPETITIVENESS REPORT

Since 2013, the Magyar Nemzeti Bank – in line with its statutory authorisation – performs its work with a broader horizon than before, with the analysis of competitiveness also forming part of it. In addition to the primary mandate, i.e. achieving and maintaining price stability and ensuring financial stability, it is also the statutory duty of the central bank to support the government's policies on economic and environmental sustainability with the instruments available to it. Hungary has set on a successful convergence path in the past years. Between 2013 and 2021, economic growth of Hungary exceeded the EU average by some 2 percentage points on average, and even in 2020, at the time of the lockdowns introduced during the coronavirus pandemic, it continued to converge to the average development of the EU, reaching 75.6 per cent of that by 2021.

Based on the MNB's analysis, the full achievement of the competitiveness turnaround remains an essential condition of sustainable convergence. The MNB has already made proposals in several of its publications regarding the measures to be implemented to ensure further improvement in Hungary's competitiveness. The monograph entitled *Competitiveness and Growth*, published in 2016, contained 50 proposals. Afterwards, in the summer of 2018, the MNB submitted its workshop paper, already containing 180 proposals, to the National Competitiveness Council. As the next step of the work performed in the area of competitiveness, the *Competitiveness Programme*, containing 330 points, was published in February 2019, which – building on the results of the previous publications – formulated proposals in 12 areas. In the spring of 2022, the MNB presented a new collection of proposals aiming at a sustainable balanced convergence and consisting of 144 points.

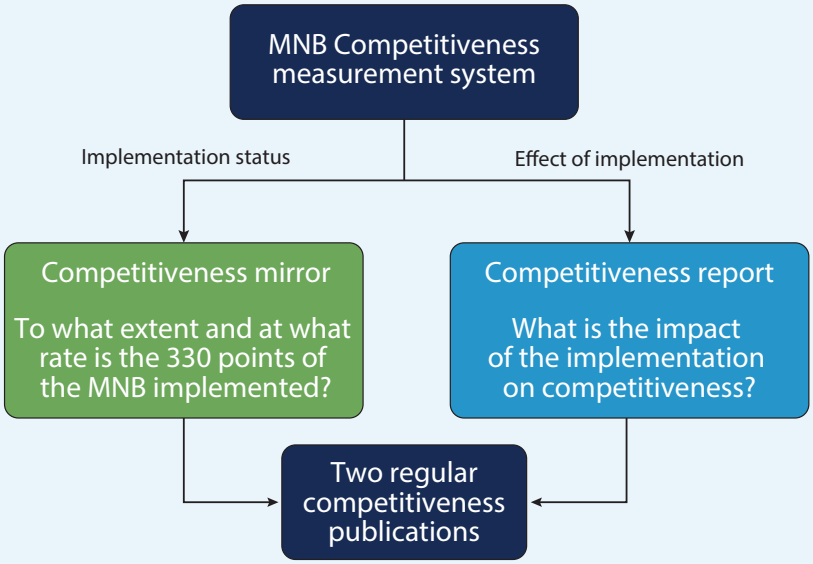
The MNB's competitiveness backtesting system assesses the progress of the turnaround in competitiveness by two publications, issued annually (Chart 2.1)**:**

- The ***Competitiveness Mirror*** assesses what part of the 330 competitiveness proposals, put forward by the MNB, has been realised. The publication monitors the proposals made in the areas assessed in the *Competitiveness Programme* and presents the measures taken. Till now the *Competitiveness Mirror* was published three times, in autumn 2019, autumn 2020 and early 2022.

- The ***Competitiveness Report*** objectively presents the most important competitiveness indices. This publication was first issued in 2017 and examined more than 100 indicators essential in structural terms. The report was published for the second time in summer 2020 and for the third time in autumn 2021, presenting already around 160 indicators, 95 per cent of which are objective. The *Competitiveness Report* strives to present Hungary's competitiveness position in a European comparison, building on objective indicators to the largest possible degree. The main goal of the *Competitiveness Report* is to present in which factors and indicators determining competitiveness Hungary managed to improve in the past years and to identify the more significant challenges and growth potentials compared to the regional and EU competitors.

The purpose of the *Competitiveness Report* is to provide a comprehensive and objective picture of Hungary's competitiveness. The publication also includes a detailed examination of dimensions that are less in the focus of the central bank's traditional macroeconomic analyses, although they are key factors in terms of – the primarily longer- term – economic trends. These fundamentally structural areas and factors influence the economic agents' consumption, savings and investment decisions, the financial balance, the potential economic growth and, through all of these, the expected yields and price level as well as inflation. Our analysis is fundamentally based on 2021 data, but they are not yet available in the case of several indicators, for which the latest available results were used.

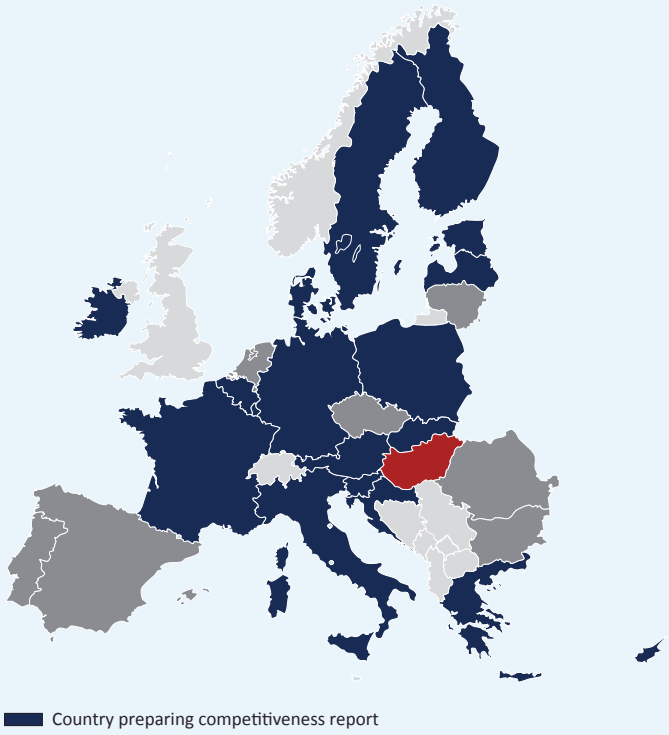
Chart 2.1
Elements of the MNB Competitiveness measurement system



Source: MNB.

The MNB's competitiveness publications are wide-ranging and complex in an international comparison, since they go beyond the macroeconomic aspects and also contain detailed analyses. At present, national competitiveness reports are prepared in some form by 20 countries in the European Union (Chart 2.2). The international competitiveness reports mostly concentrate on macroeconomic indicators, usually only focusing on the indicators rather than performing any analysis. Moreover, certain international organisations (e.g. OECD, IMF, European Commission), in addition to the analysis of the situation, also make recommendations in relation to the functioning of the respective countries, and in some instances they also monitor the implementation of such recommendations.

Chart 2.2
EU Member States preparing competitiveness reports

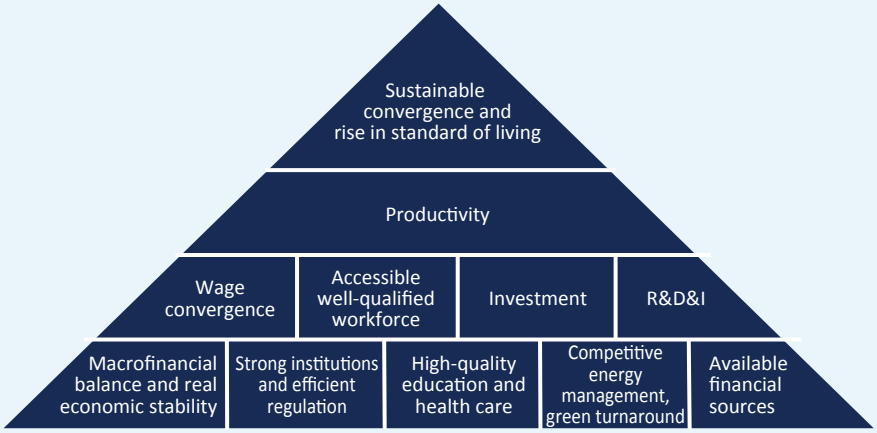


Source: MNB collection.

Methodology of the MNB's Competitiveness Report

According to the MNB's approach, a national economy is competitive if it utilises its available resources optimally to attain the highest possible, but at the same time sustainable, level of welfare. However, as there is no single, universal recipe for successful economic convergence, competitiveness also does not have a general, precise definition uniformly accepted by everybody. In some countries, improvement in competitiveness entails faster growth in the real economy. At the same time, elsewhere it tends to rather result in the maintenance of the leading role in the global economy and improvement in qualitative factors (quality of life, social and environmental sustainability). However, there is a consensus on the necessary and advantageous nature of part of the essential factors (Chart 2.3). Solid foundations – such as the stable macroeconomy and financial intermediary system, efficient functioning of the state, infrastructure of adequate quality, competitive energy management and support for the green turnaround, favourable demographic trends, strong domestic corporate sector, flexible labour market and high-quality education and health care – are essential for competitive economic operation. Relying on these allows the creation of a well-functioning and predictable business environment, which stimulates investments and innovation, which may lead to an increase in productivity and lasting economic convergence by honouring qualified labour.

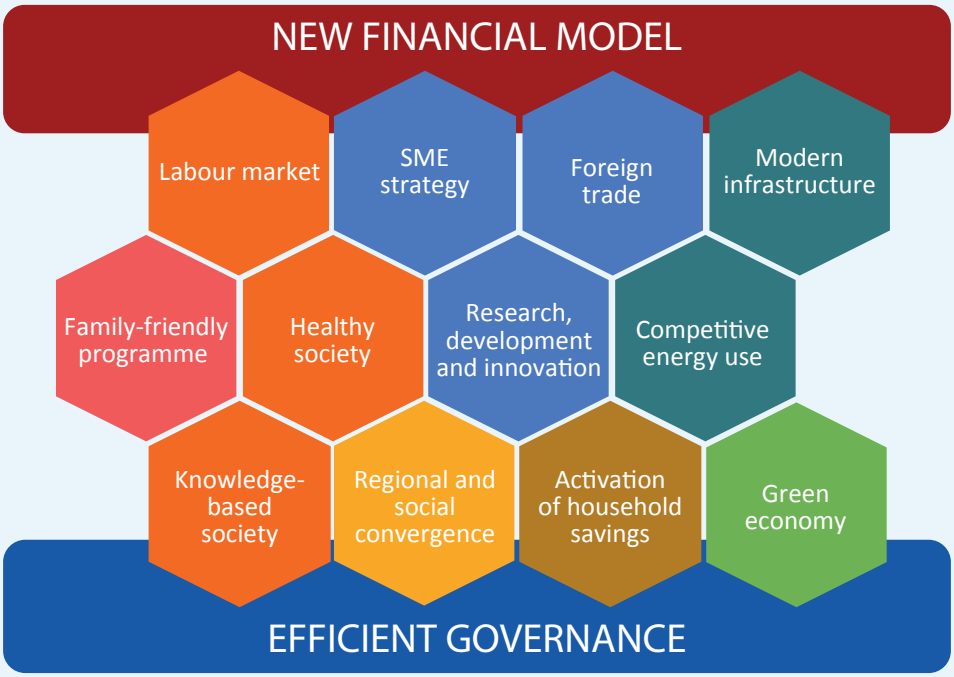
Chart 2.3
Stylised structure, foundations and objectives of competitiveness



Source: MNB.

The *Competitiveness Report* now examines Hungary's competitiveness position in an international comparison in 14 areas (Chart 2.4)**.** The 12 areas of the previous structure continue to present the indicators under review in line with the *Competitiveness Programme*, whereas Modern infrastructure, Competitive energy use and Green economy are discussed in separate chapters. The analysis also includes a chapter that summarises the macroeconomic developments and results of the main international competitiveness rankings. In addition, the *Competitiveness Report* presents in which areas progress has been achieved compared to the previous year. The change and the shift in the Hungarian competitiveness factors compared to their previous status are at least of the same importance as the assessment of the position compared to our international competitors. Similarly to the previous *Competitiveness Reports*, the focus of the publication is on Hungary, compared with the countries of the European Union and particularly with the Visegrád countries. Compared to the publication in 2021 it is a novelty that in addition to the EU and V3 countries the most sustainable EU Member States (Denmark, Estonia, Finland, the Netherlands and Sweden) named as Northern TOP5 average are also shown as benchmarks upon the presentation of the results of the individual indicators and the aggregate results. The averages for the EU, the V3 and Northern TOP5 countries are presented basically as an unweighted arithmetic mean in the analysis. The MNB deems it essential not only to summarise the results of the development, but also to highlight the areas in need of improvement in an objective manner. The MNB's competitiveness measurement scheme was presented in detail in the publication entitled *Methodology for Measuring Competitiveness* published in 2019.

Chart 2.4
Areas covered by the Competitiveness Report



Source: MNB.

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

In the past decade the macroeconomic conditions necessary for a turn in competitiveness have successfully developed in Hungary, and thus its economic convergence continued in spite of the coronavirus pandemic. Nevertheless, ensuring sustainable balanced convergence requires further comprehensive structural reforms. From 2010, the budgetary and from 2013, the monetary policy turnaround created the conditions for balanced growth. Owing to this, between 2013 and 2021, Hungarian economic growth exceeded the average of the European Union, by around 2 percentage points on average, and thus Hungary has set on the path of balanced convergence. As a result of the stable fundamentals created in the previous decade and the crisis management measures, in spite of the unfavourable situation created by the coronavirus pandemic, the Hungarian economy continued its convergence to the EU average in 2021 as well, achieving the 7th highest real economic growth in the European Union. Primarily, there is room for improvement in the area of increasing productivity, which may be supported by a sufficient headcount of healthy and trained workforce, the strengthening of innovation, digitalisation and export capabilities of companies, simple and fast access to sources of funding, a reduction of red tape as well as the creation of an energy-efficient, green domestic economy. The increase in productivity should be accompanied by a rise in real wages, which contributes to continuous convergence and an increase in the standard of living. Following the unfolding megatrends of the 21st century, economic agents should change over to a knowledge- and technology-intensive growth model that puts emphasis on environmental sustainability and also focuses on digital and green transition.

In the past years, the domestic financial system became more stable and its digitalisation started, but growth reserves can be identified in the areas of the reduction of the operating costs to assets ratio, the strengthening of capital market diversification and the deepening of financial digitalisation. As a result of the central bank and government credit schemes introduced in 2020 and carried over to 2021 as well, and also as a result of the payment moratorium, private sector loans outstanding increased from around 30 per cent of GDP to nearly 35 per cent, but their level is still well below the EU or regional averages, and thus their prudent expansion means a major convergence reserve. Provision of broad and continuous access to efficient and stable bank financing across economic cycles is essential for the maintenance of

Hungary's economic convergence. Due to the pandemic, the banking sector's operating income declined temporarily, and spreads on housing loans fell to a historic low in 2021; nevertheless, the profitability of the sector is still at the forefront among the European countries. In the longer run, price competition, reduction of operating expenses and deepening the digital infrastructure could pave the way for a permanent decline in spreads, with further contribution from easing the comparability and substitution of products. In 2022 Q1, the share of fixed-rate forint-denominated SME loans within new loans already exceeded 70 per cent. In the medium to long term, the sector's efficiency can be improved most by consolidating the fragmented market, deepening financial penetration and further digitalisation of operational processes. In parallel to the digital transformation of existing financial institutions, the existence and development of an advanced FinTech ecosystem and the institutional and legislative background supporting this are also of key importance.

While the share of foreign ownership within government debt declined, further involvement of households in the financing of public debt may improve Hungary's current account balance, and may facilitate the long-term funding of sustainable convergence. In addition to the favourable trends observed in the financial sector, in recent years Hungary's macrofinancial vulnerability has also declined significantly as a result of the conscious strengthening of domestic financing after 2011. Since 2011 households' government securities holding became more than thirteen times higher, with major contribution by the introduction of MÁP+ (Hungarian Government Securities Plus) in June 2019. With the budget deficit and public debt increasing as a result of the coronavirus pandemic and recently, a more uncertain external environment in the shadow of the Russian-Ukrainian war, it is particularly important to maintain high household savings and finance public debt from internal sources. The diversified product range of retail government securities encourages households to increase their savings, which supports sustainable economic growth as well as financial and macroeconomic stability. The MNB's Bond Funding for Growth Scheme (BGS) successfully contributed to the diversification of corporate fund raising, and the size of the corporate bond market, as a percentage of GDP, exceeded the V3 average by 2021. Despite the achieved results, the moderate role of the alternative financing channels (stock exchange, bond market) and the low financial involvement of certain social groups may be still regarded as shortcomings of domestic financial intermediation, and represent competitiveness reserves for Hungary.

The productivity of Hungarian SMEs has increased considerably in recent years, but for the reinforcing of the competitiveness of the domestic economy the continuation of the reduction of corporate duality, the raising of the ratios of digital business solutions and exporting SMEs as well as the strengthening of the efficiency of using R&D funds have remained breakout points. Between 2010 and 2019, the relative productivity of Hungarian SMEs converged by around 13 percentage points with that of large domestic companies, as a result of which Hungary achieved one of the greatest convergence even by international standards. A contributor to that was capital deepening, i.e. the steadily high level of the investment rate, which reached its historical high of 16.5 per cent regarding all the companies in 2019, and then, as a result of central bank and government programmes, its level exceeded the EU and regional averages even at the time of the measures taken during the coronavirus pandemic. Nevertheless, as far as the future of investment is concerned, there is ample room for increasing the ratio of smart capital investments, the stock of which is 2.4 per cent of GDP, i.e. lower than the Northern TOP5, EU or V3 averages. Hungarian enterprises proved to be resilient to the adverse economic effects of the coronavirus pandemic, which is also shown by the lower number of bankruptcies, compared to their increase in several European countries. Nevertheless, even despite this convergence rate the efficiency of Hungarian SMEs remained below 60 per cent of the productivity of Hungarian large corporations. SMEs' efficiency may increase primarily with the further spreading of advanced digital business solutions and investment in energy efficiency among SMEs. Exports have remained concentrated in Hungary, which means only a few SMEs export (5.8 per cent), which is confirmed by the higher average for the most sustainable EU countries (7.8 per cent), while the ratio of exporting SMEs exceeds the average of the Visegrád region (4.7 per cent). In Hungary the 20 largest companies account for more than 30 per cent of the exports, while in Poland exporting activity is around half as concentrated as in Hungary. In terms of Hungary's competitiveness, the structure of exports and increasing exports' domestic value added, which may be supported by the use of more knowledge-intensive services and the creation of knowledge-intensive jobs, are essential aspects. In addition to increasing digitisation, sustainability and external market activity, strengthening the innovation performance of SMEs is an untapped potential of the domestic economy. The innovation capacity of the Hungarian SME sector is in the bottom third of the EU Member States, significantly lagging behind the EU average and the most sustainable Nordic countries, and being in a similar position as the other Visegrád countries. It would promote the convergence of SMEs in innovation if the number of domestic companies cooperating with each other and with other institutions for

innovation purposes increased. A further challenge is that the number of new patents registered in Hungary annually is considerably lower than the EU and Visegrád average, which – under increasing research and development expenditures – implies inefficiency in the use of resources.

Although the Hungarian labour market proved to be resilient to the coronavirus pandemic, in the future it is of key importance to increase the labour market activity of vulnerable groups, to raise wages and productivity in parallel, and to mitigate regional disparities. In Hungary, the steadily improving labour market processes of the past decade were slightly interrupted in 2020 by the crisis caused by the coronavirus pandemic. However, in 2021, with the restarting of the economy, employment already exceeded the pre-crisis level, achieving full employment again. In 2021 H2, the number of employed rose to above 4.6 million, which is the highest value since the political transformation. The domestic employment rate exceeds the regional and EU averages as well, but it is still below the average of the most developed Nordic countries. In parallel with the increase in employment, unemployment also remained at a low level, and its rate (4.1 per cent) in 2021 was the 5th lowest in an EU comparison. In 2021, the labour market tightened as a result of the restart of the economy, and thus shortage of labour is a production limiting factor again in a number of sectors. For reducing the shortage there are significant reserves in the more vulnerable labour market groups, i.e. among the young, those around retirement and low-skilled people. The competitiveness of the domestic labour market is strengthened by the fact that atypical forms of employment – part-time and home-working – became more important during the coronavirus pandemic and remained that in 2021 as well, although their ratio falls much short of the EU and Northern TOP5 averages as well. Average wages continued to increase in 2021. The Hungarian wage level measured at purchasing power parity, which is 69 per cent of the EU average, is in line with the level of Hungarian labour productivity, which is also around 70 per cent of the EU average. As a result of the further reduction of the social contribution tax and the cancellation of the vocational training contribution, the tax wedge continued to decline, allowing a rise in employees' wages. In terms of competitiveness and sustainable convergence, it is important that wage convergence should take place in the long run in parallel with the productivity growth providing cover for it. Despite the favourable economic processes and development programmes of the past decade, there are still significant regional disparities in Hungary, with the dominance of the capital, Budapest. Balanced economic growth may be facilitated by a reduction of existing regional disparities through regionally targeted programmes. As regards the income and wealth inequalities, Hungary traditionally belongs to the countries of lower inequality both in a global and EU comparison.

In the past period, improving demographic trends were observed in Hungary, but only the increasing of the fertility rate to 2.1 and the raising of life expectancy at birth may ensure the social base of Hungary's long-term sustainable convergence, which requires an efficient social policy mix that encourages childbearing. From a historic low of 1.23 registered in 2011, the fertility rate rose significantly to 1.59 in 2021, which is already higher than the EU average. The generous family policy measures after 2010 also contributed to the increase in the ratio. The high number of births (93 thousand new-born babies) was successfully maintained in Hungary in 2021, but in 2022 H1, presumably due to the third wave of the COVID-19 pandemic, the numbers of births were less favourable than in the previous years. However, the fertility ratio still falls short of 2.1, i.e. the value necessary for the reproduction of the population. Another determinant factor of the population size is life expectancy at birth, which fell by 2 years to 2009 levels as a result of the coronavirus pandemic. As regards the demographic trends, in addition to the decline in the size of the population, ageing also represents increasing challenge. The ratio of the population over 65 years was 20 per cent in 2021, which was slightly lower than the EU average, but exceeded 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 in long-term by raising fertility rates. This calls for a social policy mix that effectively supports the realisation of plans to have children. Government expenditure on family support as a percentage of GDP is high by international standards. However, equally important are incentives to help women strike a balance between work and family life. In 2021, a mere 7 per cent of Hungarian women worked part-time, which ratio is lower than the Northern TOP5 and EU averages of 33 per cent and 29 per cent, respectively.

There is still ample room for improving the health condition of the Hungarian population, which may be supported to the greatest degree by the strengthening of institutional financing in addition to the wide spreading of health awareness and prevention. In 2020, the number of healthy life years in Hungary (63.5 years for women, 61.6 years for men) significantly exceeded the average of the other Visegrád countries in the case of both sexes, but was lower than the EU average. A convergence reserve can be identified in the health status of the Hungarian population compared to

the countries of similar development level in the region, which – in addition to the gradual ageing of the society – lays increasing burden on the health care system, already struggling with numerous challenges. The facts that the ratio of the obese adult population (25 per cent) is the third and the ratio of deaths attributable to behaviour risks (47 per cent) is the second least favourable, while the standardised death rate of malignant tumours is the highest in the European Union show that with prevention and a healthy lifestyle a major portion of illnesses could be avoided in the Hungarian society. In addition, early diagnoses of illnesses could also take burdens off the health care system, thus contributing to Hungary's sustainable convergence. On the other hand, the vaccination system for children is of outstanding quality even at a global level. Hungary's health care expenditure as a percentage of GDP (6.4 per cent) is the 3rd lowest in the European Union. Within expenditures, direct expenditures of households on health care exceed both the EU and the V3 average. One of the problems of the Hungarian health care system is that the private health care expenses are spent not through health funds or supplementary private health insurances. Advance savings, institutionalised forms such as health funds or health insurances would help to plan the covering of health care expenditure. At the same time, the Hungarian health care system has a large volume of efficiency reserves, exploiting which could improve the sustainability of the system even without increasing expenditure. The average length of stay in hospital is longer than the EU average by 2 days, which is mostly attributable to the poor cooperation between the social and health care system. The number of practising doctors and health professionals as a percentage of the population is below the EU average, but similar to the other Visegrád countries. The relatively high ratio of new graduates highlights the challenges resulting from working abroad and changing career in the health care sector as a whole. In terms of treating the coronavirus pandemic by the health care system, on the basis of the number of additional deaths Hungary is mid-ranking, while regarding the speed of the vaccination programme it is among the leaders in the EU. However, further increasing the scale of the vaccination programme means reserves from health care and competitiveness perspectives as well.

A knowledge- and innovation-driven economic model is based on a well-educated workforce, which can be ensured by intensifying the development of modern skills in public education and by simultaneously increasing the headcount in and the quality of higher education. The continuous availability of skilled labour has a significant impact on the productivity and competitiveness of the economy. Accordingly, the development of an education system that meets current and future needs is unavoidable. International tests measuring the effectiveness of the educational system show that Hungarian students learn the curriculum as expected of them, at the same time, they are less able to use this knowledge in practice. Based on the latest PISA tests, which examine how students use the learnt curriculum in real life, the decreasing trend observed in previous years turned, and thus the average score of Hungarian students came closer to the EU average. At the same time, the Hungarian results are still very much determined by the social and economic background of the students. In 2018, Hungary spent 3.8 per cent of GDP on education, which is slightly lower than the average of the other Visegrád countries (4.1 per cent), but it is well below the Northern TOP5 (5.1 per cent) and the EU average (4.4 per cent). Financial reward for the teaching profession in Hungary lags behind that of other occupations that require tertiary education degree to a slightly greater extent than the regional average, and the average wage of those working in public education is 61–66 per cent of that of tertiary education graduates. In Hungary, the ratio of early school leaving without qualification (12 per cent) is nearly twice the average of the other Visegrád countries, and the ratio of tertiary education graduates in the age group of 25–34 years is the 3rd lowest in the European Union in spite of the rising trend of the past decade. In 2020, the ratio of young STEM graduates in Hungary was the 6th highest in the EU, which is mainly the result of the temporary suspension of the language exam requirement necessary for receiving a degree. In Hungary 6 per cent of the adult population participated in lifelong learning, which corresponds to the regional level, but about half of the EU average. Based on the international rankings of tertiary education institutions, the Hungarian universities are not in the vanguard of the world, while the ratio of international students studying in the Hungarian tertiary education institutions exceeds the average of the EU. The numeracy competence of the adult population exceeds the international average, while there is a lag in foreign language and financial skills. Potential for improvement can be identified in two main areas of the education system: namely, the development of modern skills along with the basic skills, and increasing the proportion of tertiary education graduates. There are also areas for improvement in the competences of the older age group, such as digital skills, financial literacy and foreign language skills, according to international comparisons.

In the past years, there was major progress in the areas of the digitalisation of public administration as well as the development of traditional and modern infrastructure, but further improvement of quality in these areas represents competitiveness reserve in terms of the strengthening of the efficiency of the state and the economy. An important means of improving efficiency is the extension of e-government, which is in progress in Hungary, but convergence reserves can be identified in many of its areas. Between 2011 and 2021, public administration through the Internet among households increased from 18 per cent to 66 per cent, by the greatest degree across EU Member States. However, according to the UN E-Government Development Index, Hungary achieved the 2nd lowest performance in the European Union, and Hungary's e-government belongs to the last third on the basis of the EU Digital Economy and Society Index as well. Among others it would support the use of electronic services if a comprehensive data reform was implemented in Hungary, and a greater portion of the data of the forms submitted through the Internet was completed automatically. As a result of the introduction of the online cash register, the Electronic Public Road Trade Control System (EKÁER), and the online invoicing, ratio of unpaid VAT (VAT gap) decreased to the forth largest degree in Hungary among the EU Member States between 2010 and 2019 , from 22.3 per cent to 9.6 per cent. The continuation of the decrease would be facilitated by the real introduction of draft VAT returns, which would simultaneously reduce bureaucratic burdens of companies as well. Wage costs and the number of employees in public administration still exceed the V3 and EU averages. Significant progress was made also in the area of infrastructure development, but further measures are necessary. The density of the rail and road networks is adequate in Hungary, but the quality of those lags behind the EU average in many aspects. 7 per cent of the electricity fed into the Hungarian electricity network is recognised as net loss, which is higher than the EU and Visegrád averages of 5 per cent. This could be reduced by insulating and renovating the electricity network. The quality of internet infrastructure is competitive in Hungary. In terms of the speed and penetration of broadband internet, Hungary is among the leaders in the EU. Nevertheless, there is still room for progress in implementing the nationwide coverage of the 5G service and in increasing mobile internet subscriptions as a percentage of the population. In the field of digitalisation in Hungary, the main competitiveness reserve is represented by the widespread use of enterprise digital technologies and the achievements of e-governance, and the development of digital skills of citizens. This is confirmed by both the EU Digital Economy and Society Index, as well as the IMD Digital Competitiveness Index.

Achieving domestic carbon neutrality is possible through providing a green and affordable energy mix made up of sources produced in Hungary as well as through the creation of circular economy, in which areas Hungary has significant sustainability reserves. In the past decade, Hungary's energy dependency of around 60 per cent did not decline, and between 2010 and 2020 it exceeded the Northern TOP5 and the V3 averages by 27 percentage points and 13 percentage points on average, respectively, while it corresponded to the EU average. By reducing the ratio of energy imports it would be possible to strengthen Hungary's energy independence, improve its current account balance as well as its environmental sustainability, provided that the imports are replaced by green energy. The decline in the ratio of renewable energy within domestic energy use observed between 2014 and 2018 stopped in 2019, before increasing to 14 per cent in 2020 as a result of the installation of photovoltaic panels, but it is still lower than the Northern TOP5, EU and V3 averages of 36 per cent, 22 per cent and 17 per cent, respectively. By June 2022 more than half of the installed solar panel capacity of 6000 MW to be reached by 2030 according to the government's target was already built. Although between 2010 and 2020 energy demand per unit of output declined by more than 20 per cent in Hungary, the energy intensity of the V3 and Hungary is 1.8 times higher than the EU average and 1.5 times the average of the Northern TOP5. Hungary's carbon dioxide emissions per capita and per unit of economic output are both below the EU and the V3; however, the degree of air pollutions is the 7th highest in the EU. Ratio of irrigated areas within areas suitable for irrigation is similar to the EU average. However, taking into account that in Hungary the weight of cultivation directly exposed to weather conditions is above 60 per cent, wider spreading of irrigation is indispensable in order to increase the productivity and resilience to climate change of agriculture. In Hungary, the degree of environmental tax revenues and expenditures as a percentage of GDP declined in the past years, and at present both indicators are lower than those of the competitors in the EU and the Visegrád countries, so there is room for progress. The MNB's commitment to the green transition is demonstrated by the fact that it gained an additional green mandate, as of 2 August 2021. Thus, the MNB will continue its efforts to set the domestic financial system, and through that the economy, on a climate-friendly path.

Table 1
Improvement in certain competitiveness indicators

Indicator	2010	2020	2021
Macroeconomy and financing			
Annual GDP growth rate (per cent)	1.1	–4.5	7.1
Investment rate (in per cent of GDP)	20.1	26.6	27.1
Gross public debt (in per cent of GDP)	80.0	79.6	76.8
Households' government securities holding (HUF billions)	727	9,132	10,107
Net external debt (in per cent of GDP)	53.5	7.4	7.7
Difference between GNI and GDP (in per cent of GDP)	–4.7	–2.1	–2.8
Households' net financial wealth (in per cent of GDP)	69.9	117.4	114.1
Gross savings rate (in per cent of GDP)	20.7	26.2	27.6
Financial system			
Return on equity of the banking sector (per cent)	0.1	8.3	13.7
Spread based on the APR on housing loans extended in domestic currency (percentage point)	3.2	2.5	0.9
Share of electronic payments of retail purchases (per cent)	10.1	37.4	40.8
Ratio of internet bank users (per cent)**	37.1	58.1	63.2
Corporate sector			
Labour productivity of the SME sector relative to large enterprises (per cent)****	46.6	59.8	
Total tax rate of enterprises (per cent)****	54.5	37.9	
R&D expenditures (in per cent of GDP)	1.1	1.6	
SMEs with product innovations (per cent)**	9.7	13.5	19.5
EU Digital Economy and Society Index (weighted value)***	28.3	35.8	38.7
Credit dynamics of the corporate sector (per cent)	–3.0	8.7	10.7
Human capital			
Fertility rate (number of children per woman)	1.25	1.59	
Employment rate in the age group 15–64 (per cent)	57.0	71.9	73.1
Unemployment rate in the age group 15–74 (per cent)	10.8	4.1	4.1
Average gross monthly earnings of full-time employees (HUF)	202,525	403,616	438,814
Average tax wedge of families with two children and average wage (per cent)	41.7	36.9	36.8
Healthy life years (men, years)	56.3	61.6	
Ratio of cataract surgeries performed in same-day surgery and outpatient care (per cent)****	28.4	61.5	
Ratio of STEM graduates (per cent)*	11.2	23.5	
Participation in lifelong learning (per cent)	3.0	5.1	5.9
Ratio of people at risk of poverty or social exclusion (per cent)	29.9	17.8	18.2
Environment, infrastructure, public administration			
Ratio of unpaid VAT (per cent)****	22.3	9.6	
Public administration through the internet	17.0	37.0	66.0
Ratio of municipal waste recycling (per cent)	19.6	33.0	
Density of the railway network (km / thousand square kilometres)	98.7	122.5	
5G mobile internet readiness (per cent)	0.0	60.3	60.3
Share of renewable energy sources (per cent)	12.7	13.9	
Gas price for households (PPS/kwh)	0.09	0.05	0.05
Energy intensity of the economy (kg / EUR 1000)	266.4	211.1	
Carbon dioxide emission per one unit of economic output (tons / 1,000 USD)****	0.22	0.16	

*Note: * Data from 2013 instead of 2010. ** Data from 2014 instead of 2010. *** Data from 2017 instead of 2010. **** Data from 2019 instead of 2020.*
Source: ECB, European Commission, Eurostat, IMF, HCSO, MNB, OECD, PwC, World Bank.

2.3 MNB COMPETITIVENESS INDEX 2022

2.3.1 Methodology of the MNB's Competitiveness Index

The MNB's Competitiveness Report also assesses Hungary's competitive position in an international comparison with the use of a composite index. The Competitiveness Report provides an objective and comprehensive view of Hungary's performance, relying on 160 charts and detailed analyses related to the charts. At the same time, the summaries of the individual areas try to identify the correlations between the individual indicators and the relevance of those. At the same time, the summaries of the individual areas try to identify the correlations between the individual indicators and the relevance of those. However, the ranking of the countries' performance calls for the creation of a composite index from the indicators used in the analysis. The MNB's Competitiveness Index facilitates the presentation of a comprehensive picture, which takes into consideration the results of the 14 competitiveness areas with the same weight and is essentially based on almost fully (94 per cent) objective indicators, which substantially eases the interpretation of the results. However, it should be emphasised that the composite index supplements rather than substitutes the detailed analysis of the data.

The MNB used an independent methodology to construct the Competitiveness Index. The scoring scales the performance of the individual countries between 0 and 100 points on each indicator, where the best performing country receives 100 points, while the score of the other countries depends on the standard deviation they are from the best performing country. A country within 1 standard deviation from the best score is awarded 75 points, and thus countries being 4 or more standard deviations further from the best score receive 0 point. The advantage of the methodology is that it does not prescribe the normal distribution of the data and it permits that the optimal value varies by indicator, i.e. it can be decided for each indicator whether the minimum, maximum or even the average value of that can be deemed optimal. When calculating the Index, all charts in Section 4, which also can be interpreted in an international comparison, were included with the same weight, and thus if a chart includes several indicators these indicators received proportionately lower weight during the calculation. The score of the individual topics is the arithmetic mean of the scores of the indicators included in them, while the aggregated score of the Competitiveness Index is the arithmetic mean of the scores of the 14 areas under review taken into consideration with the same weight. The methodology elaborated by Asztalos et al. (2017)[1] is transparent and easy to reproduce, but the results obtained depend on the range of factors taken into consideration and the quality of the indicators used.

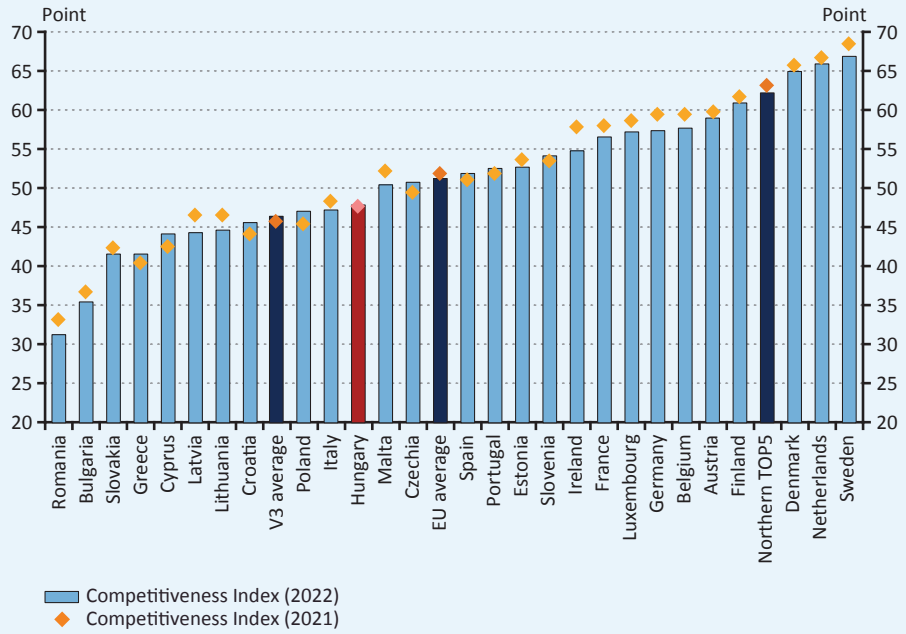
Compared to the results of the Competitiveness Index published in 2021, some minor methodological changes have been made in 2022. Some of the indicators have been replaced compared to the previous year, however, 92 per cent of the 2021 indicators are also included in the 2022 version. Relatively bigger changes took place in the *Efficient governance* chapter, which was mainly attributable to the discontinuance of the World Bank's publication entitled 'Doing Business'. This year, in the case of the charts the 'Northern TOP5' average, which presents the average of the most developed Nordic countries (Denmark, Estonia, Finland, the Netherlands and Sweden) is also included as a benchmark in addition to the EU average and the average of the other Visegrád countries (V3), but this expansion does not affect the calculation of the Index. In addition, minor methodological refinements have been made in the treatment of outliers.

[1] Asztalos P., Horváth G., Krakovský Š., Tóth T. (2017): Resolving Conflicts in Measuring Banking System Competitiveness – MNB Banking System Competitiveness index, Financial and Economic Review, Vol. 16, Issue 3

2.3.2 Results of the MNB's 2022 Competitiveness Index

Hungary was ranked 17th in the MNB's competitiveness ranking among the countries of the European Union in 2022, up 1 place compared to 2021 (Chart 2.5). Hungary's score of 47.9 is still slightly higher than the average of the other Visegrád countries (46.5), but it lags behind the EU average by 3.4 points (51.3), while the average score of the most developed Northern countries is 14.4 points higher than that of Hungary. As in the previous two years, Sweden topped the rankings, while the Netherlands and Denmark came second and third. At the bottom of the list are Romania, Bulgaria and Slovakia. The first half of the Competitiveness Index includes the developed Western and Northern European countries, while the Mediterranean countries tend to be in the mid-range. In Central and Eastern Europe, Slovenia (54.1 points) and Estonia (52.6 points) reached the highest score, while the result of the other countries in the region falls short of the EU average. Sweden, the country that performed the best, scored 66.9 points of the possible 100, i.e. there is still room in all countries for the strengthening of competitiveness.

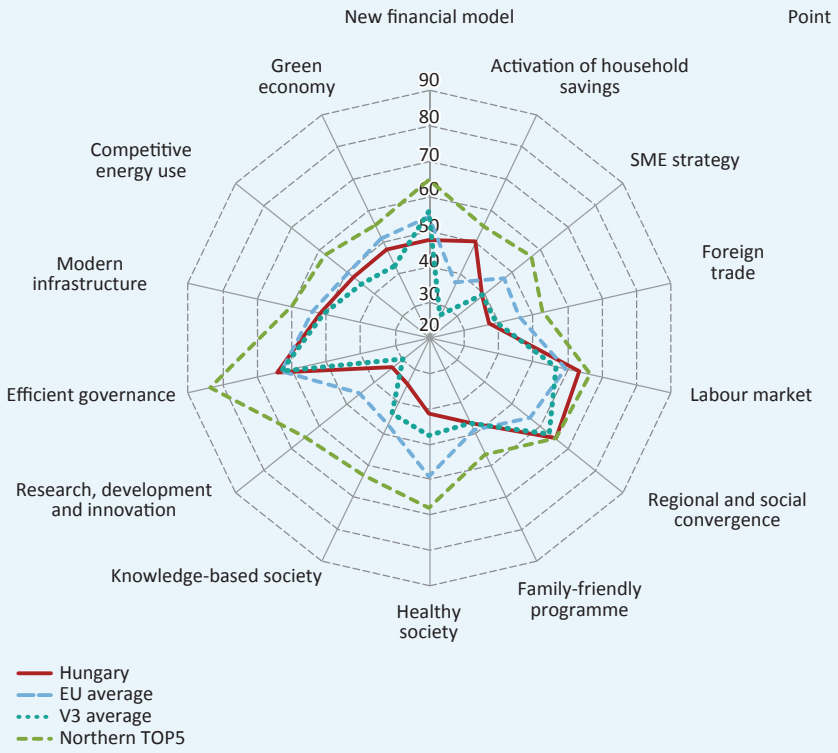
Chart 2.5
Aggregated Results of the MNB Competitiveness Index



Source: MNB.

Hungary achieved a higher score than the EU countries and the other Visegrád countries in the areas of *Activation of household savings*, *Regional and social convergence*, *Labour market* and *Efficient governance* (Chart 2.6)**.** The Hungarian results exceeded the average of the other Visegrád countries in further five chapters and were below the average in five other chapters. Compared to the region, Hungary performs best in the chapters of *Activation of Household Savings*, *Labour market* and *Green Economy*, while underperformance are identified in the *Knowledge-based Society*, *New Financial Model* and *Healthy Society* chapters. When interpreting the results of the individual areas, it is worth taking into consideration that the higher average scores show that the countries under review are relatively close to the best performing countries, while the lower scores imply larger deviation in the respective area. For example, in the *Efficient governance* chapter, the EU average for the indicators taken into consideration became 62.9 points, that is the countries are on average within one and a half standard deviation from the most successful country. By contrast, in the *Activation of household savings* chapter, the EU average became merely 37.1 points, i.e. here the differences between the best performing and the rest of the countries are much larger.

Chart 2.6
Results of the MNB's Competitiveness Index by areas (2022)

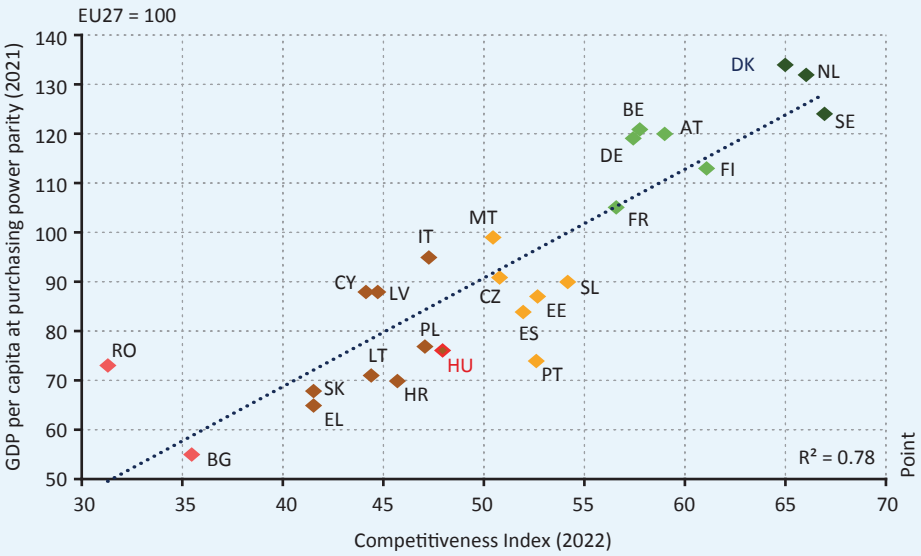


Source: MNB.

Overall, Hungary's score in the Competitiveness Index increased by 0.3 percentage points in 2022 compared to the previous year, with the majority of chapters showing an increase in the Hungarian score. In 9 of the chapters, Hungary's score improved, most notably in the *Competitive energy use* (+10.1 points), *Family-friendly programme* (+5.4 points) and *Efficient governance* (+5.2 points) chapters. By contrast, there was a relatively significant drop in the chapters on *SME strategy* (–12.4 points) and *External economy and economic structure* (–6.5 points).

There is a strong correlation between the ranking in the MNB's Competitiveness Index and the countries' economic development (Chart 2.7). The EU countries may be broken down into five, relatively distinct groups based on their competitiveness position and GDP per capita measured at purchasing power parity. The top players included the three countries achieving an outstandingly result in the area of competitiveness (Sweden, the Netherlands and Denmark), which are also in the vanguard in the ranking based on GDP per capita. They are followed by the developed Western European countries (Finland, Austria, Belgium, Germany and France), whose competitiveness scores and economic development all lag behind the 'front-runners', but still perform well in both dimensions. Based on their competitiveness position Luxembourg and Ireland also belong to this group, excluded from the present analysis due to their outstandingly high GDP. The economic development of the next two groups does not differ significantly from each other, however, one group has a competitive advantage over the other. The more competitive group basically includes the better performing Mediterranean countries (Portugal, Spain and Malta) and the better performing countries in the Central and Eastern European (CEE) region in terms of competitiveness (Slovenia, Estonia, Czechia). The other countries in the CEE region (Hungary, Poland, Croatia, Lithuania, Latvia and Slovakia) and the other Mediterranean countries (Italy, Cyprus and Greece) are in the less competitive group. The two countries belonging to the last group (Bulgaria and Romania) are already in need of major competitiveness measures even to catch up with the better performing countries in the region.

Chart 2.7
The relationship between the MNB's Competitiveness Index and economic development in the European Union



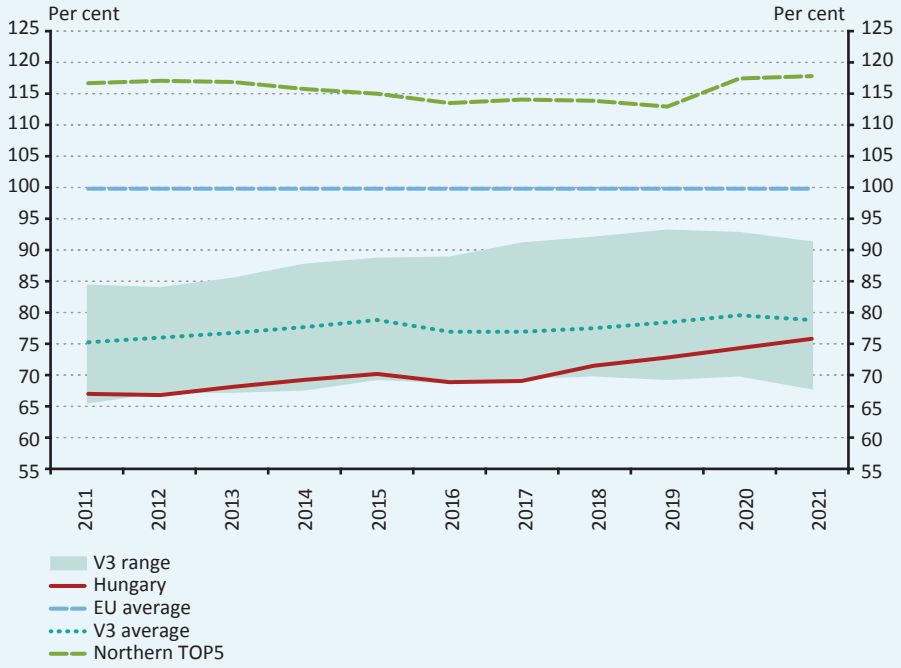
Note: EU27 = 100. In the case of Ireland and Luxembourg, the GDP per capita values are outliers, and thus they are not indicated in the chart.
Source: Eurostat, MNB.

3 Situation of the macroeconomy and results of the competitiveness rankings

3.1 HUNGARIAN MACROECONOMIC ENVIRONMENT

Hungary's economic convergence continued despite the coronavirus crisis. The results of the fiscal and economic stabilisation after 2010 were reflected in the dynamic economic growth from 2013 and the macrofinancial balance. As a result of the growth turn, Hungary's convergence restarted, and following 2018 Hungary outperformed Slovakia in development again, and is coming closer and closer to the V3 average (Chart 3.1). The Hungarian economy had strong fundamentals prior to the pandemic, which – together with the government's and the central bank's crisis management measures – resulted in a lower economic downturn in Hungary compared to the EU average in 2020, and in 2021 Hungary already exceeded the pre-crisis level of its GDP. The success of the crisis management is shown by the fact that Hungary continued the convergence in the recovery period as well that followed the extraordinary crisis situation caused by the pandemic. Based on the Eurostat data, GDP per capita at current prices in 2021 was EUR 24 471, amounting to 75.6 per cent of the EU27 average. This is 1.3 percentage points higher than a year earlier. As a result of the different structure of its economy as well, Poland perceived the supply difficulties of the coronavirus and the subsequent turbulent period to a lesser extent, and thus it has been ahead of Hungary since 2020.

Chart 3.1
Evolution of GDP per capita compared to the EU average

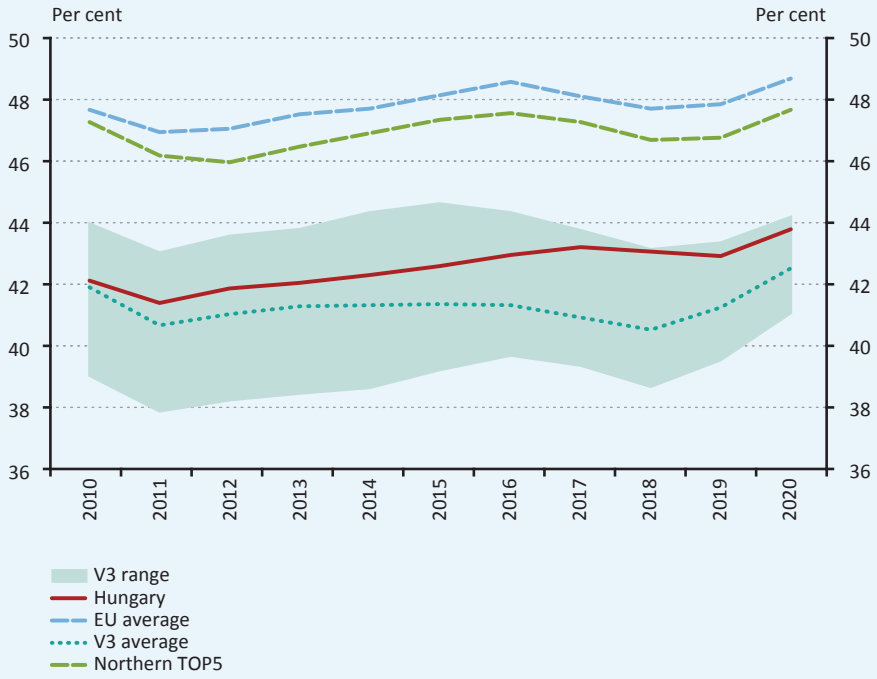


Note: Calculated on current prices, purchasing power standards (PPS).

Source: Eurostat, MNB.

The value creating capacity of the Hungarian economy is favourable in a regional comparison, although it is well below the EU average. One important indicator of an economy's value creating capacity is the ratio of the produced value added to output. Hungary's value added per unit of output started to rise in 2011 and by 2017 it caught up with Poland, the best performing country in the Visegrád region. The stagnation observed between 2017 and 2020 was followed by an increase again in 2021. At the same time, in terms of the level of the indicator Hungary still falls significantly short of the average of the European Union, and was not able to achieve any significant convergence either in the past period (Chart 3.2). Higher value added is generated at the beginning and end of the value chain, while production process itself typically has low value added content. The foreign direct investments that used to flow into the region usually outsourced the production process to the CEE region, while the higher value added activities typically remained in the parent country. As a result of this, the production structure of the countries of the region was based on activities of high value added to a lesser degree in the past decades. In Hungary, the ICT sector and the chemical industry have recently been the most successful in increasing their value added to output ratio, while the automotive sector registered a decline.

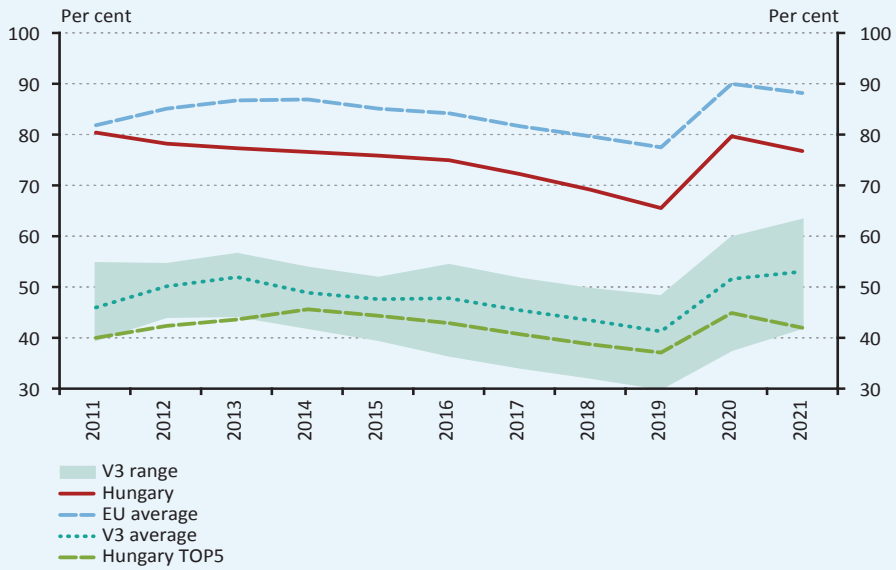
Chart 3.2
Value added as a proportion of output



Source: Eurostat.

As a result of the recovery of economic growth following the coronavirus crisis and the declining budget deficit, the gross public debt-to-GDP ratio declined in the majority of EU member countries in 2021. Hungary's public debt ratio decreased by some 3 percentage points to 76.8 per cent, corresponding to a greater decrease than the EU average. The Hungarian debt ratio decreased to 76.8 per cent by end-2021, which is lower than the average debt level of EU countries, but exceeds the ratios observed in the Visegrád and northern regions. In addition to the level of public debt, the structure of it is also an essential financial vulnerability factor. As a result of the post-2010 deliberate debt strategy aiming at the increasing of the domestic investor base, the share of foreign ownership within public debt fell to less than half of the 2011 historical high, which trend continued in 2021 as well, reaching 31.8 per cent at the end of the year. As a result of FX bond issuances, the foreign currency ratio within the debt of the central government rose from 19.9 per cent to 20.6 per cent in 2021, which is still well below the level of around 50 per cent seen at end-2011. With the preference towards longer-term bonds, in 2021 the average residual maturity of government debt rose by 1.2 years to 6.8 years, corresponding to the greatest annual increase in an EU comparison. The moderate foreign investors' holding and foreign exchange ratio as well as the increase in the average maturity play a significant role in reducing macrofinancial vulnerability.

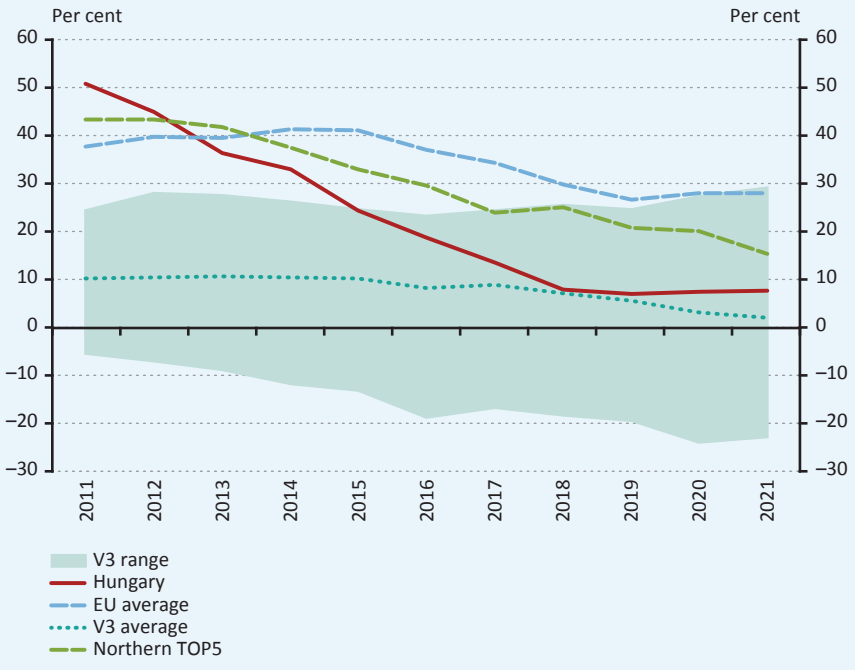
Chart 3.3
Gross public debt-to-GDP ratio



Source: Eurostat.

As regards the external debt ratios, Hungary achieved major improvement in the past decade and converged to the region. At the outbreak of the global financial crisis in 2008, Hungary's net external debt, and thus its external financial vulnerability, were extremely high. Since 2010, owing to the adjustment process of the domestic sectors, the current account turned into a surplus, and the high net lending facilitated a continuous and substantial reduction of external debt. By 2019, the net external debt of the Hungarian economy as a percentage of GDP fell to a historic low of below 8 per cent, close to the regional average. Thus, in terms of the external debt ratios, Hungary worked off its major competitive disadvantage compared to the Visegrád region. The favourable financing trends observed in recent years contributed to the reduction of vulnerability, which also fostered improvement in perceptions about Hungary's risk, decrease in premiums and improvement in competitiveness.

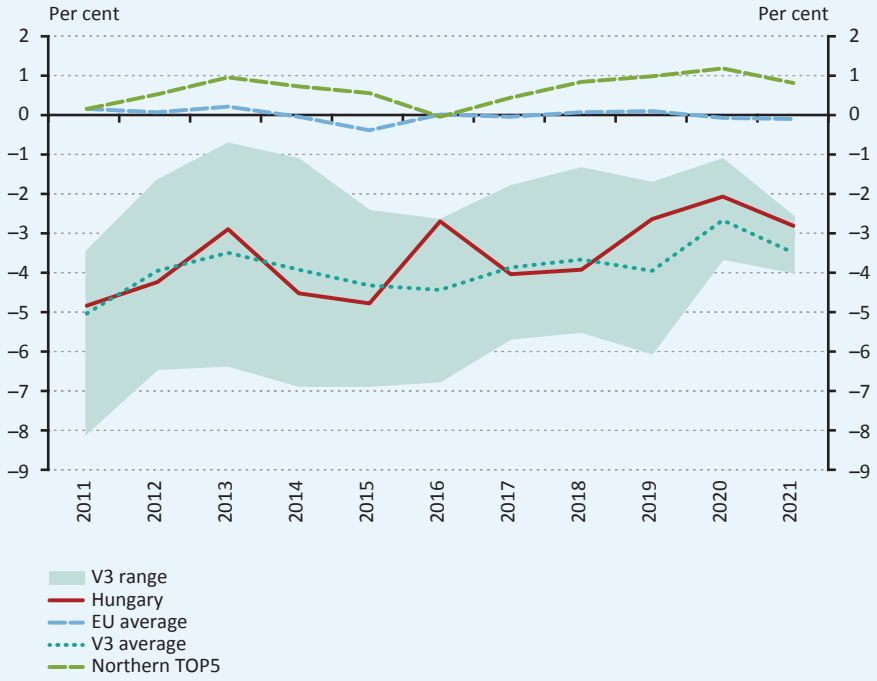
Chart 3.4
Net external debt in per cent of GDP



Source: Eurostat, MNB.

The Hungarian GNI–GDP gap declined considerably during the past decade, and thus now it is already smaller than the regional average, although it still exceeds the EU level. Foreign capital inflows characterise the economic convergence of a country, and due to the profit and interest paid in connection with those, gross national income (GNI) falls short of GDP. In the period before the global financial crisis, this difference (close to 7 per cent) was exceptionally high in Hungary in a regional comparison, which was attributable to the high FDI stock and substantial external indebtedness. After the financial crisis, the decline in the profit of foreign companies, the rise in the income of Hungarian employees working abroad and the reduction of external debt resulted in the narrowing of the GNI-GDP gap. The fall in external debt, registered in recent years, reduced the gap between GDP and GNI through the lower interest expenditure paid abroad, which by 2020 fell to almost half of the value registered a decade ago, then increased slightly last year, in line with regional competitors. The ratio gradually comes closer to the EU average, but it still exceeds it, partly due to the differences in the level of development.

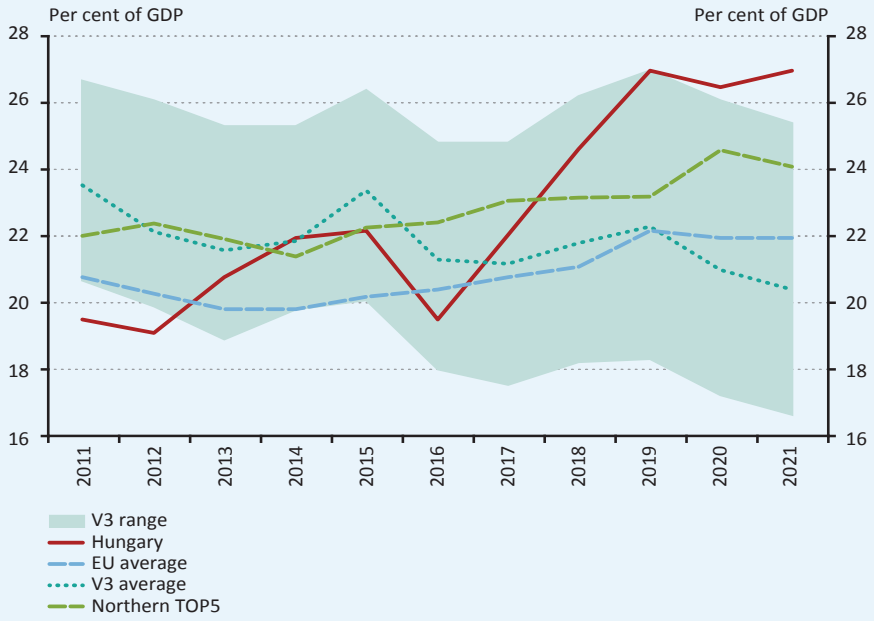
Chart 3.5
Difference between GNI and GDP as a percentage of GDP



Source: Eurostat, MNB estimate.

Hungary's investment ratio reached a historic high in 2021 and was the second highest among the European Union's Member States. High investment ratio is one of the fundamental pillars of sustainable growth and it is essential for the transition to the capital-intensive and then to the technology-intensive growth phase. Based on empirical experience, successfully converging countries were characterised by high investment rates of 25 per cent or more. The rise in investments has been supported by a favourable interest rate environment, buoyant lending, the Funding for Growth Schemes, a tight labour market, favourable wage developments and government measures (Family Housing Benefits Scheme, preferential VAT on new housing, home renewal programmes, Green Home Programme [GHP]). All three sectors (enterprises, government, households) made positive contributions to the significant rise in the investment rate lasting since 2016. The investment rate reached a historical high in 2021, supported by the economic policy through measures stimulating lending activity (expansion of subsidised credit schemes, moratorium on loan instalments) during the coronavirus crisis and the recovery. In Hungary, the ratio of construction (and machinery) investment in the structure of investments is high by international standards, while the ratio of the most value-creating 'smart' investments (intangible assets and ICT) remains low.

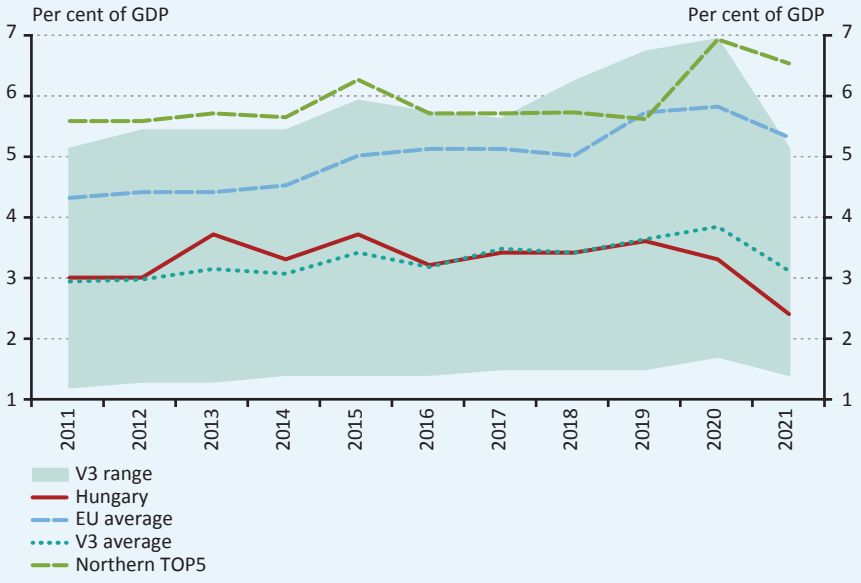
Chart 3.6
Investment rate as a percentage of GDP



Source: Eurostat.

Despite the historically high investment rate, in terms of smart investment, which is crucial in respect of future competitiveness, Hungary falls short of both the EU and regional averages. Investments in the ICT (information and communication technologies) sector and into intellectual assets are considered smart investments. The ratio of domestic smart investments typically moved together with the average of the Visegrád countries (in the case of Poland, investments into the ICT sector are not included in the calculation). On average, Hungary is 1 percentage point below the average value for Slovakia and Czechia in the period under review. Hungary's lag behind the EU average is even greater, 1.7 percentage points on average (2.6 behind the Nordic countries). Moreover, the lag has increased in recent years. Apart from the end of the period, the smart investment rate of Czechia, which is the best performer in the region, exceeded even the EU average. A generally observed phenomenon in 2021 was that the ratio of smart investment to GDP compared to the previous year declined not only in Hungary and the region, but also in the EU.

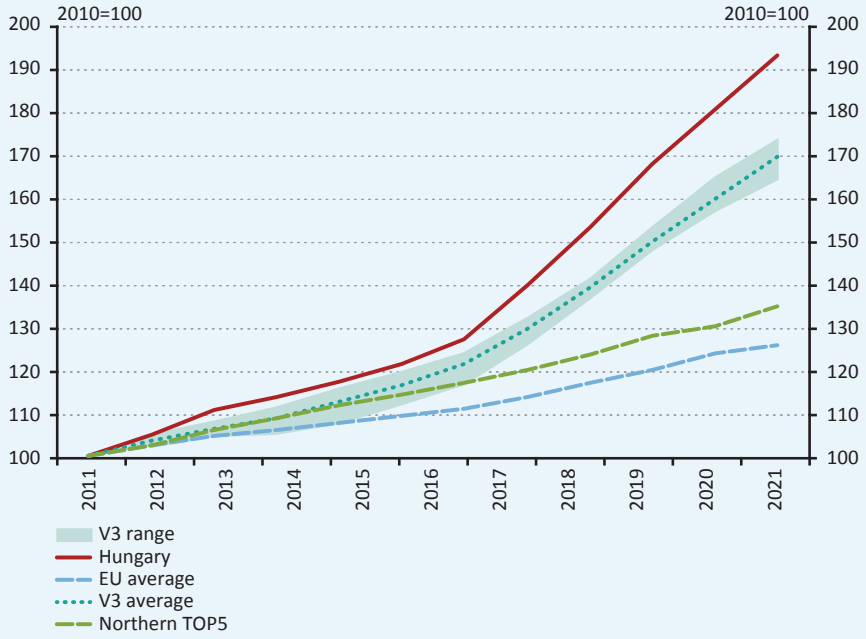
Chart 3.7
Smart investments as a percentage of GDP



Note: Smart investments are investments in the ICT sector and in intellectual assets. Data on ratio of ICT investments in Poland is not available.
Source: Eurostat.

In the past years, domestic wage dynamics significantly exceeded the EU average, resulting in major wage convergence. Following 2016, in a labour market environment that became tight due to strengthening labour demand and a result of government measures, significant wage convergence took place in Hungary (and in the average of the region), which was not blocked by the coronavirus pandemic either. Labour cost per hour almost doubled in Hungary between 2010 and 2021; a significant part of the increase took place after 2016. By contrast, labour cost per hour increased by an average 70 per cent in the Visegrád countries and by a mere 25 per cent in the European Union (Chart 3.8). The rise in labour cost was moderated by the reduction of the social contribution tax in multiple steps. Even the coronavirus pandemic did not break the wage dynamics, as employers did not react to the economic restrictions by cutting wages or postponing wage rises, which was attributable to central bank and government programmes. In 2021, the major wage increases in the health care system and job protection subsidies contributed to the significant wage dynamics, which was supported by remarkable increases in the minimum wage and the guaranteed wage minimum as well as by the 'arms money' (allowance for the recognition of service in armed and law enforcement bodies) in 2022.

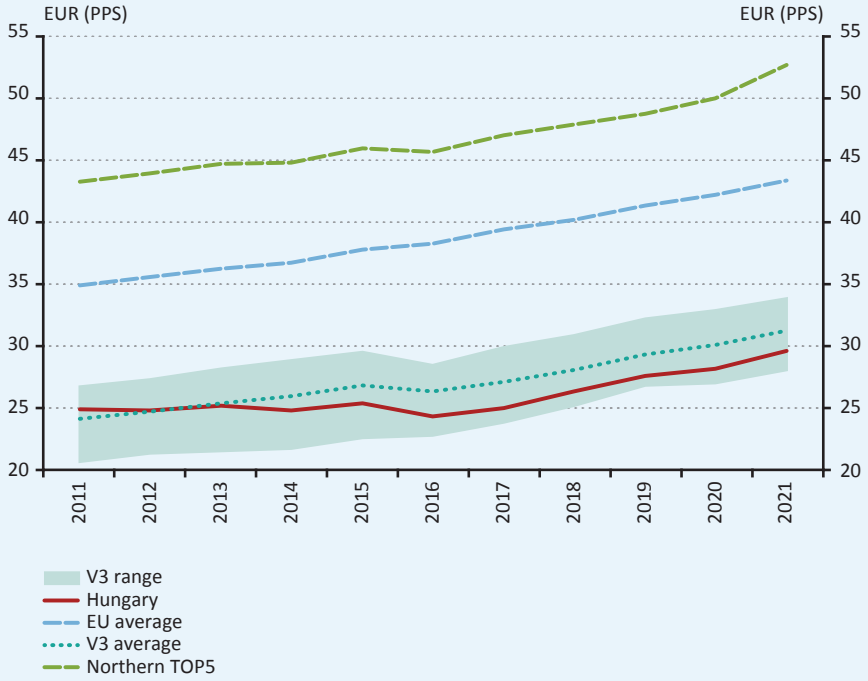
Chart 3.8
Nominal unit labour costs



Source: Eurostat.

Since 2016, labour productivity has improved in line with employment growth, but Hungary has not been able to catch up with the regional average. In addition to the growth in labour costs, we also examine labour productivity trends when assessing cost-based competitiveness. Before the financial crisis, the level of Hungarian productivity was above the regional average; however, the crisis caused a lasting stagnation of productivity in Hungary (Chart 3.9). By contrast, a continuous productivity growth can be observed both in the countries of the region and in the European Union since 2009. In Hungary, labour market reforms introduced from 2010 resulted in a large increase in the number of active and employed people, with employment peaking by the end of 2021. However, new entrants were usually of lower productivity, and thus the negative composition effect decelerated productivity growth. As a result of the tightening labour market, from 2017, economic growth has become increasingly capital-intensive, and thus labour productivity also started to rise. At the same time, it is still true that the convergence of Hungarian labour productivity to the regional and European averages is progressing slowly.

Chart 3.9
Labour productivity (GDP per hours worked)



Source: Eurostat.

3.2 RESULTS OF INTERNATIONAL COMPETITIVENESS RANKINGS

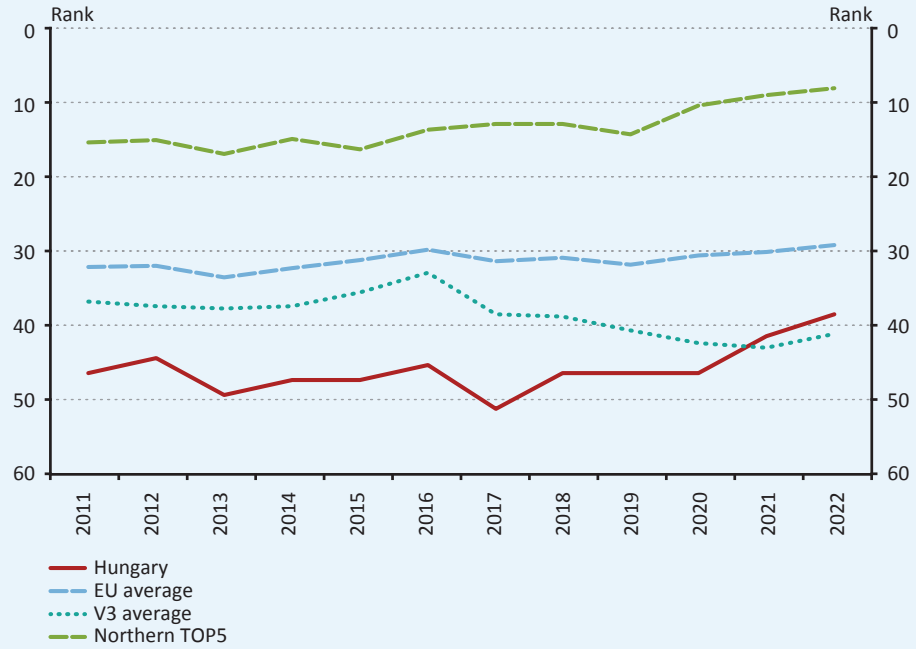
The international competitiveness rankings that were determining in the period before the outbreak of the coronavirus pandemic have gone through fundamental changes in recent years. Of the most followed three rankings, only IMD was able to maintain continuity, the publication of the WEF is in the phase of renewal, and thus temporarily it was not published, while Doing Business is discontinued, and is expected to be published with a new concept and another title (Business Enabling Environment) in 2023. As a result, the chapter that presents international competitiveness rankings discusses those known and relevant rankings where continuity was ensured, although with minor methodological changes.

2022 results of the IMD Competitiveness Ranking

Hungary has moved up from the 42nd to the 39th place in IMD's recent, 2022 World Competitiveness Ranking. For ranking the countries, IMD uses 255 indicators in total, two thirds of which are objective. The indicators cover 4 main areas: economic performance, government efficiency, business efficiency and infrastructure. The 2022 ranking contains 63 – typically developed – countries, among which Hungary was the 39th. Of Hungary's competitors in the region only Czechia (26th) was able to finish ahead of Hungary, while Slovakia was the 49th and Poland the 50th. Among the 63 countries, it was Croatia that achieved the greatest progress, reaching the 46th place in the ranking following a 13-place improvement in performance. The speciality of the 2022 issue is that due to the war Ukraine and Russia were temporary excluded from the ranking.

Of the four pillars that constitute the competitiveness ranking, Hungary's position improved in three, while stagnation was observed in one (economic performance). Looking at the main areas of the IMD Competitiveness Ranking, Hungary's performance is the weakest in the business efficiency pillar. In 2022, Hungary achieved the greatest progress, moving up 8 places. Minor improvement in performance took place in two other pillars; Hungary finished 3 places higher in government efficiency and 1 place higher in infrastructure. Hungary's ranking remained unchanged in the economic performance pillar, but the country was able to preserve the dynamic improvement in position seen in recent years. Moreover, this is the only area where Hungary is among the TOP-10 countries.

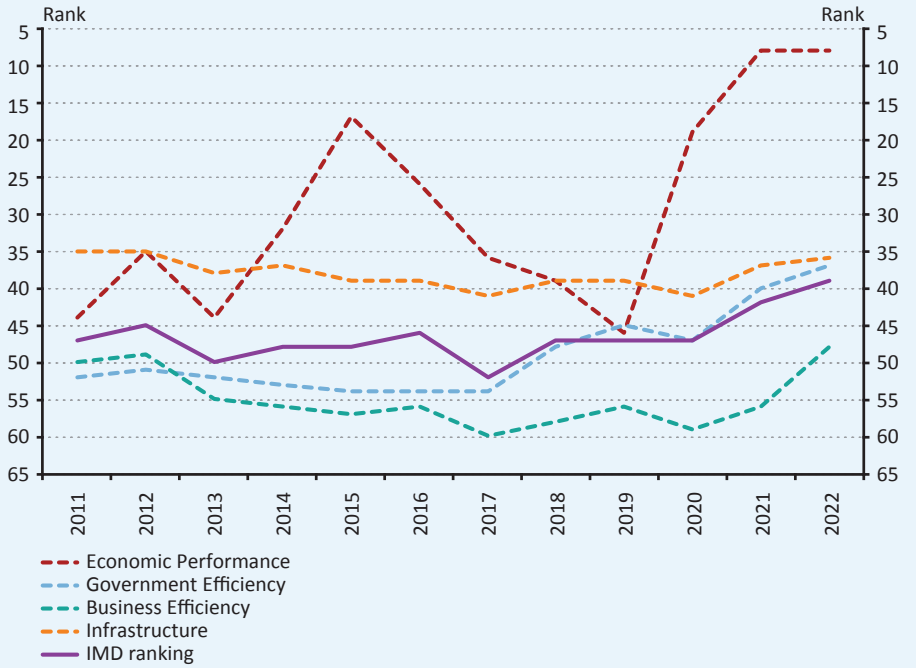
Chart 3.10
Time series development of Hungary's competitiveness ranking in the IMD Competitiveness Ranking in international comparison



Note: No data are available for Malta. Data for Latvia are available from 2013 and for Cyprus from 2017.

Source: IMD.

Chart 3.11
Hungary's ranking in the IMD's aggregate ranking and in its four main pillars between 2011 and 2022

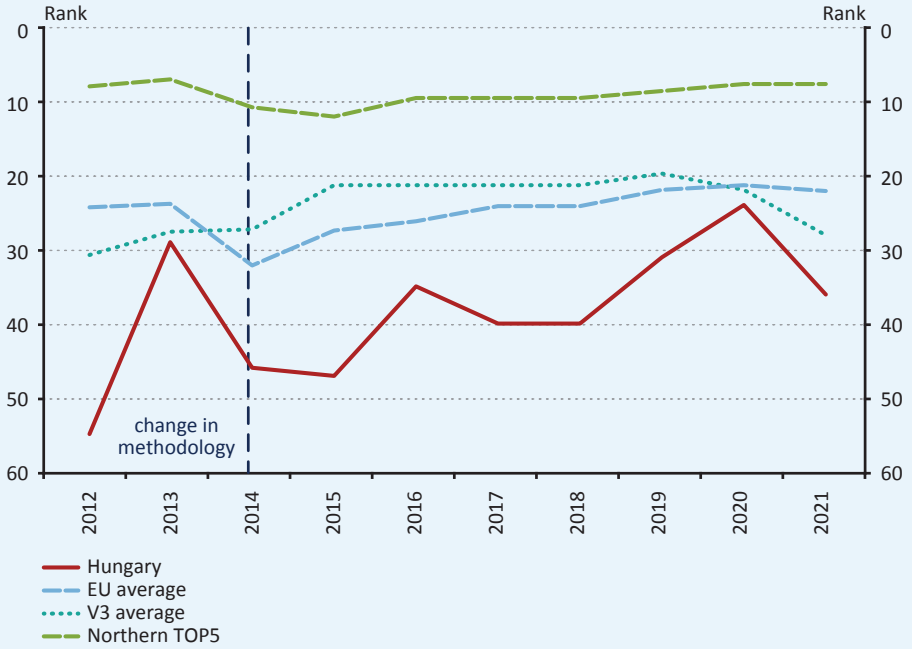


Source: IMD.

Results of the Solability Global Sustainable Competitiveness Ranking 2021

Weakening 12 places, in 2021 Hungary was the 36th in the Solability Global Sustainable Competitiveness Ranking, which lists 180 countries. Arranged in 5 pillars (Natural Capital, Social Capital, Intellectual Capital, Governance Performance, Resource Efficiency), the ranking published by Solability for the 10th time uses 130 indicators in total, more than 90 per cent of which are objective. According to the special scoring[2] applied by the Swiss–Korean think tank, Hungary slipped from the 24th place in 2020 to the 36th one in 2021. All Visegrád countries reached higher positions than Hungary; Slovakia finished 23rd, Czechia 26th and Poland 35th.

Chart 3.12
Time series development of Hungary's competitiveness ranking in international comparison of 180 countries by the Solability's Global Sustainable Competitiveness Index



Note: Between 2012 and 2021, several changes were made to the methodology. From 2014 onwards, the index includes five pillars, whereas before it consisted of four pillars.

Source: Solability.

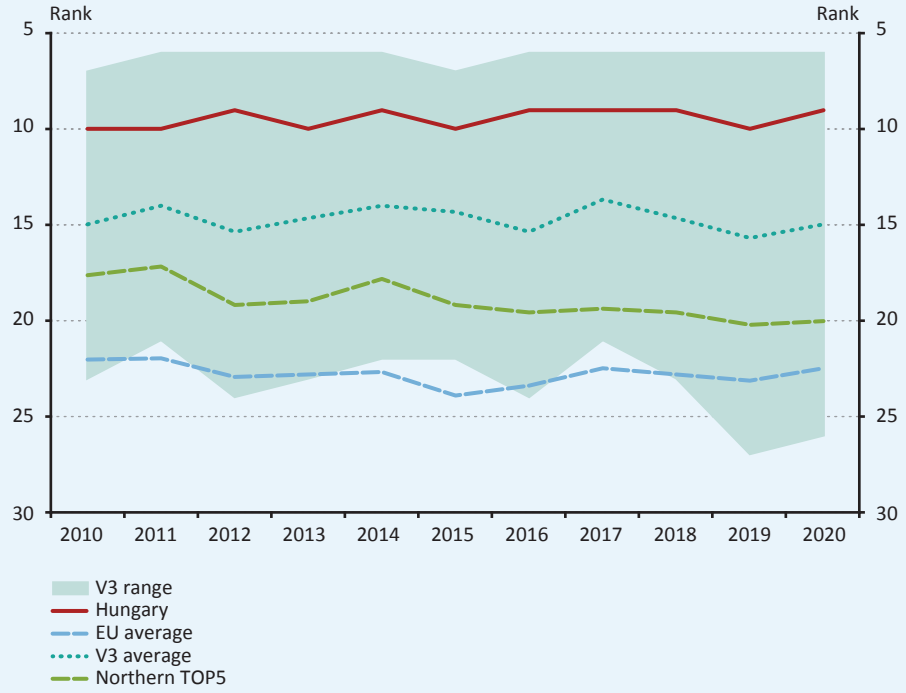
The Economic Complexity Index

The Economic Complexity Index estimates a country's knowledge capital based on the volume and structure of exports. The research group of Harvard University ranks the countries on the basis of the diversity and complexity of their export baskets. Using international trade data, they created a evaluating system that reflects a country's economic power as well through the diversity of exports. According to the producers of the index, research shows that economic growth is higher in the countries where exports are more complex than what could be estimated on the basis of the income level. In this approach, the source of economic growth is the choice of goods and services, which is becoming wider and more complex with the utilisation of the knowledge base.

[2] According to the generally applied methodology, in the case of each indicator the deviation from the country that is considered the best-performing one is taken into account. By contrast, Solability opted for the method that the least and most optimal countries (5 per cent each) automatically receive 0 and 100 points, respectively, while the scores for the other countries vary depending on the distance from the extreme values.

In 2020, Hungary reached the 9th place in the ranking examining 133 countries, leaving both the Visegrád and EU averages behind. Compared to its position in 2019, Hungary moved up one place, while in the past 10 years it was always among the best 10 countries in the ranking. Hungary's position in Harvard University's ranking is 6 places above the V3 average and 13 places better than the average of the EU countries. Hungary was able to precede countries like the United Kingdom, the United States of America, Ireland, France and Belgium. On an annual basis, the top three countries remained the same in the ranking: Japan, Switzerland and Germany.

Chart 3.13
Ranking of Hungary, the V3, the European Union and the Northern TOP5 in the Economic Complexity Index (2010-2020)



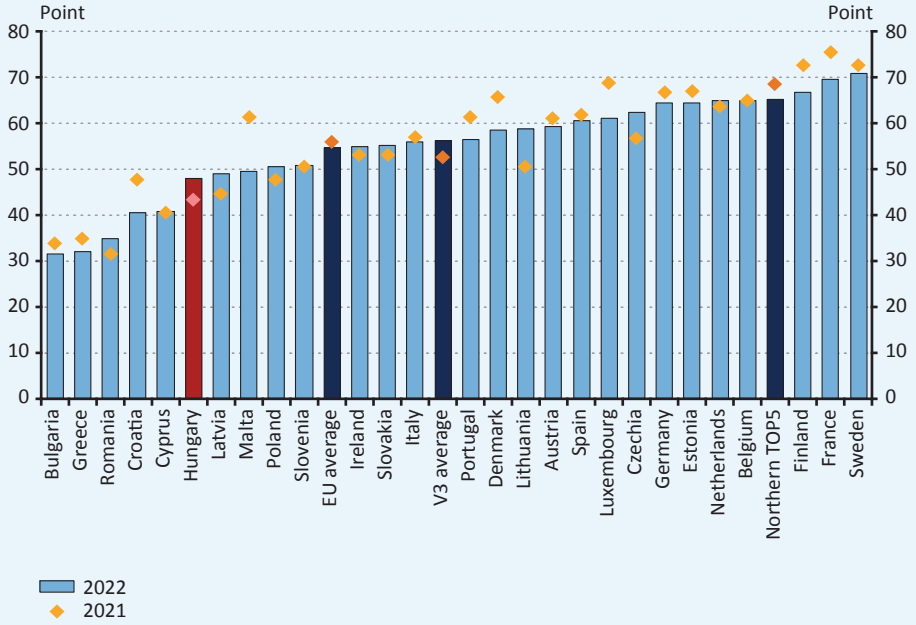
Source: Harvard University.

4 Competitiveness indicators

4.1 NEW FINANCIAL MODEL

Provision of access to efficient and stable bank financing is essential for the maintenance of Hungary's economic convergence. As a result of the central bank and government credit schemes introduced in 2020, and the moratorium on loan instalments, the private sector's loan portfolio grew at an outstanding rate – even in a European comparison –- and thus its level as a percentage of GDP was around 35 per cent in 2021. However, this figure is still well below the average for both the region and the European countries, which holds a major reserve for further prudent growth in lending. In 2022, with 47.7 points, Hungary finished 22nd among 27 EU Member States in the New financial model area. Compared to 2021, by 4.7 points, the increase in Hungary's performance was the 3rd highest, but its level is still lower than the averages of the Northern TOP5 (64.6 points), the V3 (55.6 points) or the EU (54.3 points).

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 ratio of small and medium-sized enterprises that face financing constraints Hungary still exceeds the average of the V3 countries, although productive corporate resource allocation can still be improved by diversifying the channels, developing digitalisation and increasing the efficiency of the institutional guarantee system. While in the corporate segment the Hungarian banking system is in the mid-range of the EU in terms of pricing, the spread on domestic housing loans fell to a historical low by end-2021, thus standing below the averages of both the euro area and the other Visegrád countries. Both the delayed repricing of lending rates and the increasing share of loans refinanced by the central bank played a role in the decline. At the same time, according to our estimation, a change in the cost of funds, i.e. in the reference rate, passes through into aggregate housing loan interest rates with a delay of around 3-4 months, and thus spreads are expected to increase already in the short run. In the longer run, price competition, reduction of operating expenses and deepening the digital infrastructure could pave the way for a permanent decline in spreads, with further contribution from easing the comparability and substitution of products.

Efforts should be made to ensure the predictability of the instalments in all segments and credit products. As a result of FGS Fix, launched in 2019, the ratio of forint-denominated SME loans with interest rate fixed for more than 3 years once again exceeded 50 per cent, and then, as a result of FGS Go! available from April 2020 and crisis management loan

programmes the ratio of fixed rate loans already exceeded 70 per cent by the end of the first quarter of 2022 through new disbursements. Within the disbursements of household loans, the variable rate loans – the ratio of which was more than 40 per cent at the beginning of 2016 – have practically disappeared from the market by now, which was also attributable to the penetration of the Certified Consumer-Friendly Housing Loans and the differentiation of the legislative constraint related to the payment-to-income ratio (PTI) by interest period. The shift in the structure of new mortgage loans towards longer interest rate periods is remarkable also by international standards, and the interest rate risk in the previously built-up portfolio is gradually decreasing due to the favourable structure of these loans and amortisation. This significantly decelerated the increase in repayment burdens caused by the rising interest rates, and reduced the size of a potentially ensuing financial stability risk.

In addition to the interest rate risks, the level and concentration of the indebtedness are also important considerations. As regards the debt-to-income ratio, there are no signs that imply stability risk in a regional comparison, while the debt cap rules prevent the build-up of excessive concentration. On the other hand, the financing constraints that result in the exclusion of certain social groups from the financial system may give rise to problems. According to international data, a lag is perceived in the ratio of bank account holders with regard to the whole population, and certain more vulnerable groups are at an even greater disadvantage. Firstly, giving preference to electronic channels and cashless payment may facilitate financial inclusion. Secondly, the rationalisation and cashless operation of branch networks and giving preference to banking using digital solutions can be expedient only if the banking and payment preferences and attitudes of the individual regions and social groups are taken into consideration.

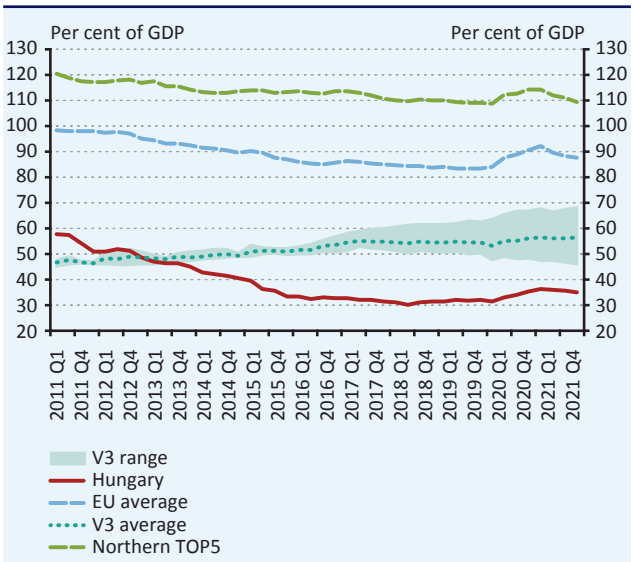
With a view to maintaining the banking sector's role supporting the economy in the long run, strong capital formation and attraction capacity as well as the prevention of systemic stability risks are indispensable. Although the after-tax return on equity (RoE) of domestic credit institutions declined sharply in the period of the pandemic, steadily approaching the European and regional averages, the RoE of 13.7 per cent in 2021 was again the highest among EU countries. However, the high operating costs to assets ratio, relative to the EU, is a constraint on profitability and the pricing of banking products. In the medium to long term, the sector's efficiency can be improved most by consolidating the still fragmented market, deepening financial penetration and digitalising operational processes.

As financial processes are becoming increasingly digital, the general development of bank digitalisation alone results in competitive advantage less and less. However, its absence may have an unfavourable impact on the preservation of the competitiveness of individual institutions and of the sector as a whole. Continuous bank digitalisation with a proactive approach relying upon high-level user experience has become crucial for the tailor-made satisfaction of rapidly changing customer needs and for the preservation of competitiveness vis-à-vis emerging innovative players.

In recent years, keeping abreast of consumer needs, the utilisation of the innovative technological solutions and of the digital space and channels, gained increasing importance in the functioning of the financial system. In parallel with that, in terms of competitiveness it has – and will in the future as well – become increasingly important not only to put the access to services into online space, but also to implement digital transformation overarching the entire operation of institutions in order to be able to offer their services' end-to-end digital accessibility to their customers as well as to ensure the fastest possible following of changing needs. The digital solutions often intended to be temporary or complementary options in view of the pandemic have often became basic services and primary solutions in the recent period. Digital transition, which is necessary in the serving of customers and in the internal institutional operation, and which provides significant support to business continuity, has started at sector level.

In parallel to the digital transformation of existing financial institutions, the existence and development of an advanced FinTech ecosystem and the institutional and legislative background supporting this are also of key importance. The development of a regional innovation centre could substantially support the competitiveness of a country or region. FinTech solutions typically include developments that not only provide both the traditional and the newly established institutions with cost-efficient operation, but may also contribute to the better, faster and more customised satisfaction of customer requirements at a favourable price, as well as to a greater integration of financial transactions into customer journeys that involve the spending of money and cover various areas of everyday life. Considering the international trends, it is important that the Hungarian regulation should actively support the use of FinTech-based solutions on a wider scale, at the same time creating or proposing changes in the legislative framework bearing in mind consumer protection, financial stability and competitive neutrality aspects.

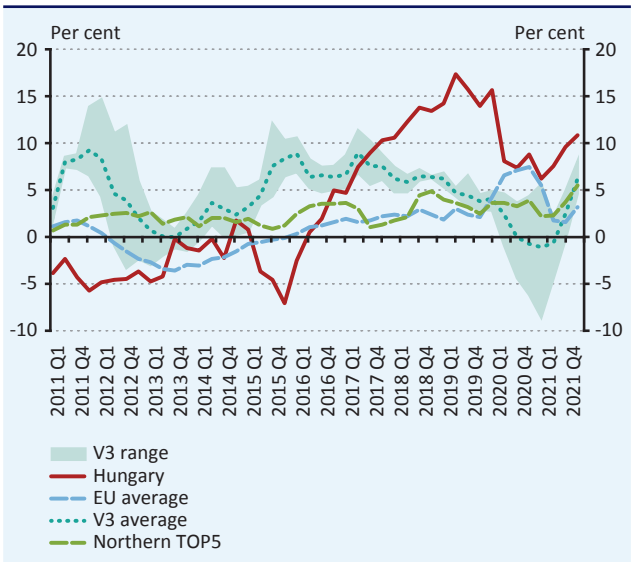
4.1.1 Developments in the volume of lending to the private sector as a percentage of GDP



Source: ECB.

Efficient financing of the economic agents, spanning through cycles, is essential for ensuring sustainable convergence of the economy. Although the dynamic credit expansion of recent years has broken the decline in the loan-to-GDP ratio, credit penetration in Hungary did not rise significantly above the historically low level of 30 per cent until the end of 2019. As a result of the central bank and government credit schemes introduced in 2020 and extending to 2021, as well as the moratorium on loan instalments, the private sector's loan portfolio grew at an outstanding rate and thus its level as a percentage of GDP was around 35 per cent in 2021. However, this figure is still well below the average for both the region and the European countries, which holds a major reserve for further prudent growth in lending.

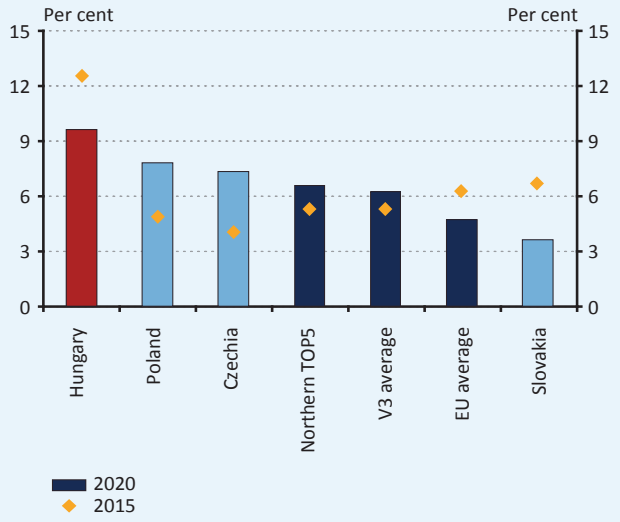
4.1.2 Development of corporate lending dynamics



Source: ECB.

The credit dynamics of the corporate sector plays a particularly important role within the outstanding debt of the private sector, since lending by banks is key to the fund raising of corporations necessary for the high investment ratio. In spite of the appearance of the coronavirus pandemic, the increase in corporate loans remained high in Hungary all along, reaching annual dynamics of 9 per cent and 11 per cent in 2021 and 2022, respectively. The rapid GDP growth due to the restart of the economy and the government's credit and guarantee programmes made major contribution to the growth rate, being persistently high and broad-based by international standards. However, the lending cannot be deemed overheated; as a result of the credit contraction in the years after the 2008 financial crisis, corporate indebtedness substantially decreased; the credit expansion supports financial deepening and convergence.

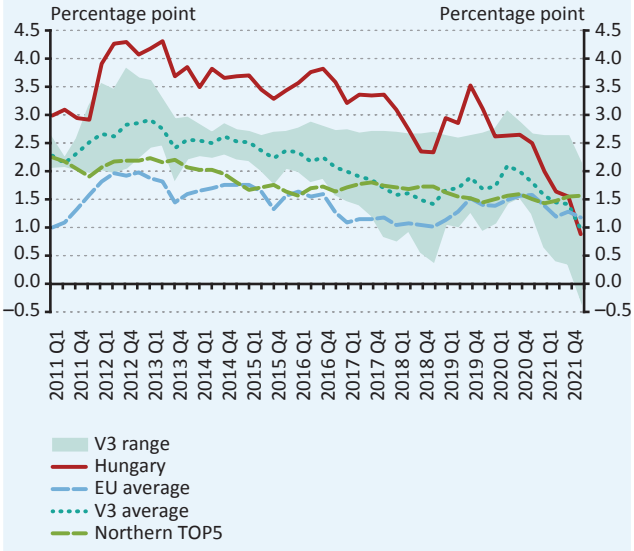
4.1.3 Ratio of enterprises facing financing constraints



Source: EIB.

According to the EIB Investment Survey, in the 2020 financial year, less than 5 per cent of enterprises operating in the European Union and nearly 10 per cent of enterprises in Hungary faced a financing constraint. Compared to 2019, some 4 percentage points fewer domestic firms faced financing constraints. The favourable change that took place in a year concerned small and large enterprises alike. In the case of micro and medium-sized enterprises a slight increase was observed in the ratio of undertakings facing financing constraints. The firms participating in the survey were the least satisfied with the collateral requirements, and thus we still consider the improving of the efficiency of the institutional guarantee system important.

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

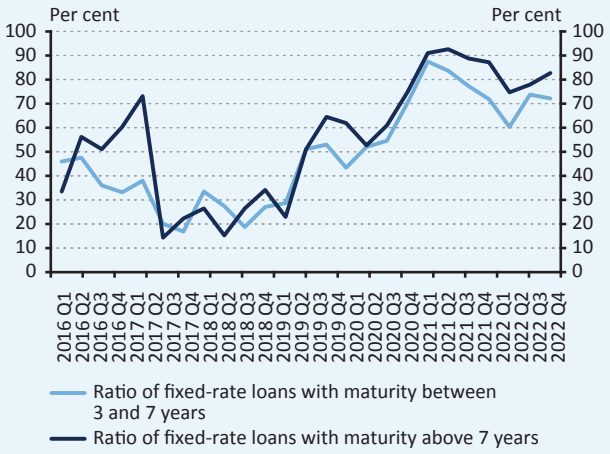


Note: In the case of housing loans with variable rate or interest rate fixation of up to one year the 3-month interbank interest rate, in the case of loans with interest rate fixation for 1-5 years the 3-year, in the case of loans with interest rate fixation for 5–10 years the 7-year, while in the case of housing loans with interest rate fixation over 10 years the 15-year smoothed margin over IRS, based on APR.

Source: ECB.

The spread on domestic housing loans fell to a historical low by end-2021, thus standing below the averages of both the euro area and the other Visegrád countries. A contributor to the decline was that in the Hungarian banking sector the increases in banks' costs of funds due to interest rate hikes are repriced into the lending rates only with a delay. In addition, due to the increasing share of subsidised and central bank refinanced loans, on the whole, only a moderate increase was observed in the average transaction interest rates of housing loans in 2021. In December 2021, the average interest rate spread on domestic housing loans stood at 0.9 percentage points, lower by 160 basis points year-on-year. By contrast, the averages for the euro area and the V3 countries were 1.2 percentage points and 1 percentage point, respectively, and only the Czech spreads were lower than the figure for Hungary. Nevertheless, changes in the yield environment feed through into the aggregate housing loan interest rates with a delay of around 3–4 months, and thus spreads are already rising in 2022.

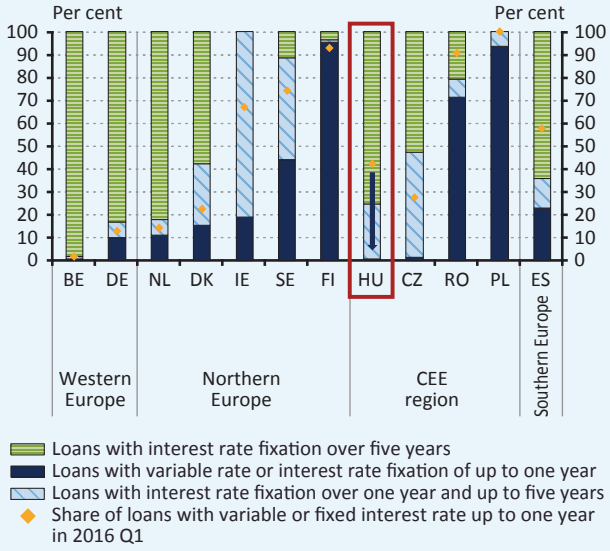
4.1.5 Ratio of fixed-rate SME loans within new loans



Source: MNB.

The reduction of interest rate risks and the increase in the ratio of fixed-rate loans – and thereby providing enterprises with stable and predictable financing, particularly in the SME segment – are important in terms of financial stability. Starting from 2019, as a result of the FGS *fix* scheme, the share of fixed-rate loans returned again to the desired level of above 50 per cent. In order to mitigate the negative economic impact of the coronavirus pandemic and avoid disruptions in the credit market, the FGS Go! scheme launched by the MNB in April 2020 resulted in a further increase in the ratio of fixed-rate loans. Following the closing of the FGS Go! scheme, the government's crisis management credit schemes continued to ensure a high ratio of fixed-rate transactions through the new disbursements.

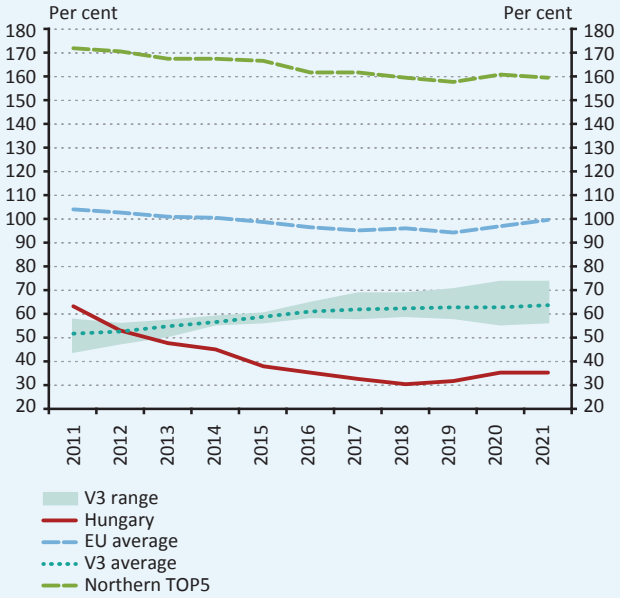
4.1.6 New housing loans by interest period (2020 Q4)



Source: European Mortgage Federation, MNB.

The predictability of instalments is of key importance in terms of the households' indebtedness in a prudent and sound structure. While in early 2016 the ratio of variable rate loans in new disbursements of housing loans was 42 per cent, by the end of 2019 the introduction of Certified Consumer-friendly Housing Loans (CCHL) and the differentiation of the statutory limit applicable to the payment-to-income ratio (PTI) by interest period together effectively ousted these higher risk loans from the market. The shift in the structure of new mortgage loans towards longer interest periods is also outstanding by international standards. The higher ratio of loans with longer interest periods within new disbursements and their complete dominance by now also contribute to the gradual decline in the share of the still outstanding variable-rate mortgage loans. By the end of 2021, the ratio of variable-rate household mortgage loans within the portfolio fell to 28 per cent, from 70 per cent in 2016. Thus, the outstanding variable rate household mortgage loans carries a steadily declining degree of risk due to the amortisation of loans and the favourable interest rate fixation structure of new loans, which significantly reduced the potential negative financial stability effects of the rising interest rates. In the longer run, loan refinancing may be stimulated by statutory reduction of the related fees, particularly the early repayment and notarial fees, as well as by reducing the related administrative burden.

4.1.7 Households' debt-to-income ratio

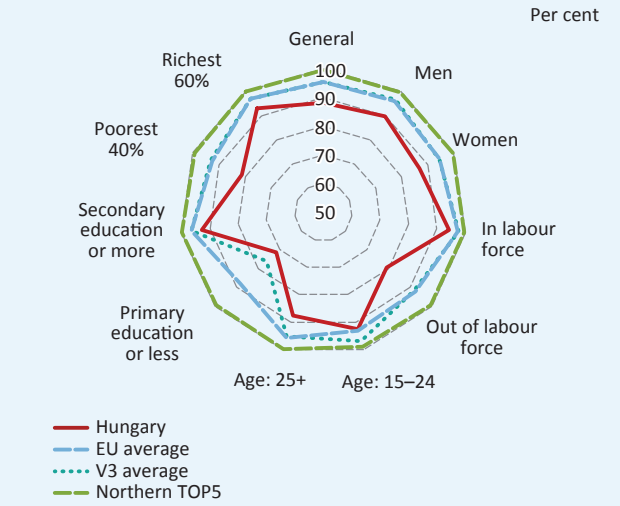


Note: Defined as loans (ESA 2010 code: AF4) liabilities divided by gross disposable income (B6G).

Source: ECB – QSA.

The Hungarian households' debt-to-income ratio is one of the lowest in the European Union, and it also substantially falls behind the other Visegrád countries. While the debt burden of the household sector in the European Union as a whole has barely declined over the past decade, the debt-to-income ratio of the Hungarian population was much lower at the end of 2021 than 10 years earlier. This is the combined result of favourable income developments and the prolonged deleveraging of the outstanding debt accumulated in the previous credit cycle. The existing debt cap rules are also effective in preventing over-indebtedness: more than 80 per cent of the outstanding household loans at the end of March 2022 (75 per cent of mortgage loans) is already linked to contracts concluded under these rules.

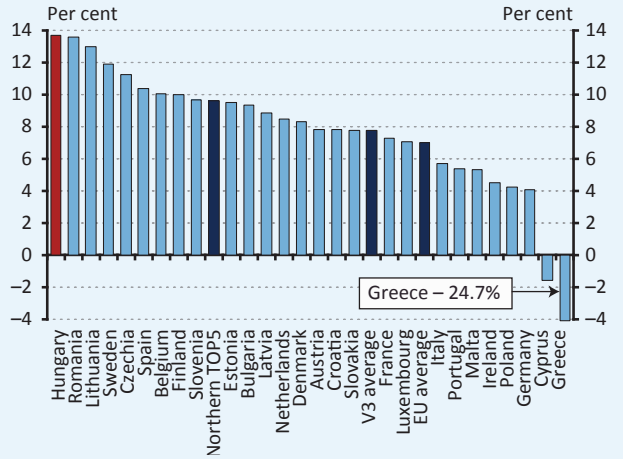
4.1.8 Ratio of bank account holders at financial institutions (2021)



Source: WB – GFD.

In order to improve financial deepening, it is necessary to ensure the general availability of banking services. Although between 2017 and 2021 the ratio of bank account holders increased considerably in all segments in Hungary, compared to the Visegrád and EU averages a lag is perceived in the case of several social groups. It is observed that in Hungary the more vulnerable groups (the inactive, those with lower educational level, the two lowest income quintiles) are at a greater disadvantage in the area of financial inclusion. Although the digital channels may ease the inclusion of certain excluded customers, the rationalisation of the branch network, the reduction of the availability of cash, and giving preference to banking through digital solutions may be expedient only after giving due consideration to the banking and payment preferences and attitude of the individual regions and social groups. In the regions with no bank branches, the application of "mobile" bank branches and multifunctional ATMs to a larger degree may be justified. It may be also favourable to introduce free account packages for the socially disadvantaged persons. In addition, it is necessary to enhance the population's financial awareness, which is responded to by numerous programmes – also promoted by the MNB – as well as by the National Core Curriculum.

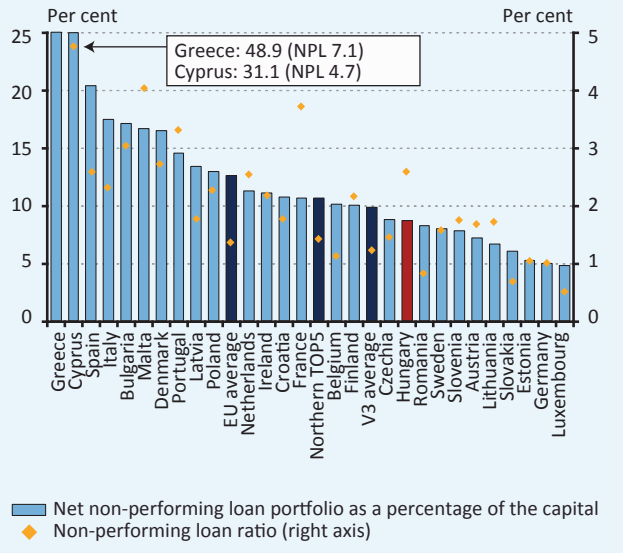
4.1.9 Return on equity (2021)



Source: EKB – CBD.

Satisfactory profitability is important both for maintaining a strong capital position in the credit institution sector and for making efficiency enhancing developments. While some of the banking sectors in the EU experienced low returns on equity over several years, the Hungarian sector was consistently ranked among the top performers in the EU rankings from 2016 to 2019, partly due to the reversal of previously recognised impairments, with its outstanding profitability. Although the consolidated 12-month rolling after-tax return on equity (RoE) of domestic credit institutions declined sharply in the period of the pandemic, steadily approaching the European and regional averages, the year 2021 RoE of 13.7 per cent was again the highest among the EU countries.

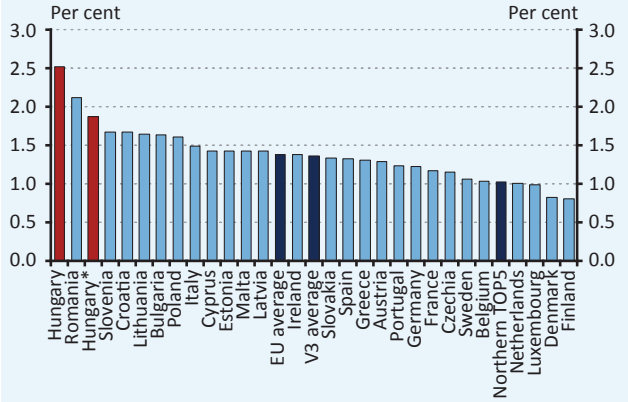
4.1.10 Net non-performing loan portfolio as a percentage of the capital (2021)



Source: EKB – CBD.

Although the ratio of domestic non-performing loans moved from its historical low after the phasing out of the general payment moratorium in October 2021, the ratio of the private sector's non-performing loans can still be considered favourable in European comparison. In the corporate sector, NPL ratios of loans to large corporations as well as to small and micro enterprises also increased in 2021. In the case of household loans, mainly personal loans and home equity loans were affected by the deterioration in portfolio quality. European examples show that the phasing out of the payment moratorium did not result in a dramatic deterioration in portfolio quality as the economic effects of the coronavirus pandemic eased. Nevertheless, geopolitical tensions, the economic sanctions against Russia and the pass-through effects of the inflation environment entail major uncertainty in terms of maintaining solvency. On the other hand, the consolidated capital adequacy ratio of the banking sector rose to 18.6 per cent in 2021, which represents adequate buffers even taking into account these risks.

4.1.11 Operating costs-to-total assets ratio (2021)

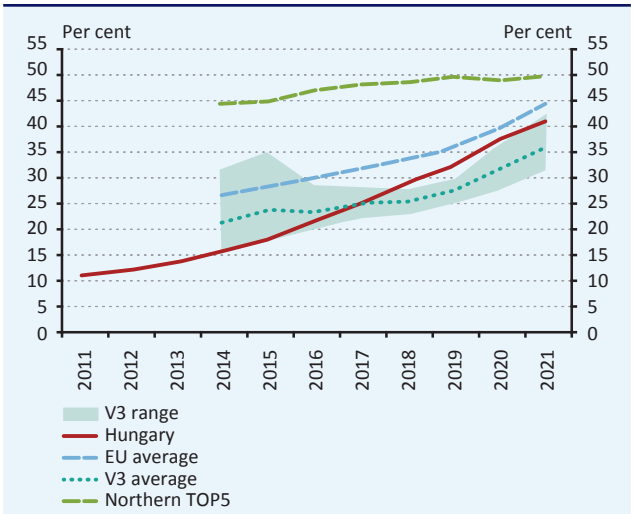


Note: Hungary denotes data filtered from transaction levy, bank tax and foreign subsidiaries.*

Source: EKB – CBD.

The high operating cost to assets ratio of the Hungarian credit institutions sector in the EU represents a constraint on profitability and pricing of banking products. The shortfall can be identified in all sub-items – personnel costs, administrative costs, depreciation – which is significant even after eliminating the bank tax and financial transaction levy. The Hungarian banking sector's operating expenses to assets ratio fell to a historical low by end-2021, with major contributions from the balance sheet expanding effect of the central bank's liquidity management and lending incentive programmes introduced as of mid-2020, in addition to the consolidation as a result of the integration of cooperatives. At the same time, the relative position of the Hungarian banking sector remained unchanged in European comparison, as similar declines took place in the operating expenses to total assets of the European banking sectors as a result of the crisis management measures.

4.1.12 Ratio of electronic payments for purchases

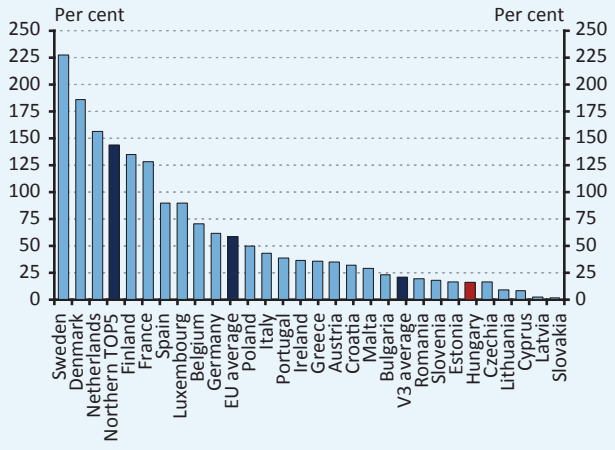


Note: Annual value of purchases conducted with payment cards / Annual household consumption.

Source: MNB, HCSO, ECB, Eurostat.

The increase in the ratio of electronic payments is related positively to economic growth also through the reduction of the shadow economy and hence the decline in tax evasion, and contributes to improving the competitiveness of national economies. In Hungary, thanks to the development of the electronic payment infrastructure, and particularly to the rapid spread of contactless card technology, this ratio has been steadily increasing in recent years. A major contributor to it was the change in payment habits (following the outbreak of the coronavirus pandemic), mainly in relation to the preference for contactless solutions and online shopping. The provision of the Commercial Code requiring all taxpayers obliged to use online cash registers to offer electronic payment after 1 January 2021 brought significant change. Bill issuers also offer more and more electronic payment methods, which are primarily based on card acceptance. Consumers are also more and more open to innovative solutions, and thus the use of card-based mobile wallet applications is spreading increasingly fast. As a result of the foregoing, in 2021, the ratio of electronic payments for purchases in Hungary – after a rise of more than 3 percentage points – came close to 41 per cent, which already exceeds the level in the V3 countries and close to the European Union average of 44 per cent.

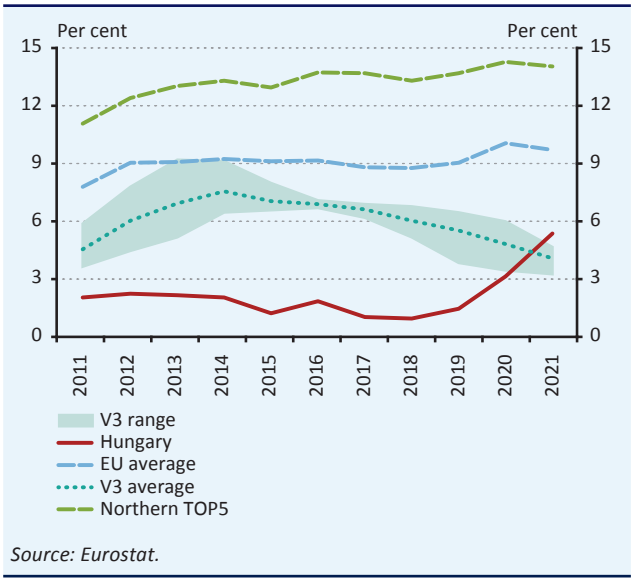
4.1.13 Equity market capitalisation to GDP (2021)



Source: World Bank, CEIC, the national stock exchanges of each country.

In Hungary, market capitalisation as a percentage of GDP is low in an international comparison, standing at 16.5 per cent. With this, Hungary follows Poland in the regional field, although it precedes Czechia and Slovakia. In the Western European and Scandinavian countries, market capitalisation often exceeds even 100 per cent. The diversified financial system serves as a basis for the competitive economy and sustainable growth. Whereas in Hungary financing takes place almost solely through bank channels. This dependency represents major vulnerability for the economy, since at times of credit crunch it renders substantially more difficult for companies to obtain funding. According to the estimates, reaching a capitalisation ratio of 30 per cent may increase the economy's potential output by 0.2–0.3 percentage point.

4.1.14 Corporate bond market capitalisation to GDP in the region

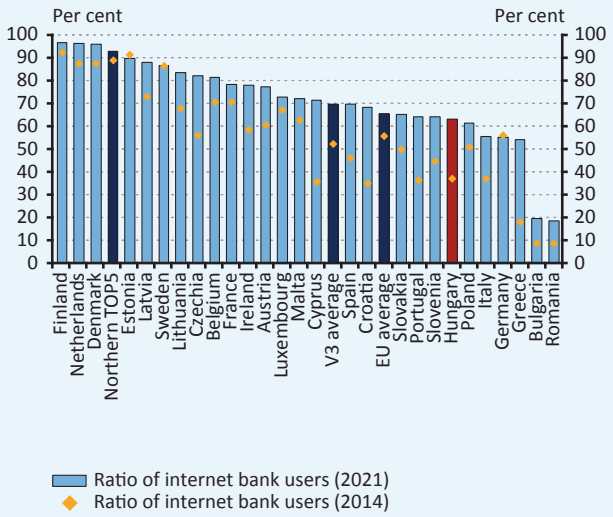


Source: Eurostat.

The MNB launched its corporate bond purchase programme, the Bond Funding for Growth Scheme (BGS) in July 2019 with the objective to facilitate, through increasing the liquidity of the bond market of domestic non-financial corporations, the diversification of Hungarian companies' liability structures and the increase in the efficiency of the monetary transmission mechanism. Until end-2021, 94 bond series (including 13 green corporate bonds) of 71 issuers were issued within the framework of the BGS. Through the securities, issuers raised funds amounting to more than HUF 2480 billion in total, while the nominal value of bond purchases by the central bank exceeded HUF 1310 billion. As a result of the significant contribution by the BGS, the Hungarian corporate bond market, which had been a laggard in the region, became the leader of the Visegrád countries. Namely, while at the end of 2019 Q2 the stock of the market was only around 1 per cent of GDP, by end-2021 it already reached 5.4 per cent, growing seven times higher in nominal terms.

BANK DIGITALISATION

4.1.15 Ratio of internet bank users

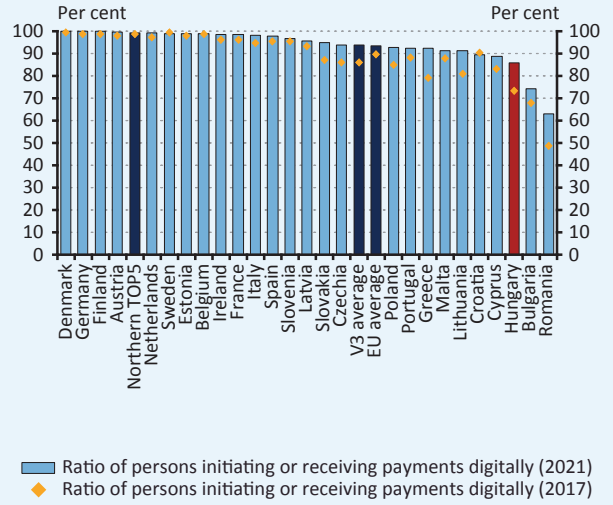


Note: As a percentage of internet users older than 16 years.

Source: European Commission, Digital Scoreboard.

Online bank services developed continuously and gradually throughout Europe in the 2010s. At the same time, the development of Internet banking adaptation gained new momentum in the 2020s, mainly as a result of the outbreak of the pandemic. In Hungary, from 2019 to 2020 the ratio of the users of Internet banking increased by nearly 4 percentage points, followed by a further rise of more than 5 percentage points from 2020 to 2021. As a result, Hungary is only 2 percentage points below the average level of the EU, but the lag behind the V3 countries has still remained above 6 percentage points. These data show that the pandemic situation and the subsequent 'new norm' already resulted in a major increase in the number of customers using online banking in Hungary as well, but there is still a major development potential in this area in the future.

4.1.16 Use of digital payment methods

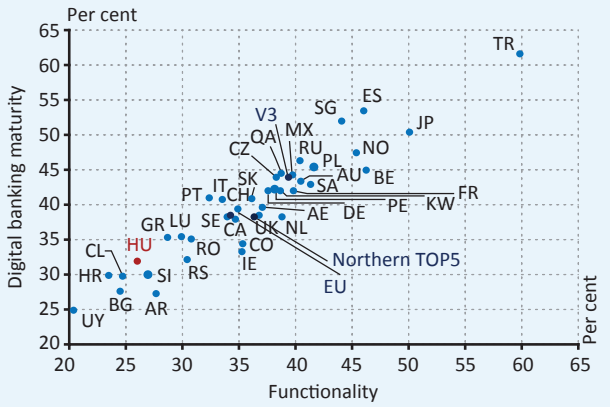


Note: Ratio of the population aged 25 and over who used a debit or credit card, mobile phone or mobile wallet for carrying out various payment transactions in the past 12 months. For Luxembourg, data for 2021 were not available.

Source: WB (2022) – Global Findex Database 2021.

In more than four-fifths of the EU countries at least 90 per cent of the population use some sort of digital solution for the execution of payment transactions. By contrast, before the coronavirus outbreak, only 73 per cent of the population use digital assets in Hungary, which put it not only below the European average, but also below the average of the V3 countries. Although in four years the penetration of digital payment methods increased by more than 12 per cent in Hungary, there is still room for development also in terms of the growth rate. In addition, it should be emphasised that while in most countries the penetration of digital payment was typically lower among the young adults (age group of 15–24 years), in 2021 it reversed in many places, including Hungary. The larger scale use of digital payment methods could be supported by the wide-ranging application of package pricing by banks and the completion of the third phase of the Instant Payment System could further stimulate the future spread of digital payments.

4.1.17 Functionality of digital channels and digital banking maturity in the banking sectors of some countries (2020)

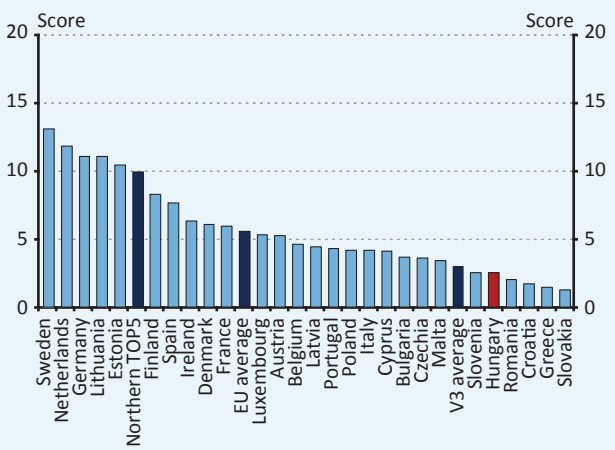


Note: The digital banking maturity, assessed on the basis of the survey performed by Deloitte, is a composite indicator comprising of three main pillars, which consist of the sub-pillars measuring the range of banking functions available in the digital space, the level of user experience measurable in digital interfaces and the consistency of digital development with consumer expectations. The EU data point shows the average of European banking systems.

Source: Deloitte (2020): Digital Banking Maturity 2020.

Based on the 2020 publications, the digital maturity of domestic banks is low not only compared to the European banking sectors, but also compared to those in the region. Through the digital channels (internet and mobile banking) 26 per cent of the total range of functionality – including the collection of information related to the individual products, account opening, transaction initiation, use of new services and account closing – was available in 2020. While Hungary's score is low in absolute terms, the country also lags behind significant in a European comparison: on average, 35 per cent of functions are available digitally in the European banks surveyed, while this ratio was 41 per cent in Poland and 38 per cent in the Czechia. In addition to functionality, the customer experience on the digital platforms and the consistency of the available services with consumer expectations should be also improved, as the overall digital banking maturity in Hungary, aggregated from the surveyed dimensions, is 31 per cent. By contrast, the European average was 38 per cent, while that of the countries in the region is 43 per cent. Although the COVID-19 pandemic generated a major development in the level of digital maturity in the past 2 years, values that quantify it are not yet available at the time of the publication. According to the MNB's own measurements, domestic banks paid special attention to the digitalisation of product ranges and customer interactions during this period, and user experience based product design also became common. However, the lag compared to European and regional countries presumably still exists.

4.1.18 Assessment of the EU Member States based on the FinTech environment (2020)

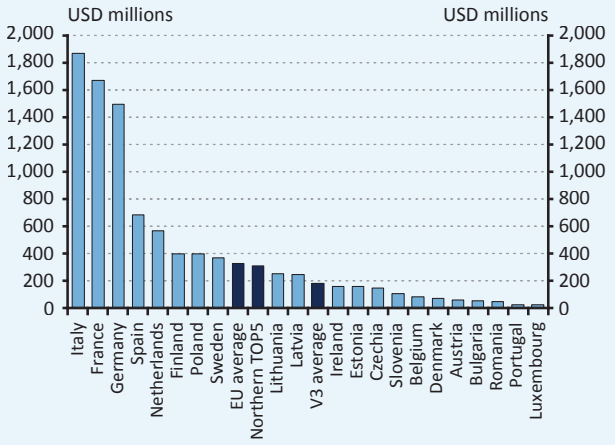


Note: The 2020 survey uses a different assessment method to the 2019 Global Fintech Index. The entire survey was wider, with a global scope, analysing 83 countries in total.

Source: Findexable (2021): Global FinTech Rankings Report.

Although the regulatory authorities are strongly committed to the innovative development of the domestic financial sector, there is still substantial room for improvement in supporting the development of the FinTech ecosystem. The 2020 survey of Findexable shows that at present the activity and success of companies applying FinTech solutions, and the efficiency and maturity of the business environment in Hungary are lower than the EU average, and in a regional comparison both Poland and Czechia outpace Hungary.

4.1.19 Size of the alternative financing markets in certain European countries (2020)

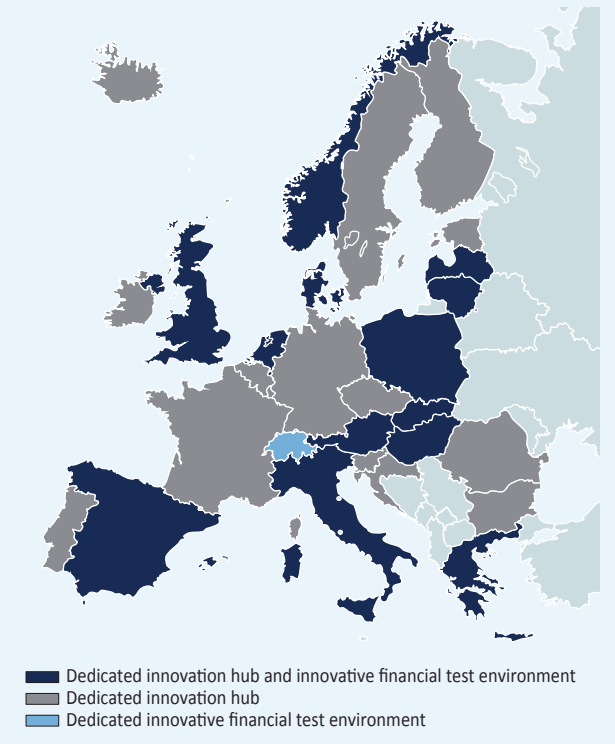


Note: The data refer to 2020. The chart does not show Slovakia, Greece, Cyprus and Croatia, where the size of the alternative financing market is below USD 10 million, nor Hungary and Malta where it is below USD 1 million.

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

In Europe the use of alternative, online forms of finance are increasingly common both in the household and corporate sectors. The turnover of platforms that offer this form of financing increased considerably in the past years. As a result, the aggregate value of EU transactions reached almost USD 10 billion by 2020. The leaders in this respect in the continent are Italy, France and Germany, while Poland is the frontrunner among the V3 countries. Internet-based alternative forms of financing remained less significant in Hungary. Although an increase of more than 70 per cent was observed from 2019 to 2020, the aggregate financing volume still did not reach USD 1 million. It is worth mentioning that there are already examples of non-business based crowdfunding schemes in Hungary (e.g. donation platforms), business- focused crowdfunding solutions may dynamically expand in the future, both at national and EU level. Its foundation – i.e. the requirement of operating in line with rules harmonised at European level and of high-level investor protection rules – was created by the Regulation on European Crowdfunding Service Providers for Business, which entered into effect on 10 November 2021.

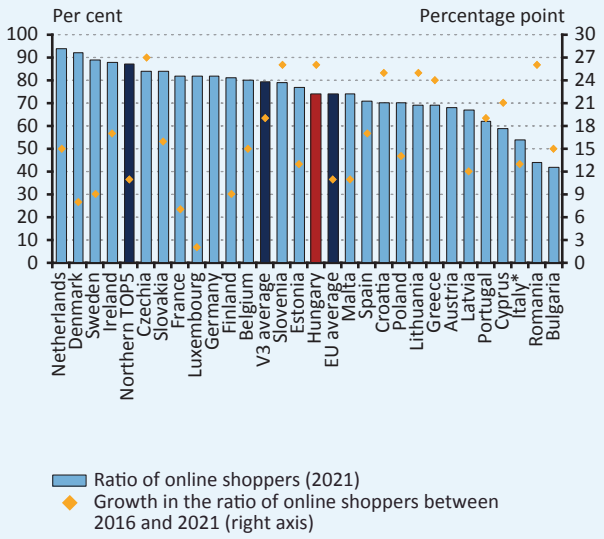
4.1.20 Innovation hubs and innovative financial test environments (2022)



Source: ESAs (2022): Innovation facilitators in the EU.

Every year, the FinTech phenomenon is gaining increasing priority for public authorities in Europe, which leads to a steady increase in the number of actively operating innovative supervisory frameworks. Innovation Hubs to help innovators navigate in the regulatory environment are already widespread, with substantial progress made across Europe in the past year. It is a sign of progress that the environment, which basically focused only on Innovation Hubs before, is beginning to be complemented by the increasing penetration of Regulatory Sandboxes, which allow the testing of innovative solutions in real market conditions. However, there is still ample room for their large-scale, general spreading. Hungary is one of the countries in Europe where both innovation platforms are present: the Innovation Hub and the Innovation Financial Test Environment (IPT, the domestic regulatory sandbox) have been active since 2018. The existence of these frameworks can support both the innovative and secure development of financial systems, and their operation is becoming increasingly important, as it was highlighted by the pandemic and the subsequent “new normal”.

4.1.21 Ratio of online shoppers in 2021 and growth between 2016 and 2021



Note: For Italy, marked with an asterisk, 2020 values are available, and for Germany and Austria, only 2021 values are shown due to lack of historical data.

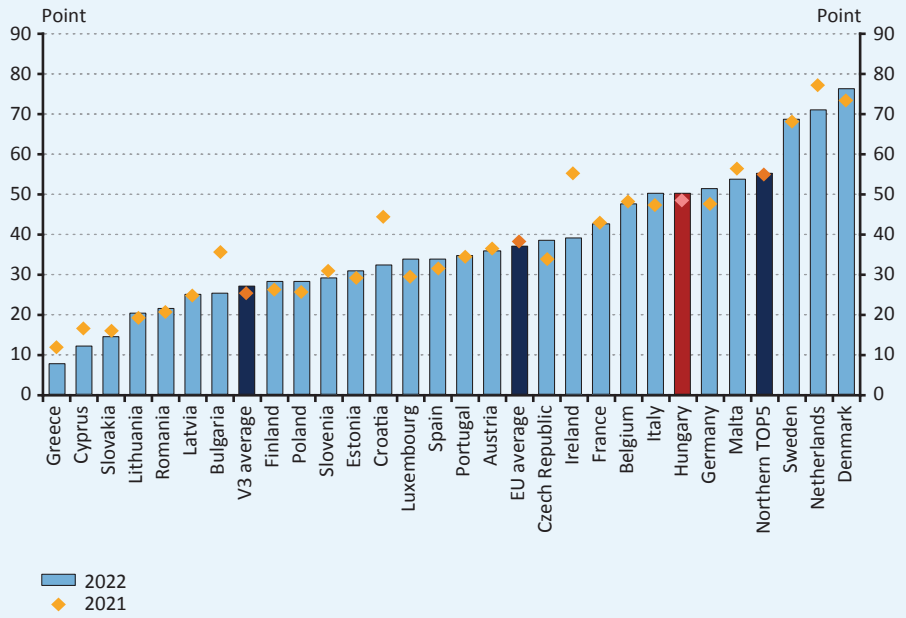
Source: Eurostat (2022).

Between 2016 and 2021, the increase in the ratio of online shoppers was one of the highest in Hungary in the whole European Union. In addition to the increase, the level reached is also remarkable, as it constitutes an important base for an even wider use of digital channels and for the dynamic development of digital financial solutions. According to 2021 data, nearly three quarters of Hungarian Internet users already bought something online, which corresponds to the EU average, and exceeds the Polish or Lithuanian levels.

4.2 ACTIVATION OF HOUSEHOLD SAVINGS

In 2008, the global financial crisis highlighted the fact that financing based on external resources entails several risks, and thus strengthening domestic financing is of utmost importance, and at the same time also a condition for balanced convergence. Growth financed from external resources and credits can make an economy extremely vulnerable. In line with this, international examples and economic history experiences show that those convergence models in which long term, growth-supporting investments have relied predominantly on domestic savings have proved successful. with the budget deficit and public debt soaring because of the coronavirus pandemic, it is particularly important to maintain high household savings and finance public debt from domestic sources. With the budget deficit and public debt soaring as a result of the coronavirus pandemic and recently, a more uncertain external environment in the shadow of the Russian-Ukrainian war, it is particularly important to maintain high household savings and finance public debt from internal sources. In 2022, with 50.3 points, Hungary finished 6th among the 27 EU Member States in the Activation of household savings area. Compared to 2021, Hungary's performance improved by 2.0 points, and its level exceeds the V3 (27.0 points) and the EU (37.1 points) averages, but is below the Northern TOP5 average (55.1 points).

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



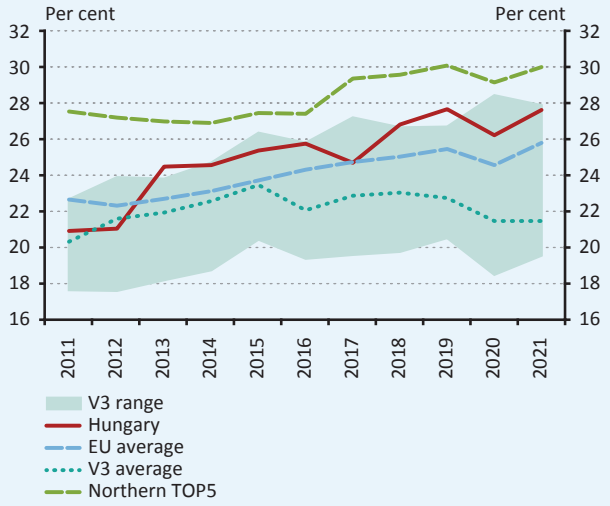
Source: MNB.

To maintain the macrofinancial balance and to continue economic convergence, it is essential to keep household savings at a high level, in which households' government securities financing has a key role. Prior to the financial crisis, Hungary struggled with financing difficulties following the growth financed from external resources. The economic growth following adjustment materialised in parallel with a current account surplus and declining external debt ratios, as corporate investment was primarily financed by high domestic, household savings. The uncertainty caused by the Russia–Ukraine war and the changed inflation environment puts additional pressure on the level of households' savings, while a natural rearrangement also started in the retail government securities market, during which the attention of households turned towards inflation-indexed schemes.

The diverse range of household government securities encourages households to increase their savings, which supports sustainable economic growth as well as financial and macroeconomic stability by stabilising the current account and mitigating the upwards effect of purchases of investment property. The current supply structure of government securities is able to divert the additional earnings realised under the fast wage dynamics, thereby supporting the maintenance of households' high savings rate. This is particularly important from two aspects: on the one hand – based on international examples – these savings may contribute to the financing of investments aimed at the improvement of competitiveness; on the other hand, the household financial savings have a key role in ensuring the balance of the current account,

reduces external debt and improves the balance position. All these factors have an important role also in the credit rating decisions, since as a result of these, Hungary's external exposure decreases and self-financing strengthens, which improves the country's financing conditions through more favourable investor sentiment and the reduction of the risk premium – especially in this more uncertain period of the pandemic and then war.

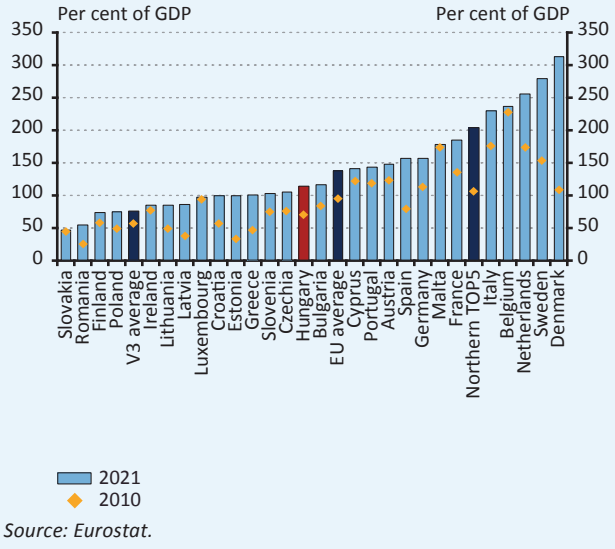
4.2.22 Gross savings as a percentage of GDP



Source: Eurostat.

The Hungarian economy's available internal sources substantially increased in the past decade. The low domestic savings (defined as the difference of earnings and consumption) prior to the 2008 crisis were a serious vulnerability due to the strong reliance on foreign resources. Household balance sheet adjustment (e.g. reduction of debts), income growth and government measures (e.g. reduction of the personal income tax rate) all contributed to growth in savings exceeding both the EU and the regional average. In the second half of the decade, the tight labour market and the intense wage dynamics facilitated further improvement in households' savings position. Furthermore, also due to the substantially growing corporate investments, Hungary's gross saving rate persistently exceeded the regional and the EU average. In 2020, the containment measures introduced to decelerate the coronavirus pandemic made households postpone their consumption, which kept gross savings at high levels. With the improvement in the pandemic situation, the previously accumulated forced savings started to decline, which was offset by a pick-up in investment. Accordingly, in 2021 the domestic gross savings rate stabilised at a high level compared to EU countries and the countries in the region.

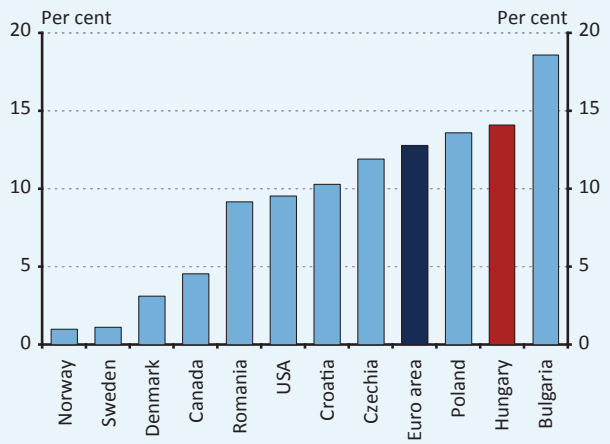
4.2.23 Financial wealth of Hungarian households as a percentage of GDP



Source: Eurostat.

Net financial wealth, calculated as the difference of the Hungarian households' financial assets and liabilities as a percentage of GDP, increased significantly from 70 per cent to over 114 per cent between 2010 and 2020. In 2019, among the securities, the increase in long-term assets was outstanding – following the introduction of the MAP Plus scheme -, and this trend also continued in 2020. Households' liabilities as a percentage of GDP halved after the peak (41.8 per cent) registered in 2010, in which the early repayment, the conversion of foreign currency loans into forint and the MNB's market regulation measures played a significant role, in addition to the households' changed savings behaviour resulting from the crisis. The rise in the savings rate in 2020 was mainly attributable to increasing cautiousness, the forced savings resulting from subdued consumption due to the lockdowns as well and the more or less unchanged nominal GDP. In 2021, the result of the lifting of the restrictions was that the expansion in nominal GDP exceeded the increase in financial assets, and thus the indicator as a percentage of GDP (114.1 per cent) slightly adjusted, although it still significantly exceeds the 2019 level (106.5 per cent).

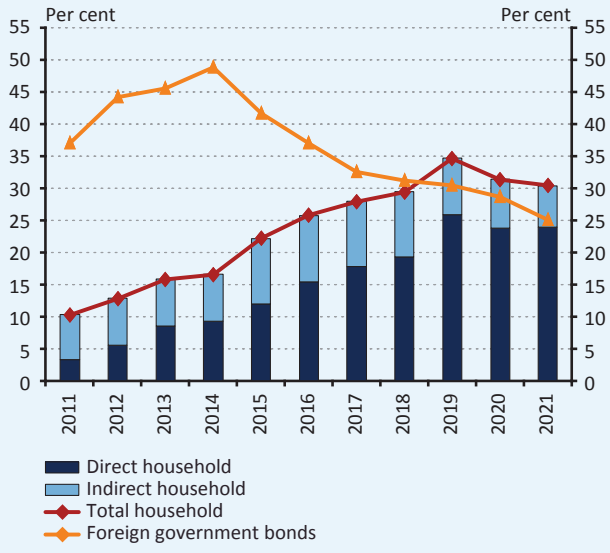
4.2.24 Cash holding as a percentage of GDP in specific countries (2021)



Source: Eurostat, national central banks.

Hungary's cash holdings are high in an international comparison, the mobilisation of which – already started with certain measures – may represent major sources for the economy. In an environment of low inflation and yields following the financial crisis in 2008, the popularity of liquid assets has increased in most countries, and thus the rise in cash holdings as a percentage of GDP was a general phenomenon. The COVID-19 pandemic boosted cash demand almost everywhere, except in the Scandinavian countries. In 2021, households spent a great deal of the cash accumulated for precautionary reasons, and thus the indicator as a percentage of GDP declined in Hungary. It is worth mentioning that in early 2022, following the outbreak of the Russia–Ukraine war, the demand for cash increased significantly again, which is a good indication of its importance. In the past years, the introduction of the MÁP+, the development of the related services of the State Treasury and the innovations proposed by the MNB in the Competitiveness Programme as well (capitalisation of interest, cancellation of the financial transaction levy for the Treasury) also contributed to the deceleration of the accumulation of cash assets. In addition, technical innovations (e.g. the introduction of the Instant Payment System) reduced the cash holdings through declining transaction demand.

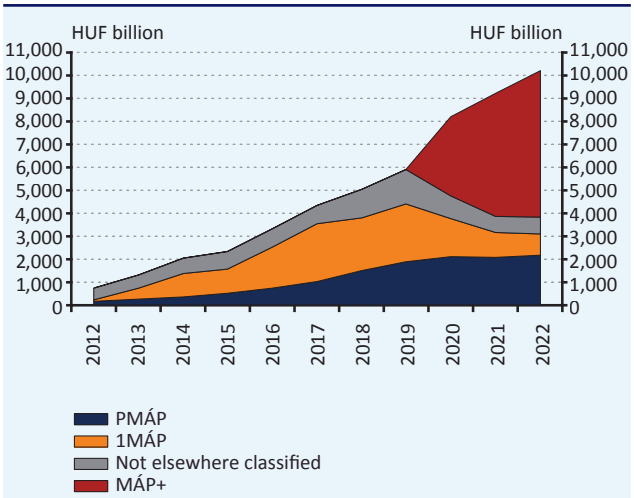
4.2.25 Financing based on security holdings of households and non-residents as a percentage of public debt



Source: MNB.

Measures to reduce external vulnerability have gradually decreased the significance of external liabilities in the financing of public debt since 2011. Direct financing by households rose from 2-3 per cent of the public debt in 2011 to over 25 per cent in 2019; however, considering indirect financing too (i.e. through financial intermediaries), this ratio was 35 per cent. The funding of government expenditures related to the pandemic reduced the ratio of financing by households. Nevertheless, the increasing participation of the households in the financing of public debt made contribution to the fact that by the end of 2021, the weight of government securities holding of non-residents fell below 25 per cent from 50 per cent registered in 2014. It is also worth noting that households provided stable funding for the state through the MÁP+ introduced in 2019 and the inflation-indexed PMÁP securities even in the more uncertain times of the past period. In addition to the strategy of the Government Debt Management Agency, which focuses on financing by households, the central bank's self-financing and government securities purchase programmes were also major contributors to the strengthening of the role of domestic sources.

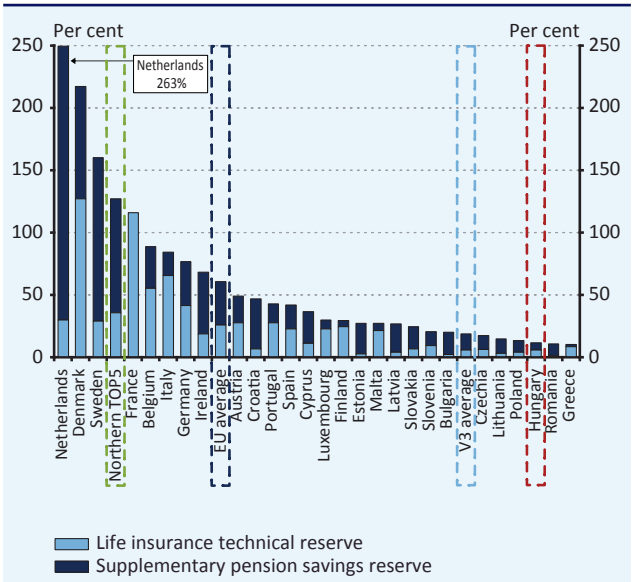
4.2.26 Households' holdings of government securities



Source: MNB.

As a result of the debt strategy that had been strengthening the domestic investor base deliberately since 2011 in order to reduce external financial vulnerability, households' government securities holdings increased more than 13.5 times higher between 2011 and end-2021. During last year, households' government securities holdings increased by nearly HUF 1000 billion, thus exceeding the level of HUF 10 000 billion by the end of 2021, which is considered a milestone. The MÁP+ continued to be the determinant of the increase in the holdings, and the PMÁP holdings also were up slightly compared to the end of the previous year. By contrast, the maturities of the 1MÁP were not completely renewed by households. Nevertheless, as a result of the increasing inflation environment and the outbreak of the Russia–Ukraine war, in 2022 the trend typical of the previous years broke. Popularity of the MÁP+ introduced in June 2019 dropped considerably, while households' interest in the inflation-indexed PMÁP increased significantly in parallel with that. As a result, a rearrangement started in the retail government securities market, where the PMÁP gradually takes over the role of the MÁP+.

4.2.27 EU households' gross life insurance and supplementary pension savings as a percentage of GDP (2020)



Note: The supplementary pension savings reserve value for the Netherlands is 239 per cent.

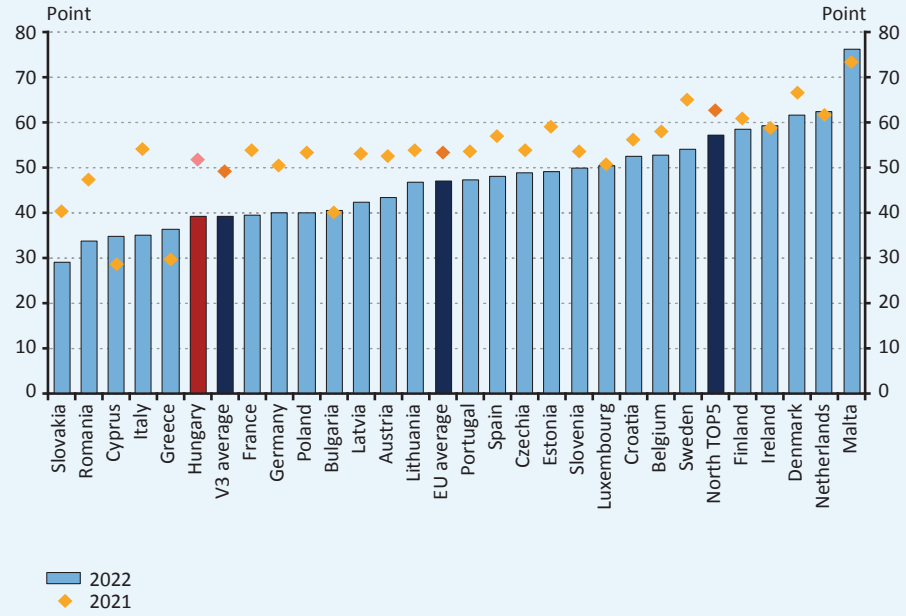
Source: Eurostat.

In view of their long-term nature, supplementary pension and life insurance savings provide stable financing for economies. In West European countries the related reserves are higher than in Hungary, where major growth reserves may be identified in these sectors. Supplementary pension and life insurance reserves amounted to only 9.1 per cent of GDP in 2020 as well, which is lower than the 48.5 per cent EU average or the 15 per cent average of the Visegrád countries. The current voluntary savings schemes (pension insurance, voluntary pension funds, pension savings account) cover only 23 per cent of the active population. By raising financial awareness and developing institutional investor models, the additional leg could be increased, which could become a significant source of income in old age in the long run, complementing the presently dominant public leg.

4.3 SME STRATEGY

As of early 2020, due to the COVID-19 pandemic, small and medium-sized enterprises had to face an economic uncertainty never seen before. SMEs also had to cope with satisfying the increasing demand experienced in the period and with the rapid rise in the prices of numerous inputs. Simultaneously with the extraordinary economic and social challenges of the past two years, SMEs also had to prepare for the transition to digital and sustainable economy. In the period of the recovery from the crisis, labour market frictions hindered the increase in employment. SMEs compete with large enterprises in the labour market, and therefore it is necessary to assess their performance and situation compared to domestic large enterprises as well. With 39.1 points, Hungary ranked 22nd in the area of SME strategy among the 27 EU Member States in 2022. Compared to 2021, Hungary's performance decreased by 12.4 points, and its level is lower than the V3 (39.2 points), the EU (47.0 points) and the Northern TOP5 (57.0 points) averages.

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



Source: MNB.

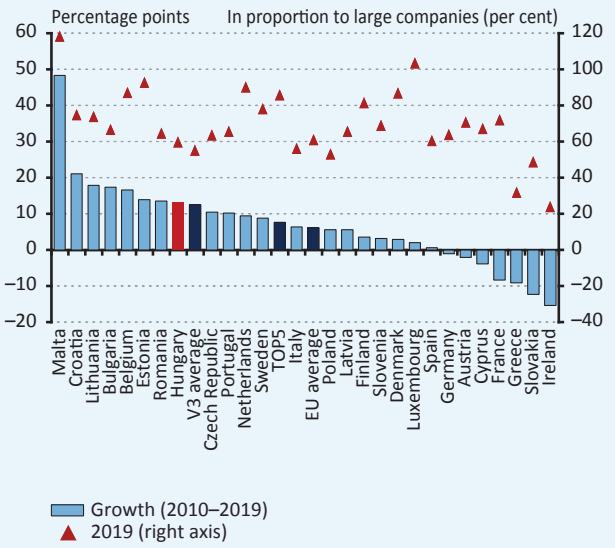
Corporate duality in Hungary eased significantly until the outbreak of the economic crisis caused by the pandemic, which makes economic growth of Hungary more sustainable after the recovery as well. Easing duality is desirable, among other things, because it makes the production of SMEs self-sustainable in the long term by keeping them competitive in the labour market against large corporations. Between 2010 and 2019, the relative productivity of Hungarian SMEs converged by around 13 percentage points with that of large companies. This gives Hungary the 8th largest improvement over time compared to the EU. Even in spite of this pace of convergence, the efficiency of Hungarian SMEs remained below 60 per cent of the productivity of Hungarian large enterprises. Capital deepening, i.e. the steadily high level of the investment ratio, contributed to the relative convergence process of SMEs, which peaked at 16.5 percent in 2019 for the overall corporate segment. Hungarian enterprises proved to be resilient to the adverse economic effects of the COVID-19 pandemic.

An increasing number of SMEs invested into sustainable technologies and acquired the skills and knowledge that may make their business more sustainable and more competitive. Complete exploitation of the potential inherent in the digital solutions of SMEs and implementing them in their concrete business activity offer an opportunity to increase the productivity of SMEs. Hungarian enterprises use an increasing number of the advanced digitalisation solutions like cloud services or sensor solutions. At the same time, big data, artificial intelligence, robot technologies or blockchain are rarely used innovations.

The greatest potential for improvement can be identified in the creation of conditions for sustainable enterprise development. In line with its green mandate, the central bank pays particular attention to the use of sustainable solutions by Hungarian enterprises. The already mentioned digitalisation allows not only the increase in the productivity of SMEs, but also the reduction of their environmental impact. Only one fifth of Hungarian SMEs recycle waste/materials, while the EU average is three times, the Visegrád average is two times higher. The majority of Hungarian companies did not take measures to reduce their environmental footprint or to combat wasting energy.

Until the outbreak of the coronavirus crisis, Hungarian SMEs were characterised by strong convergence in productivity, and the lasting and sustainable continuation of this trend requires digital and green transition. The lag experienced on the business side could be reduced by planning ahead and by measures to retain employees, whereas in addition to a change in attitude, extended adaptation of digital technologies would be necessary to accelerate the green transition.

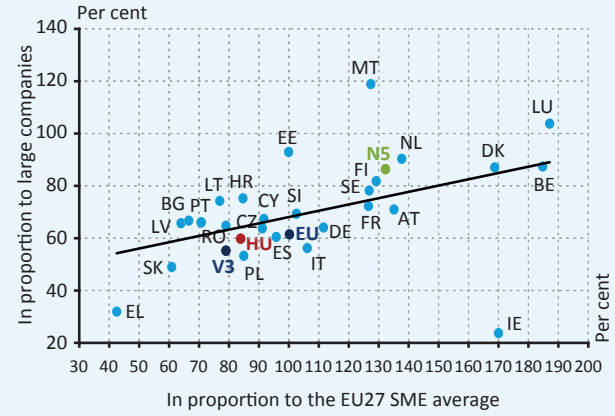
4.3.28 Development of corporate duality



Source: Eurostat, DIW-ECON, MNB calculations.

The productivity of the Hungarian SME segment came 13.1 percentage points closer to large enterprises between 2010 and 2019, significantly exceeding the EU average (6.1 per cent) and overperforming the Visegrád average as well. The corporate duality, i.e. the productivity gap between SMEs and large enterprises, strongly determines the growth potential of the Hungarian economy. Unless SMEs can improve their efficiency, they will lose properly skilled labour force, which will have a negative impact on the performance of the sector and the economy. Since 2010, Hungary has experienced an ease in corporate duality, i.e. the gross value added per employee of the SME sector has increased relative to large companies.

4.3.29 Relative labour productivity of SMEs (2019)

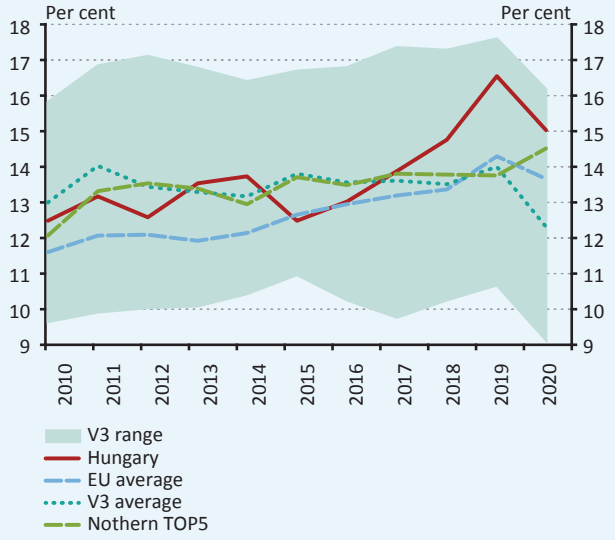


Note: The comparison with the EU27 is calculated at purchasing power parity. For DK, EE, IT, AT and PT, we have also used external data sources due to lack of data.

Source: Eurostat, DIW-ECON, MNB calculations.

Despite dynamic growth in recent years, the labour productivity of the Hungarian SME segment is still 60 per cent of Hungarian large companies, placing Hungary in the third of the EU. Compared to European SMEs – calculated at purchasing power parity – SMEs in Hungary are in a more favourable position, as their productivity reaches 84 per cent of the EU average. The Hungarian proportion is in line with the pattern seen across Europe, where SMEs show higher relative development relative to SMEs operating in other countries than compared to large companies in the country where they operate.

4.3.30 Business investment to GDP ratio

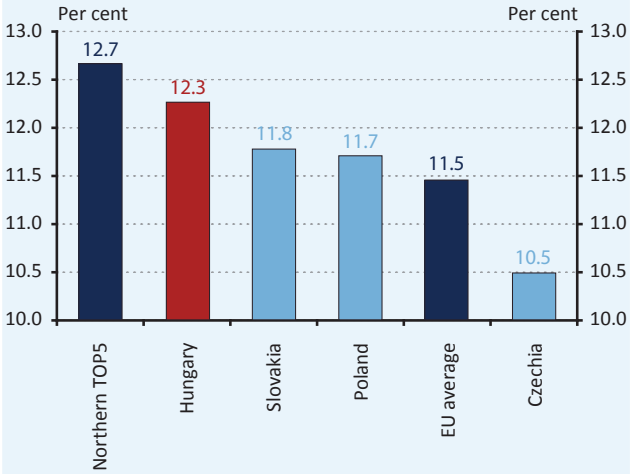


Note: Including financial companies.

Source: Eurostat.

In 2020, including financial intermediary firms, the Hungarian corporate investment rate (15 per cent) was the 2nd highest in the region following the Czech rate (16 per cent), and even in the European Union only 6 member countries were ahead of it in this performance-based indicator. The figure for Hungary also slightly exceeded the average of the 5 Northern states (14.5 per cent), which is considered as a reference value. According to the MNB's estimate, business investment increased further by 1.2 percentage points (to 16.2 per cent) in 2021, coming close to the pre-crisis level (16.5 per cent in 2019). A key component of productivity growth is capital deepening, i.e. the relative rise in investments, and therefore its structure and timing are of particular importance. The increasing of the business investment spending in excess of depreciation enables companies to increase their productivity. In Hungary, after 2015 the business investment to GDP ratio substantially increased, which also contributed to the favourable growth trends observed in the SME segment. The favourable financing environment, the inflow of foreign direct investments, the targeted central bank programmes (FGS), the EU funds and the high domestic demand supported by the government contributed to the growth in corporate investment activity. The dynamically rising trend of the corporate investment rate until 2019 was temporarily broken by the coronavirus, but its level – as a result of central bank and government programmes – exceeded the regional and EU averages even during the crisis.

4.3.31 Ratio of high-growth companies (2019)

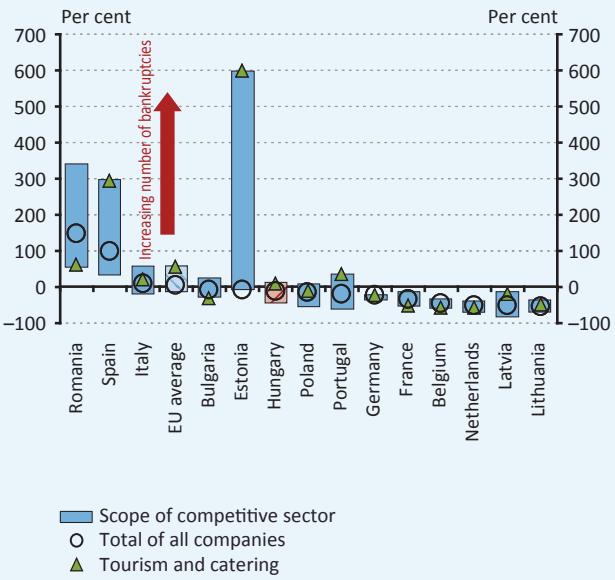


Note: Based on employment. Calculation method: Number of high-growth companies divided by active enterprises with a headcount of more than 10 persons.

Source: Eurostat, MNB.

The ratio of high-growth companies in Hungary rose to 12.3 per cent in 2019. The ratio of high-growth companies shows the ratio of companies employing minimum 10 persons that increase their headcount by at least 10 per cent for 3 years, within the total corporate population. The relatively favourable development in the Hungarian ratio was also supported by government measures. In Hungary, the targeted labour demand stimulating measures of the 2013 Job Protection Action Plan and the processes supporting high demand (improving financing environment, family support measures, FDI inflow, EU funds) also had favourable impact on the domestic value, which rose above 12.3 per cent by 2019. This high ratio was achieved despite tight labour market conditions in Hungary since 2016, and despite the fact that in the new EU budget cycle it was no longer a mandatory requirement to increase the number of employees when corporate applications were granted.

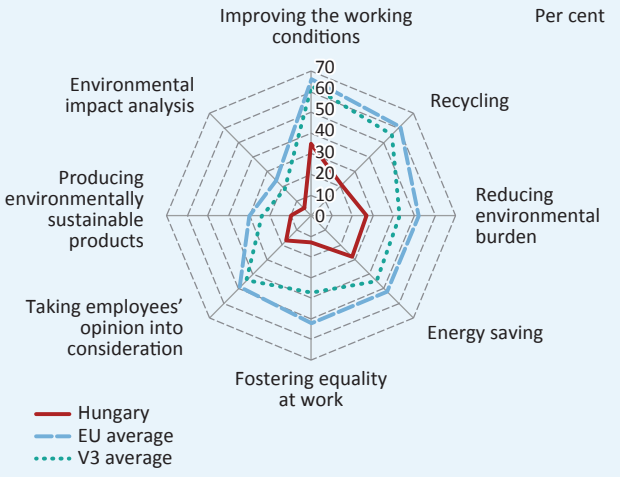
4.3.32 Number of bankruptcies in the 1st quarter of 2021 compared to the same period in the previous year



Source: Eurostat, MNB editing.

Hungarian SMEs have successfully weathered the negative economic impact of the pandemic, as the bankruptcy rate of companies even fell, while the average increase was above 7 per cent in the EU over the same period. The pandemic affected companies on both the demand and supply sides, to which they were able to respond depending on how much reserve they had been able to build up in previous years and the extent to which economic policy was able to support economic resilience. In Hungary, the deviation between sectors was not significant, unlike in some countries such as Romania, Spain and Estonia. The moratorium on loan instalments, proposed by the Magyar Nemzeti Bank, the Funding for Growth Scheme, the Bond Funding for Growth Scheme, the liquidity-providing programmes and the easing of the capital buffer requirements also contributed significantly to avoiding a wave of bankruptcies.

4.3.33 Ratio of SMEs adopted sustainability measures (2020)

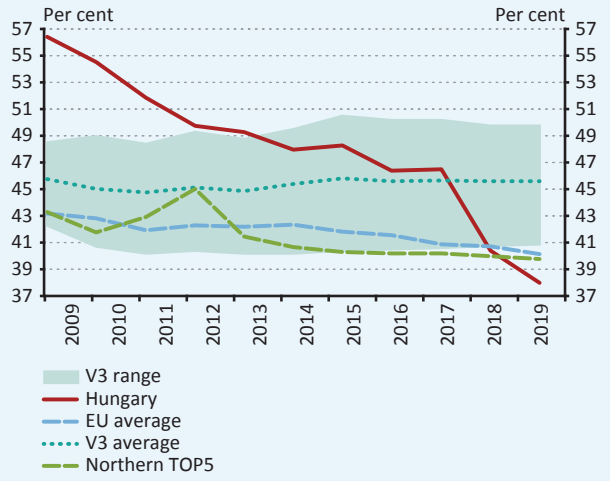


Note: In proportion of SMEs want to grow. Due to lack of data, the Northern TOP5 average is not shown.

Source: Flash Eurobarometer 486: SMEs, start-ups, scale-ups and entrepreneurship.

Only 21 per cent of Hungarian SMEs recycle waste, compared to 61 per cent in the EU. One of the most important general conditions for increasing productivity is that production processes should be sustainable in terms of both physical and corporate culture. This is not only a condition for individuals, often construable through abstract environmental sustainability, but also the well-understood self-interest of companies, as the retention of their employees or customers also depends on it. Hungarian companies underperform on all sustainability criteria. From a labour market perspective, the Hungarian SME sector does not seem to be sustainable either: Hungarian SMEs are among the last in terms of improving working conditions, promoting equality at work and involving employees in decision-making. The main reasons cited by Hungarian companies for not doing more for sustainability were financial reasons and lack of market demand. This calls attention to the fact that the state needs to create demand for sustainable products. In line with its new, fourth mandate, the Magyar Nemzeti Bank supports the government policy in order that Hungarian companies may reach a growth path that is environmentally sustainable as well.

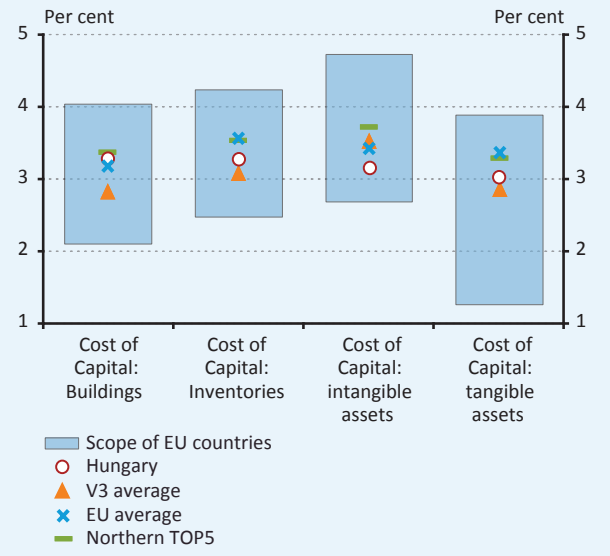
4.3.34 Total tax rate of companies as a proportion of commercial profit



Source: World Bank, PwC.

The tax regime is a determinant component of the business environment. Based on the Doing Business survey, the tax burden of enterprises in Hungary is slightly favourable than the EU average and much more favourable than the regional average. One important reason for this is that since 2017 Hungarian companies pay the lowest corporate income tax in the EU. In addition, in the past 3 years the efficiency of tax audits improved, and public dues charged to labour substantially decreased (from 2017 social contribution tax cut in multiple steps). Additionally, tax and administrative simplifications in the small taxpayers regulations also resulted in major easing for the enterprises.

4.3.35 Capital indicators of the business environment (2020)

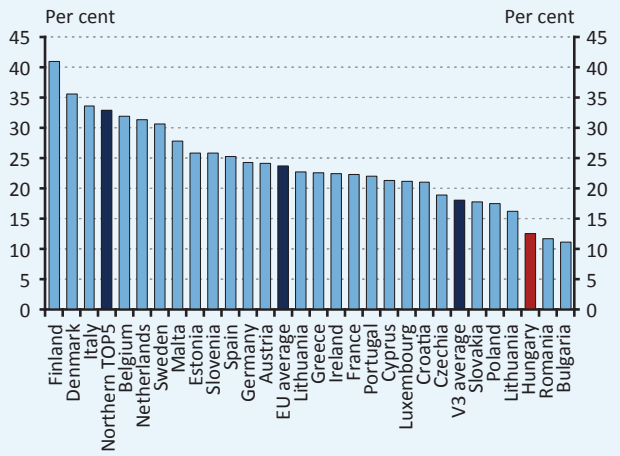


Note: The cost of capital is the pre-tax rate of return on equity required to produce after-tax economic profit based on a stylised investment. This indicator is the weighted average of equity and debt financing.

Source: MNB editing based on OECD.

In terms of capital use expenditures, Hungary's performance was close to the regional standard, providing a similar interest rate environment for corporate fund raising. There are many aspects of economic policy that supports enterprise, from the quality of governance through infrastructure, to the quality of the tax system. Total tax burden of companies depends on the capital keys, and low capital costs provide significant help to investment by leaving more funds at the firms. Low capital costs also contribute to Hungary having one of the highest investment rates in the EU.

4.3.36 Ratio of SMEs using advanced digital business solutions (2021)



Note: ERP (2021), CRM (2021), e-invoicing (2020), cloud technology (2021), Big data use (2018), 3D printing and use of industrial or service robots (2020). Arithmetic mean. Excluding Greece.

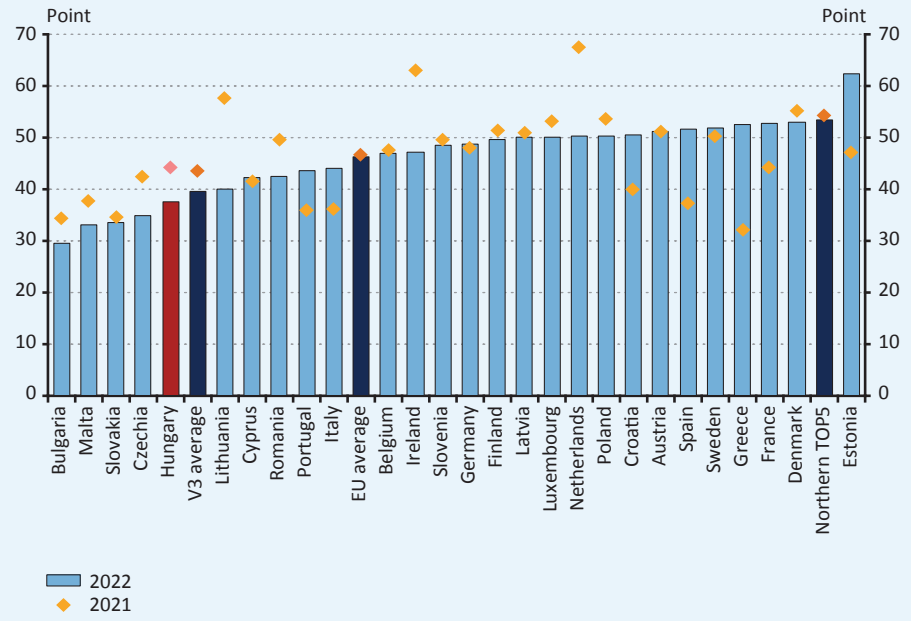
Source: MNB calculation based on Eurostat.

In terms of the aggregate ratio of small and medium-sized enterprises utilising digital solutions, Hungary is the 25th in the European Union, lagging 5.6 percentage points behind the V3 average and 11.6 percentage points behind the EU average. The ratio of Hungary is only about half of the EU one and one third of the leading countries. The penetration of digital solutions in the SME segment is a key priority, as Hungarian SMEs still show a lag behind large companies in labour productivity, despite the convergence of recent years. At the same time, the persistent lag in the area of digitalisation may result in the evolution of a new type of duality. The penetration of digital technologies could also be facilitated by mandatory requirements such as the online invoicing obligation from January 2021, as digital invoicing systems are capable of automated processing. This could encourage companies to use more software solutions in the future.

4.4 FOREIGN TRADE

For small open economies the increase in exports is one of the fastest ways of economic convergence. However, the width of the base underlying foreign trade and the expansion thereof is also important. In Hungary, roughly 37,000 SMEs export; their performance substantially determines the country's competitiveness and the competitiveness of the country also determines the prospects of exporters. In 2022, with 37.4 points, Hungary was ranked 23rd among the 27 EU Member States in the Foreign trade area. Compared to 2021, Hungary's performance declined by 6.5 points, and its level is lower than the V3 (39.3 points), the EU (45.9 points) and the Northern TOP5 (53.0 points) averages.

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



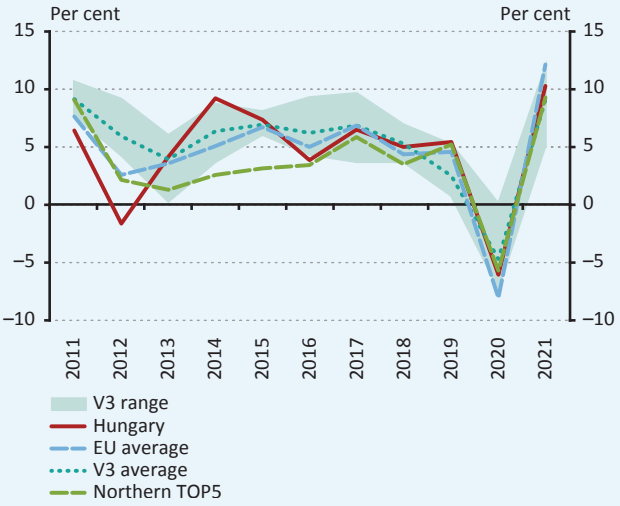
Source: MNB.

As a result of its historic and geographic attributes, Hungary is an open economy, and thus it considerably depends on the external trends both in cyclical and structural terms. It has numerous favourable effects that some of Hungary's larger sectors involved in foreign trade (primarily car and electronics, dominated by foreign companies) are outstandingly competitive; however, these sectors are integrated in the domestic economy only to a limited degree. The manufacturing companies (most of which produce for export) mostly source their production from imports. Meanwhile, in Czechia and Slovakia – having a similar economic structure – the ratio of factors originating from domestic sources is higher in production. As regards the long-term development potential, the structure of the economy may be deemed favourable when the multinational companies, accounting for a vast part of Hungarian exports, work with an increasing ratio of domestic suppliers and Hungarian value added.

Exports have remained concentrated in Hungary, which means relatively few SMEs export, however the ratio of exporting SMEs exceeds the average of the Visegrád region. In Hungary – as in Slovakia – some 6 per cent of SMEs export, while this ratio for Poland is nearly one percentage point higher. At the same time, this ratio is much lower in Czechia, where less than 2 per cent of SMEs enter foreign markets. The lag behind other countries of the region is significant: 17 per cent and 13 per cent of the SMEs export in Slovenia and Austria, respectively, and thus these two countries are among the European TOP3, exceeding even the average of the Northern TOP5. In Hungary the 20 largest companies account for more than 30 per cent of the exports, while in Poland about half of the exports is concentrated to such a degree.

One of the main structural factors for competitiveness is to increase the domestic value added of exports, the most important way of which is to increase the use of knowledge-intensive services and to encourage the creation of knowledge-intensive jobs. Increasing the share of services in exports is also a priority, but the coronavirus pandemic has also hit services exports through tourism and transport hard. In addition, recent events may also hinder the recovery of international tourism in the region, and may impair the performance of Hungary's services exports. As a result, in respect of this indicator the process of convergence to the EU average may be protracted.

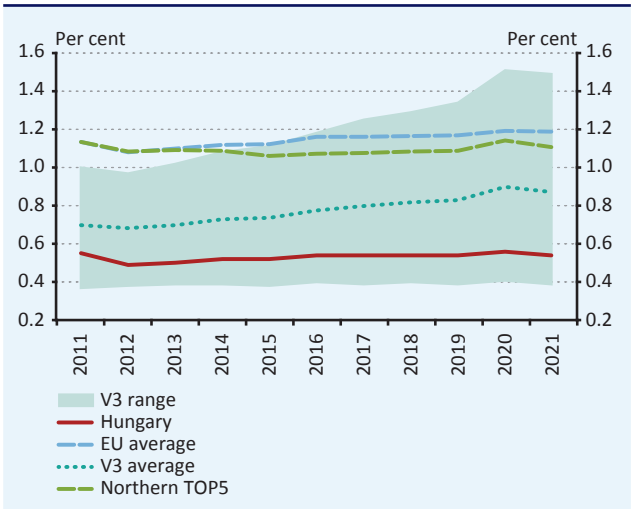
4.4.37 Annual changes in exports



Source: Eurostat.

Due to its open structure, the performance of the Hungarian economy considerably depends on exports. In the years before the coronavirus pandemic, exports showed strong dynamics, above the EU and Northern TOP5 averages. In 2020, however, the volume of exports declined as a result of the pandemic. In 2021 H1, goods exports performed well, partly as a consequence of the low base, and net FDI inflows into Hungary continued. Goods exports declined in connection with the increase in the shortage of chips at the end of the year, while exports of services continued to grow compared to the same period of the previous year. Future changes in exports are determined by the developments in the nearby war, disruptions in international production chains as well as high transportation costs, commodity and energy prices. The global shortage of semiconductors and base materials hinders the growth in exports. In addition, the increase in uncertainty due to the war may impair the performance of services exports through the decline in regional tourism.

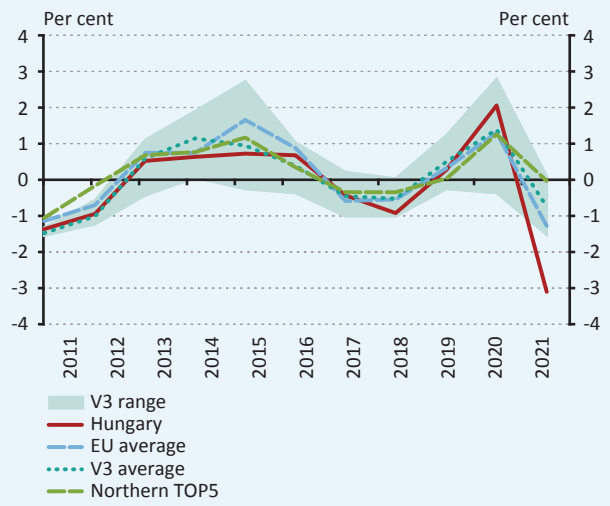
4.4.38 Export market share



Source: Eurostat.

Hungary's share within global exports was stagnant in the past years, and in 2021 it started to decline, similar to the EU and Visegrád countries. At present, Hungary accounts for around 0.5 per cent of the world's exports, while the aggregate weight of the V3 countries in the global economy is around 3 per cent. In 2020, Hungarian exports fell only moderately compared to Europe, which meant a further increase in export market share, which has thus remained stable during the coronavirus pandemic. On the whole, during the entire period under review the change in Hungary's export market share is below the averages of the V3, the EU and the Northern TOP5 as well.

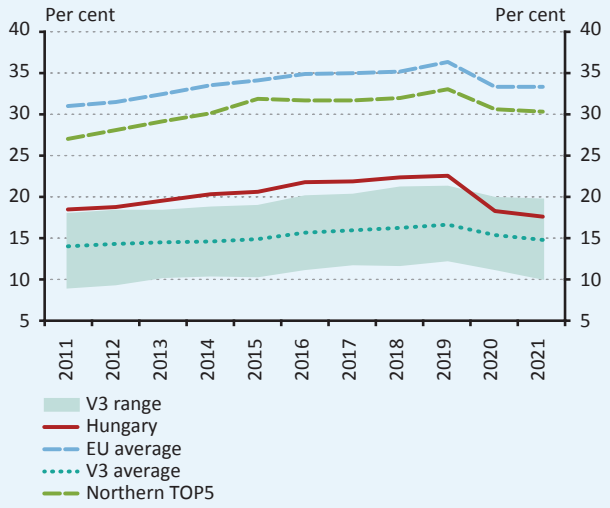
4.4.39 Annual change in terms of trade



Note: Trade in goods.
Source: OECD.

The terms of trade, i.e. the developments in export and import prices relative to each other, indicates competitiveness in addition to cyclical processes. For example, persistent decline (beside oil price shock) in the terms of trade may also indicate structural problems. By contrast, persistent improvement in the terms of trade supports real convergence. The more open an economy is, the more important the positive development of exchange trends is. Therefore, it is advantageous that the terms of trade in Hungary followed an improving trend in the first half of the last decade, i.e. the growth in export prices exceeded that in imports. Hungary's terms of trade continued to improve in 2019, when the improvement already exceeded the average of the Northern TOP5, and in 2020 it already exceeded the averages of the EU and the V3 countries. In 2021 H2, however, unfavourable developments started with regard to the changes in the terms of trade, which worsened considerably as a result of the high commodity and energy prices. The deterioration in the terms of trade due to unfavourable developments for Hungary and the disruptions in supply chains exert major pressure on the goods balance as well.

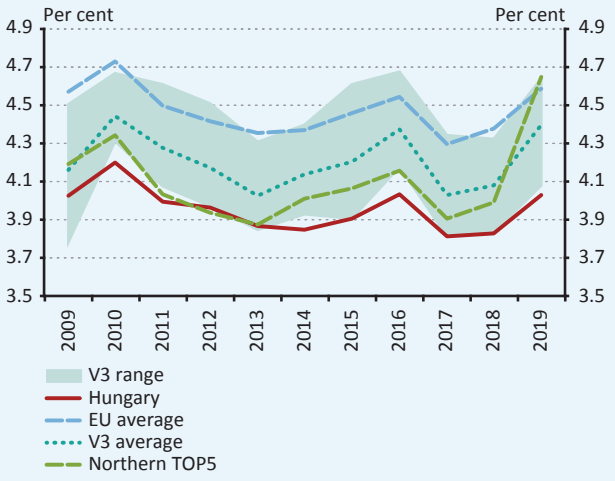
4.4.40 Share of services within exports



Source: Eurostat, MNB.

It is typical in case of advanced economies that services account for an increasing part of their exports. The strength of this export group is not only that it has high domestic value added content, but also that it is more resistant to crises than exports of goods, exposed to cyclical factors. In addition, the flow of services cannot be hindered by the classic customs and does not depend on logistics barriers either. In Hungary, the share of services within exports has been on a rising trend over the past decade. However, as a result of the coronavirus pandemic, significant service sectors declined, mostly in the area of accommodation and catering services in 2020. Given the fact that in the Visegrád region the weight of the tourism is the second highest in Hungary, the absence of foreign tourist is also reflected in the fall of weight of services exports. In 2020, in Hungary the decline in the weight of services within exports exceeded the degree of the fall in the V3, EU and Northern TOP5 averages. Mainly in view of the still existing restrictions, the value decreased slightly further in Hungary and the region in 2021. The figure for Hungary is below the averages of the EU-27 and the Northern TOP5, but it exceeds the average of the V3.

4.4.41 Average tariffs in foreign trade

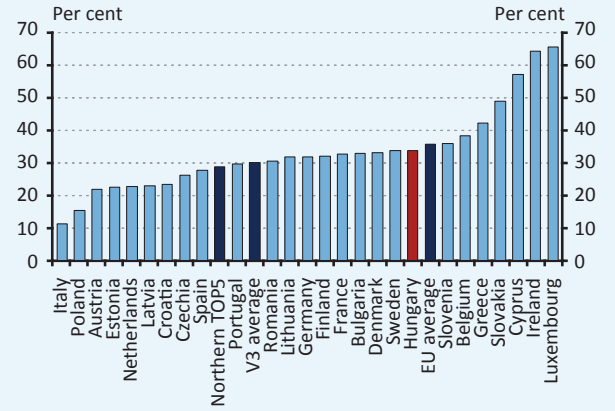


Note: Calculated as arithmetic mean.

Source: UNESCAP, MNB.

The foreign trade conditions can be categorised as tariff based (customs type) and non-tariff based (regulatory nature). Considering that non-tariff obstacles represent an assessment category difficult to quantify, the chart shows the average customs duty characterising the individual bilateral relations. Hungarian companies have one of the most favourable customs conditions in the EU, owing to the country's integration into global value chains on the one hand, and to the active foreign trade policy on the other. However, it should also be noted that the deviation in rates is not significant across the EU.

4.4.42 Export concentration index – TOP20 companies (2019)

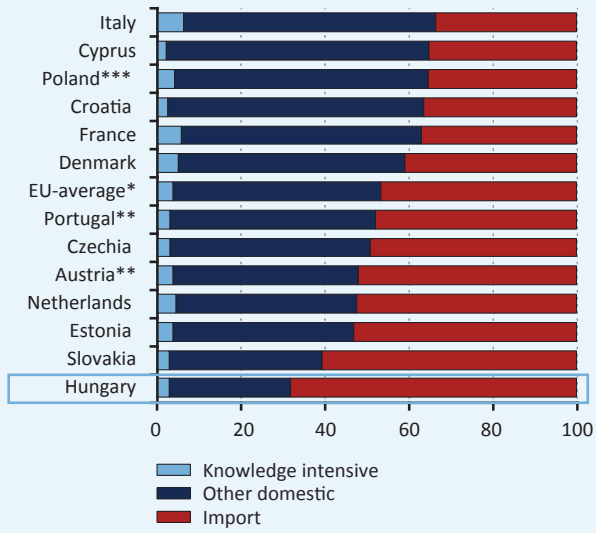


Note: Based on nominal turnover, share of the Top 20 companies in the total. Trade in goods only.

Source: Eurostat, MNB.

In addition to the aggregated level of exports, the range of its breakdown is also important. If it is concentrated, then fewer companies may be deemed competitive also at an international level, while if it is wide-ranging, then the entirety of the economy is more competitive. Hungary is in the second third of the European ranking, close to the EU average, which is illustrated here by the weight of the Top 20 exporting companies in foreign trade. Foreign trade rests on a more even base in Czechia and Poland than in Hungary or Slovakia. At the same time, in the economies of the Northern TOP5, foreign trade in Estonia and the Netherlands rests on a more even base, whereas Denmark, Sweden and Finland are middle-ranking, similar to the figures for Hungary.

4.4.43 Decomposition of manufacturing production by use (2018)

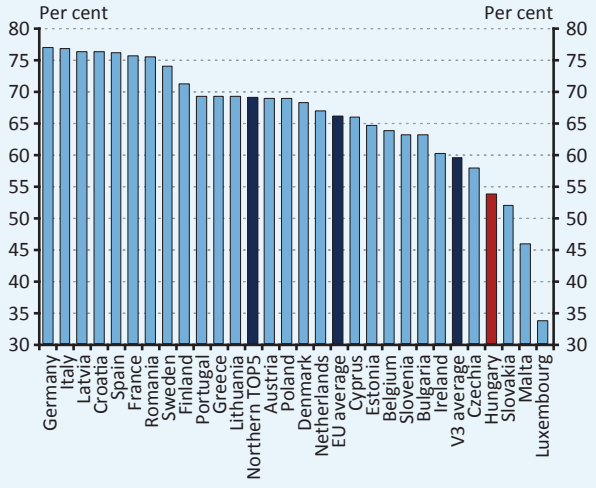


*Note: As a ratio of total current production absorption, excluding product taxes and subsidies. *EU average is the average for countries with 2018 data. **Data from 2017. ***Data from 2015.*

Source: Eurostat, MNB.

Based on the available data, in Hungary manufacturing is integrated in the economy to a lesser degree. A large part of the foreign-owned companies operating in the sector use few domestic input and do not use the knowledge-intensive services either. Among the countries under review, the weight of imports within manufacturing production is the highest in Hungary. Slovakia is in a similar situation as Hungary, while in Czechia and Poland domestic contribution is much larger. In the region, the absorption ratio of knowledge-intensive services is low. This is a priority area for development, since this could be a breakout point for the Visegrád countries and particularly for Hungary, which states are essentially poor in natural resources.

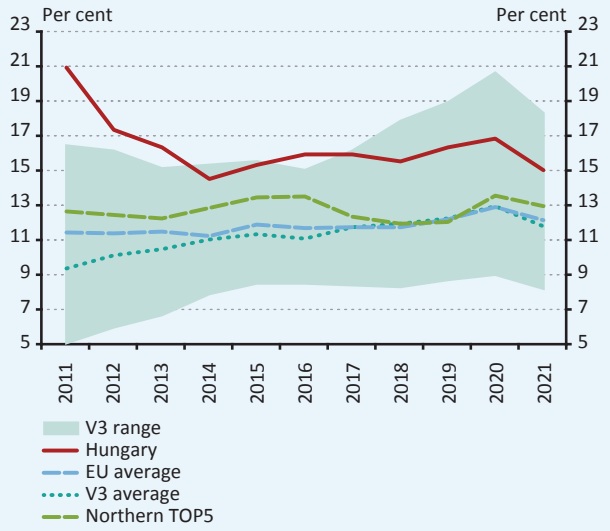
4.4.44 Domestic value added content of exports (2018)



Source: OECD.

The higher the domestic export content, the more the benefits will reach the widest possible circle of economic agents in the country when external demand is favourable. Globalisation has made production chains more complex, and thus economists can estimate domestic content through international input-output tables. According to calculations, the ratio of domestic added value of Hungarian exports is low, i.e. a major portion of exports originates from the further processing of imported products. If the share of domestic development within exports was higher, or a longer part of the value chain was produced in Hungary, domestic added value in exports would increase, which would also accelerate economic growth. The Slovak result is similar to the Hungarian one, while both the Czech and Polish rates are significantly higher than that of Hungary. In the same way, the EU and Northern TOP5 average are much higher.

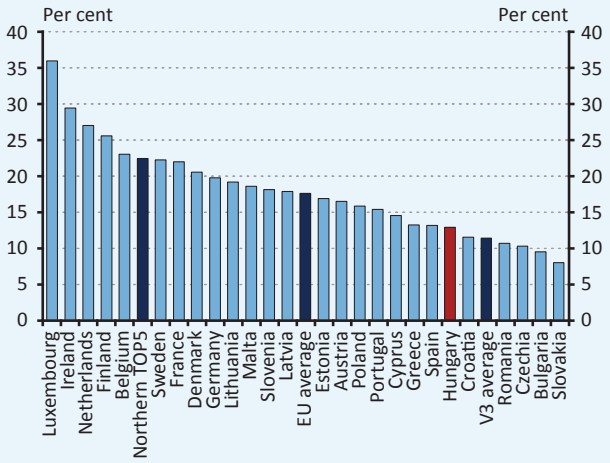
4.4.45 Ratio of high-tech export in total exports



Source: Eurostat.

The share of high-tech products within Hungarian exports is traditionally high. International demand for highly complex technical products was stable in the past years, and did not decline during the coronavirus pandemic either. In 2021, the global shortage of semiconductors restrained the demand, but it remained persistently above the EU, V3 and Northern TOP5 averages. In terms of manufacturing processes, the situation is heterogeneous in Hungary and other countries of the region. While the share of exported products above the EU average can be considered high-tech, they are mainly produced by foreign-owned companies – which are insufficiently embedded in the Hungarian economy – partly from already imported high-tech parts.

4.4.46 Ratio of knowledge-intensive employees – manufacturing (2021)

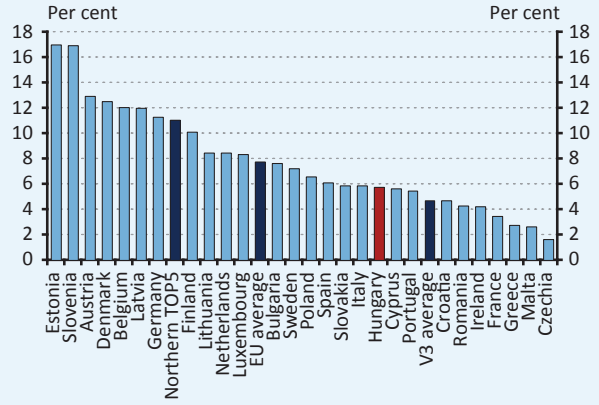


Note: Ratio of managers and those performing independent professional activity (Main categories 1 and 2 in the Hungarian standard classification of occupations (FEOR)), to total employment.

Source: Eurostat, MNB.

An essential condition for moving towards activities of higher value added is having as many highly qualified employees in manufacturing as possible, and to foster domestic R&D activity. Examining the industrial or product structure data, it can be seen that the so-called high-tech sectoral products, such as the pharmaceutical, electronics and machinery products have indeed a high weight in exports. However, in terms of the labour market, in Hungary and in the V3 average, the ratio of workforce in knowledge-intensive jobs is below the EU average. The lag compared to the countries of the Northern TOP5 is significant, some 10 percentage points.

4.4.47 Ratio of exporting SMEs (2019)



Note: Calculated for industrial sectors, public utilities, construction, trade, transportation and warehousing, information and communication, professional services and administrative service sectors.

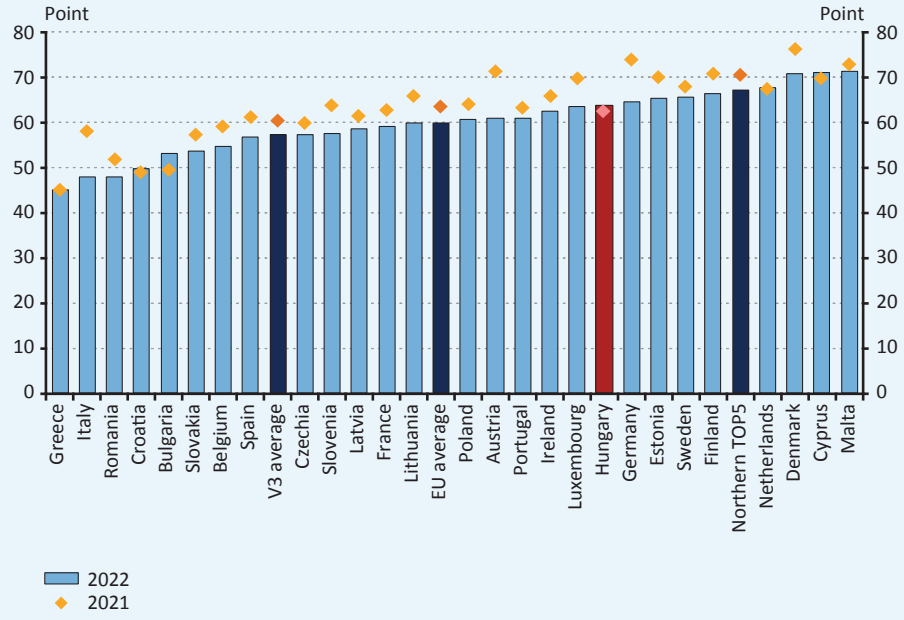
Source: Eurostat, MNB.

As for the population of small and medium-sized enterprises, many Hungarian SMEs export, but the ratio for Hungary is much below the EU and Northern TOP5 averages, although it exceeds the V3 average due to the low figure for Czechia. Two-thirds of the nearly 33,000 exporting Hungarian SMEs belonging to the selected sectors qualify as micro-enterprises. It should be noted that statistics contains only the companies that appear in the foreign market independently. In fact, the presence of the Hungarian SMEs through the supplier chains may be substantially larger. Looking ahead, if an increasing number of the SMEs are able to appear in the foreign markets independently as well, it may increase Hungary's competitiveness.

4.5 LABOUR MARKET

Human capital and its productivity is one of the most crucial factors for economic growth, convergence and competitiveness. Quantitative and qualitative attributes of human capital affect economic growth through several channels. On the one hand, through labour force available in economy, measured by the activity, employment and unemployment rates. On the other hand, through productivity of employees which is essentially determined by education level and health status. Hungary ranked 9th in the EU in the Labour Market area with 63.5 points in 2022, ahead of the EU average (59.5 points) and the Visegrád average (56.9 points). Compared to 2021, Hungary's score increased by 1.5 points, the 2nd highest, while the scores of most EU countries decreased compared to the previous year.

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



Source: MNB.

In Hungary, the steadily improving labour market processes of the past decade were temporarily interrupted in 2020 by the crisis caused by the coronavirus pandemic, but by 2021, with the recovery of the economy, employment had already exceeded pre-crisis levels. In the 2010s, growth in the Hungarian employment rate was the 3rd highest in the EU, and the Hungarian labour market was close to full employment. The coronavirus pandemic slightly broke the favourable trends, and thus the employment rate declined, and the unemployment rate increased slightly. Nevertheless, domestic developments were still more favourable than the EU average, with contributions from central bank as well as government measures (moratorium on loan instalments, wage subsidies). In 2021, recovery in the labour market started following the end of the waves of the coronavirus pandemic and the restarting of the economy. In 2021 H2, the number of employed already reached the high level observed prior to the crisis, rising to around 4.6 million people in the age group of 15–64 years, which is the highest value since the political transformation. Compared to the previous year, in 2021 the employment rate was 1.2 percentage points higher, i.e. 73.1 per cent, which exceeds the averages of the EU and of the other Visegrád countries. In parallel with the improvement in employment, the unemployment rate followed a declining trend during 2021, although its average for the year was still at 4.1 per cent, similarly to 2020.

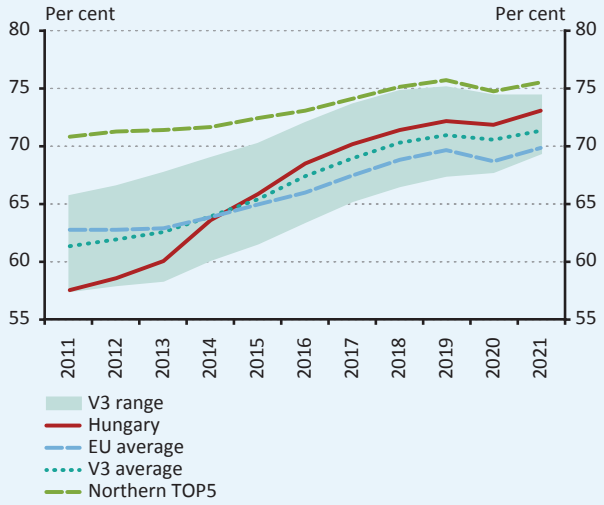
Labour shortages limit production in various sectors, but there are major reserves in the more vulnerable labour market groups. In 2021, as a result of the increase in labour demand due to the recovery of the economy, the labour market became tighter compared to the previous year, and labour shortage is a problem in a number of sectors. On the whole, compared to the previous year, the activity indicators of more vulnerable groups in terms of the labour market improved in 2021, but significant labour reserves can still be identified among the young, those around retirement and low-skilled

people. Part-time and home-working, which gained importance at the time of the coronavirus pandemic, were around the same level in 2021 as in the previous year.

The rise in average wages continued in 2021 as well, but the Hungarian wage level is still much below the EU average. In 2021, the Hungarian average wage at purchasing power parity was the fourth lowest in the EU ranking, standing at 69 per cent of the EU average wage, still falling short of the average of the other Visegrád countries as well. At the same time, the wage level measured at purchasing power parity is in line with the level of Hungarian labour productivity, which is around 70 per cent of the EU average. As a result of the further reduction of the social contribution tax and the cancellation of the vocational training contribution, the tax wedge continued to decline.

Labour market statistics were affected by a significant methodological change as of 2021. Starting from 1 January 2021 the most important change is that in addition to active workers receiving childcare benefits, those who worked before the parental leave, receive job-related income and guaranteed to return to their previous job are also considered employed due to the new EU regulations. In Hungary it ensues a 120–150 thousand growth in employment, especially impacting female activity rates.[3] At present, due to the deficiencies of the data release according to the new methodology (Eurostat), in the case of some charts of the chapter no time series comparison is possible in international terms.

4.5.48 Employment rate in the 15–64 age group

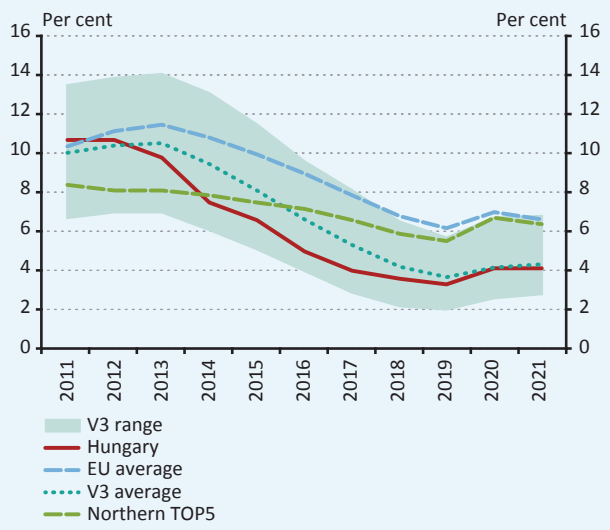


Source: Eurostat.

In the 2010s, growth in the Hungarian employment rate was the 3rd highest in the EU, exceeding the average of the EU and being close to full employment. The coronavirus pandemic interrupted the favourable developments, but the decline in the Hungarian rate was more moderate than that of the EU average, which was attributable to central bank and government measures as well (moratorium on loan instalments, wage subsidies). In 2021, recovery in the labour market started following the end of the waves of the coronavirus pandemic and the restarting of the economy. In 2021 H2, the number of employed already reached the high level observed prior to the crisis, rising to around 4.6 million people in the age group of 15–64 years, which is the highest since the political transformation. In 2021, the employment rate in Hungary was 73.1 per cent, i.e. 1.2 percentage points higher than in the previous year, exceeding the averages of both the EU and the Visegrád countries (69.8 per cent and 71.4 per cent, respectively), but falling short of the Northern TOP5 average (75.5 per cent).

[3] Source: https://www.ksh.hu/press_release_26_02_2021_2

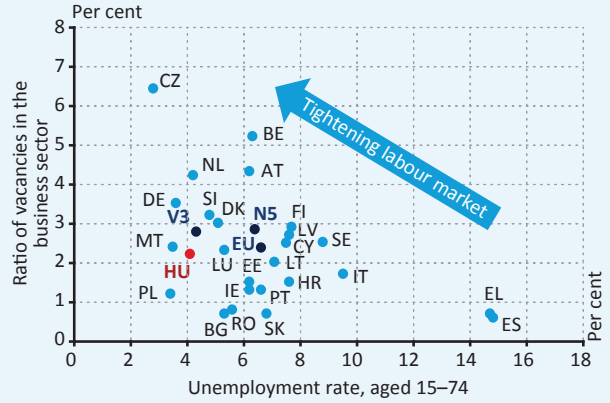
4.5.49 Unemployment rate in the 15–74 age group



Source: Eurostat.

In parallel with the developments in employment, the Hungarian unemployment rate also improved considerably and reached its historical low prior to the coronavirus pandemic. As a result of the COVID-19 pandemic, in 2020 the unemployment rate of those aged between 15–74 years rose by 0.8 percentage point to 4.1 per cent. Although the rate continued to stand at 4.1 per cent as the average of 2021, it followed a declining trend during the year, falling to 3.7 per cent by the end of the year. The Hungarian indicator in 2021 was still among the most favourable ones, the fifth lowest in an EU comparison. Czechia and Poland have the lowest rates, around 3 per cent, but the average of the V3, which is 4.3 per cent, slightly exceeds the figure for Hungary due to Slovakia's high rate. Despite the decline, the averages of the EU and the Nordic countries (6.6 per cent and 6.4 per cent, respectively) are still much higher than the Hungarian rate.

4.5.50 Labour market tightness in the EU (2021)

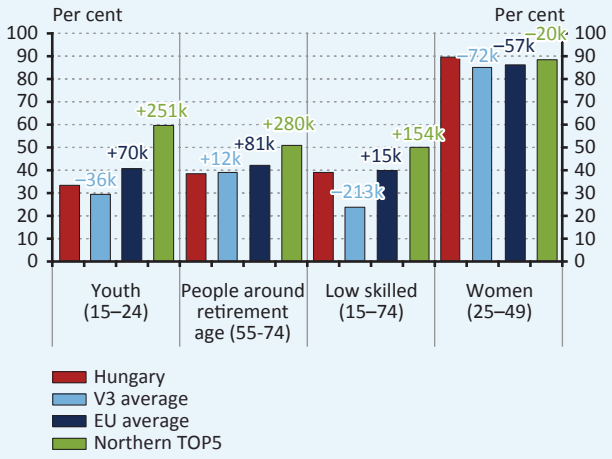


Note: Job vacancy rate in the business sector shows the number of vacancies as a percentage of the total number of jobs in the B-N sectors. There are no data available for France.

Source: Eurostat.

In 2021, as a result of the increase in labour demand due to the recovery of the economy, the Hungarian labour market became tighter compared to the previous year. Although as an average of 2021 the Hungarian unemployment rate corresponded to the figure for 2020, its degree declined during the year, and the ratio of job vacancies increased compared to 2020, coming close to the pre-crisis level. In the past period, in parallel with the increasing labour demand, more and more companies – mainly in industry, construction, accommodation and food service activities, trade – indicated labour shortage as the bottleneck of production. As a result of the restart of economies in 2021, the unemployment rate declined, while the ratio of vacancies rose in the majority of EU countries, and thus labour markets became tighter again. Compared to the EU average, the unemployment rate is lower, while the ratio of vacant jobs is similar in Hungary, and thus, the Hungarian labour market is still tighter than the EU average. Of the V3 countries, labour market tightness in Czechia significantly exceeds not only the regional, but the EU averages as well.

4.5.51 Activity rate in certain social groups (2021)

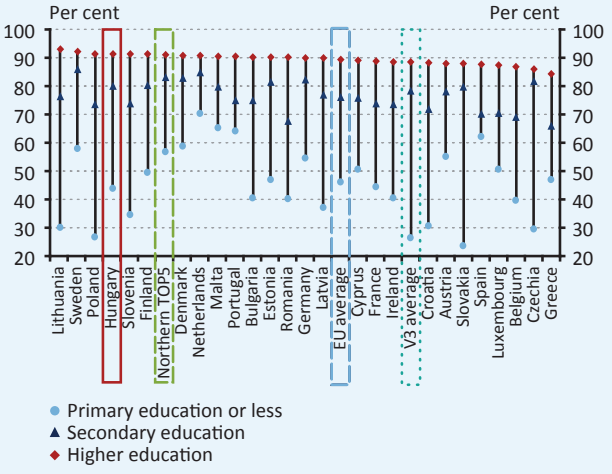


Note: The numbers denote the activity surplus/deficit required for the V3, EU and Northern TOP5 country groups.

Source: Eurostat.

With the restart of the economy, compared to the previous year, the activity indicators of more vulnerable groups in terms of the labour market improved in 2021. In 2021, major labour reserves can still be identified among the young, those around retirement and low-skilled people, whereas in the case of women the Hungarian activity rate exceeds the averages of the region, the EU and the Northern TOP5 as well. Compared to the EU and northern averages, Hungary's greatest growth reserves are in the activity of those around retirement, with 81 thousand and 280 thousand people, but there is room for increasing the activity among the young and low-skilled people as well. Compared to Hungary's Visegrád competitors, the Hungarian activity rate is lower only in the case of those around retirement, as the activity of low-skilled people, young people and women is higher in Hungary than the V3 average.

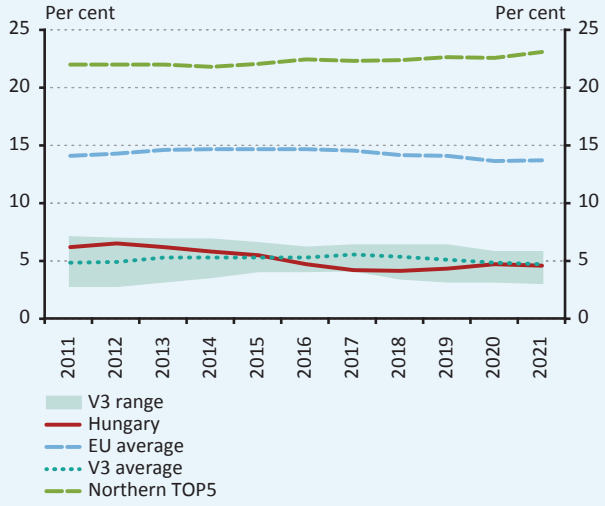
4.5.52 Activity rate by educational attainment level in the 15–64 age group (2021)



Source: Eurostat.

Examining the activity rate according to level of education, major differences across the various categories can be identified in Hungary, similarly to the EU average, although the Visegrád region shows greater differences than Hungary. In Hungary, the activity rate of tertiary education graduates was 91.5 per cent in 2021, which is more than double the rate of those having primary education at most (44.1 per cent). The indicator for tertiary education graduates is the fourth highest in the EU ranking, and the activity rate of secondary school graduates (80.3 per cent) is also more favourable than the EU average (76.4 per cent). At the same time, the activity of those having primary education at most is slightly lower than the EU average (46.2 per cent). In the Visegrád countries the activity of the low-qualified (26.7 per cent) materially lags behind that of Hungary, while there is no significant difference in the other categories. Compared to the Northern TOP5 countries, the Hungarian rates are similar in the case of tertiary education graduates and lower in the case of secondary and primary school graduates.

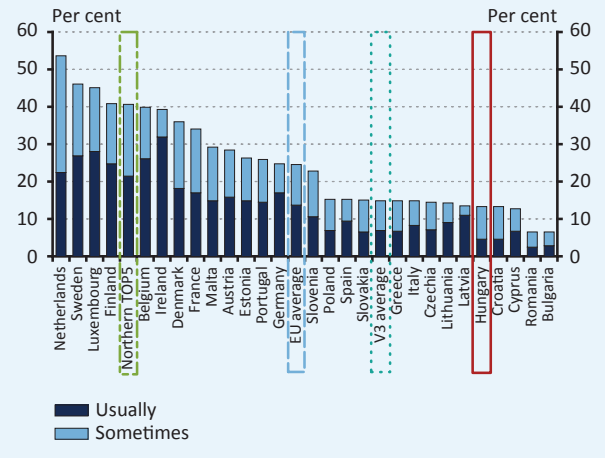
4.5.53 Part-time employees as a proportion of total employment in the 15–64 age group



Source: Eurostat.

Part-time employment in the Visegrád countries is among the lowest ones in a European Union comparison. In 2021, the ratio of part-time employees remained practically unchanged in Hungary compared to the previous year. In 2020, the number of part-time employees increased as a result of the coronavirus pandemic, as companies adjusted themselves through reducing the working hours as well. At present, the Hungarian indicator is 4.6 per cent, which is one third of the EU and one fifth of the Northern TOP5 averages. In an EU comparison, the average of the Visegrád countries (4.7 per cent) is as low as in Hungary.

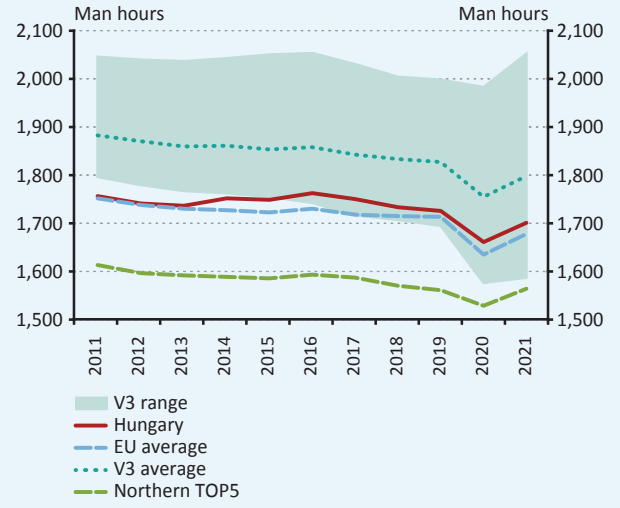
4.5.54 Employed persons working from home as a percentage of the total employment in the 15–64 age group (2021)



Source: Eurostat.

As a result of the coronavirus pandemic, in order to increase social distancing, work from home has significantly appreciated in 2020. The ratio of those working from home rose from 4.6 per cent in 2019 to 11 per cent in 2020, and increased slightly further in 2021 as well. In Hungary, the ratio of people working from home regularly was 4.5 per cent in 2021, while that of people working from home occasionally was 8.8 per cent, and thus 13.3 per cent of Hungarian employees worked from home with a certain regularity. Nevertheless, the indicators for Hungary are still well below the Northern TOP5 and EU averages. In the case of the former, some 40 per cent, while in the case of the latter around 25 per cent of the employees work from home with a certain regularity. The aggregate average of the Visegrád competitors (15 per cent) slightly exceeds the figure for Hungary.

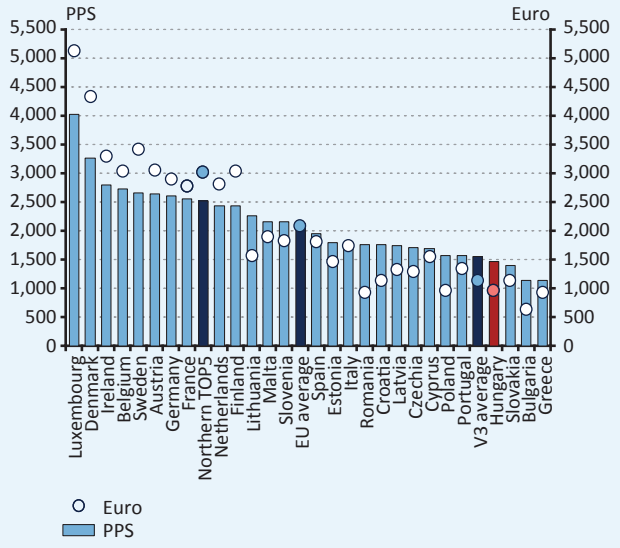
4.5.55 Average annual number of hours worked per employee



Source: AMECO.

In Hungary, the number of hours worked had declined slightly in the past years, before it fell significantly as a result of a wider spread of reduced-hour employment due to the coronavirus crisis in 2020. As in the majority of EU countries, in 2021 the average annual working time per employee increased again in Hungary, and was around 1700 hours. The Hungarian indicator is slightly higher than the EU average, and significantly exceeds the average of the Northern TOP5 countries (1560 hours). At the same time, the average of the other Visegrád countries is higher than the number of hours worked in a year in Hungary (nearly 1800 hours).

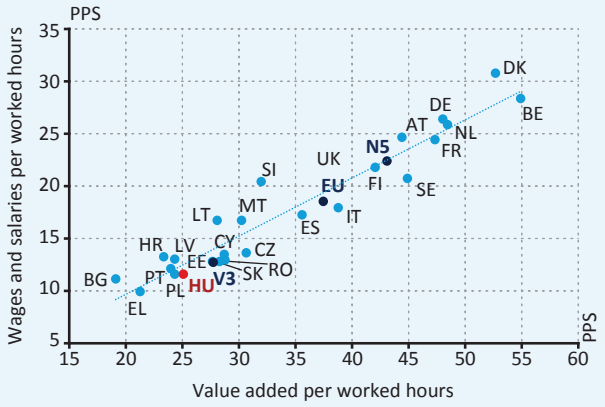
4.5.56 Monthly gross average wage in the EU (2021)



Source: Eurostat.

Gross domestic wages and salaries calculated based on national accounts increased by around 10 per cent in 2021 compared with the previous year. The degree of the increase exceeds the wage dynamics of 2020, which was the year most affected by the COVID-19 crisis, and is the fourth highest expansion in the European Union. Nevertheless, at purchasing power parity the Hungarian indicator was the fourth lowest in the EU ranking in 2021, standing at 69 per cent of the EU average wage and 58 per cent of the average of the Northern TOP5 countries. Moreover, the Hungarian average wage is slightly below the average of the Visegrád competitors as well. Expressed in euro, the Hungarian average wage was the fifth lowest in the EU in 2021.

4.5.57 Labour productivity and labour costs in the EU (2021)

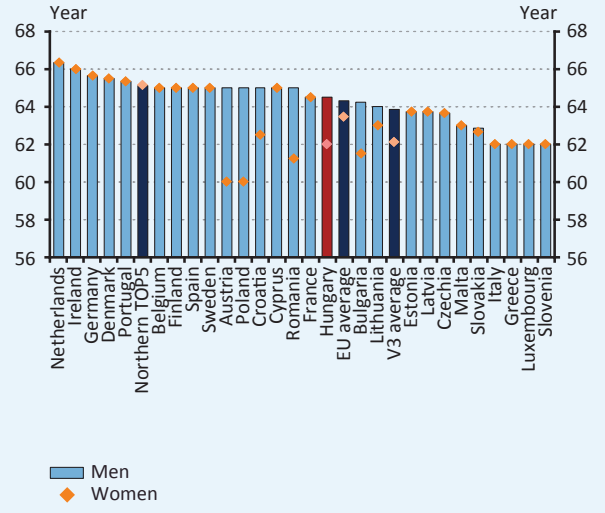


Note: Ireland and Luxembourg are not included because of their outliers.

Source: Eurostat.

Despite the average wages lag behind the average of the European Union, the Hungarian wage level is in line with productivity. As in recent years, wages and value added per hour worked continued to rise in 2021, but Hungary remains at the bottom of the EU rankings at both indicators. In parallel with the significant wage differences, Hungary's productivity is below 70 per cent of the EU average and 60 per cent of the Northern TOP5 average measured at purchasing power parity. Among the V4 countries, Poland's performance is similar to that of Hungary, while productivity and wage levels are also higher in Czechia and Slovakia. In terms of competitiveness and sustainable convergence, it is important that wage convergence should take place in the long run in parallel with the productivity growth providing cover for it.

4.5.58 Retirement age for people retiring in 2020

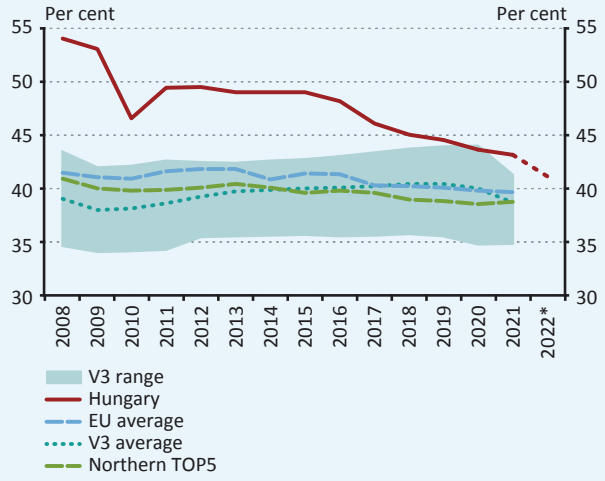


Note: People retiring in 2020 who have worked continuously since the age of 22.

Source: OECD: Pensions at a Glance 2021.

In the past decade, the retirement age for old-age pension increased gradually; as a result, it rose to 64.5 years by 2020. As women are entitled to request their full pension after a 40-year eligibility period before reaching the age limit, in their case the retirement age was 62 years in 2020, presuming that they had worked without a break since the age of 22 years. The age limit for men exceeds the EU (64.3 years) and Visegrád (63.8 years) averages, but is lower than the average of the Northern TOP5 countries (65.1 years). As a result of the benefit, women's age limit is lower than the northern and EU averages, and similar to the average of the V3. The retirement age continued to be raised, and rose to 65 years by 2022.

4.5.59 Average tax wedge of employees with no child, earning average wage

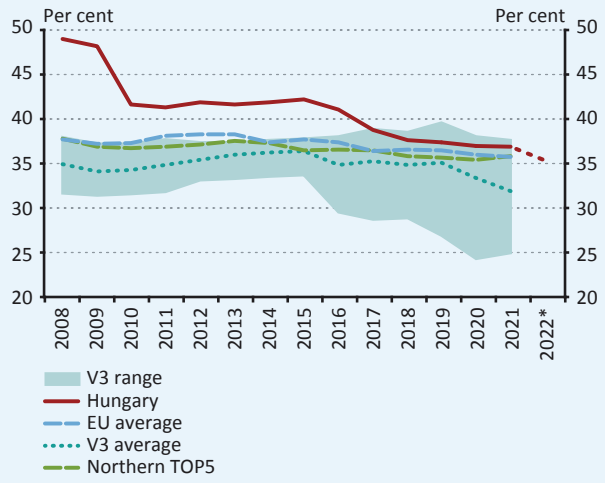


*Note: *Forecast.*

Source: European Commission, MNB-calculation.

Within the framework of the transformation of the tax system after 2010, the focus of tax centralisation moved from labour taxes to consumption taxes, as a result of which the average tax wedge decreased. The personal income tax rate changed to a single rate (16 per cent) in 2011, then it was reduced to 15 per cent in 2016. This was followed by a gradual reduction in social contribution tax from 2017, from 27 per cent until 2016 to 13 per cent in 2022. In addition, the 1.5 per cent vocational training contribution has been abolished as of 1 January 2022, and thus employers are only taxed with the 13 per cent social contribution tax. Accordingly, in 2022, the average tax wedge of employees with no child and earning average wage was 41.2 per cent, which was still slightly higher than the averages of the EU, the V3 or the Northern TOP5 (39–40 per cent).

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

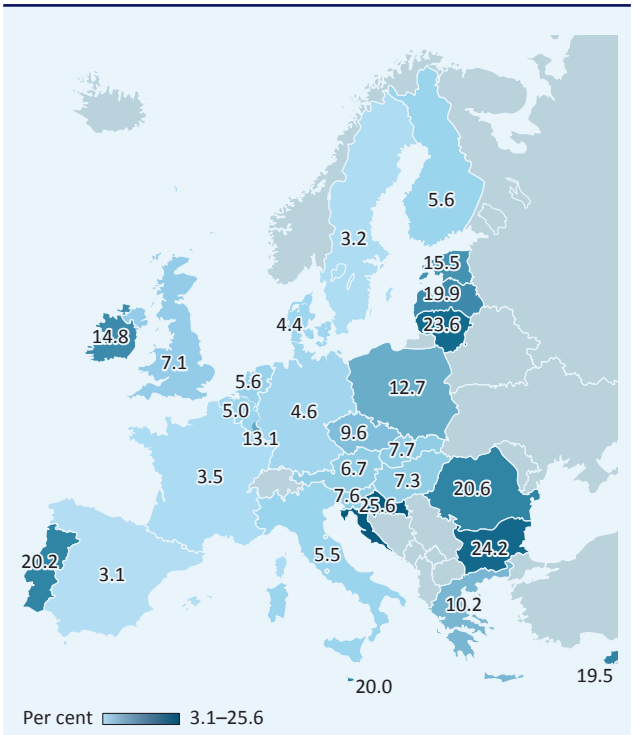


*Note: *Forecast.*

Source: European Commission, MNB-calculation.

Family tax burdens have also fallen significantly in recent years as a result of tax restructuring, and due to the tax allowances, the tax wedge of families is lower than that of single persons. The decrease in the family tax wedge was contributed to – in addition to the changes in the personal income tax and social contribution tax – by the family tax base allowance introduced in 2011, and then the doubling of the allowance for families with two children in four steps between 2016 and 2019. In 2021, the average tax wedge of families with two children and average wage was 36.8 per cent, which slightly exceeds the EU, the Northern TOP5 and the regional averages, while it is lower by almost 6 percentage points than the tax wedge of those without children. In 2022, with the further reduction of the social contribution tax and the cancellation of the vocational training contribution the family tax wedge is expected to decline to close to 35 per cent, reaching the EU and Northern TOP5 averages.

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



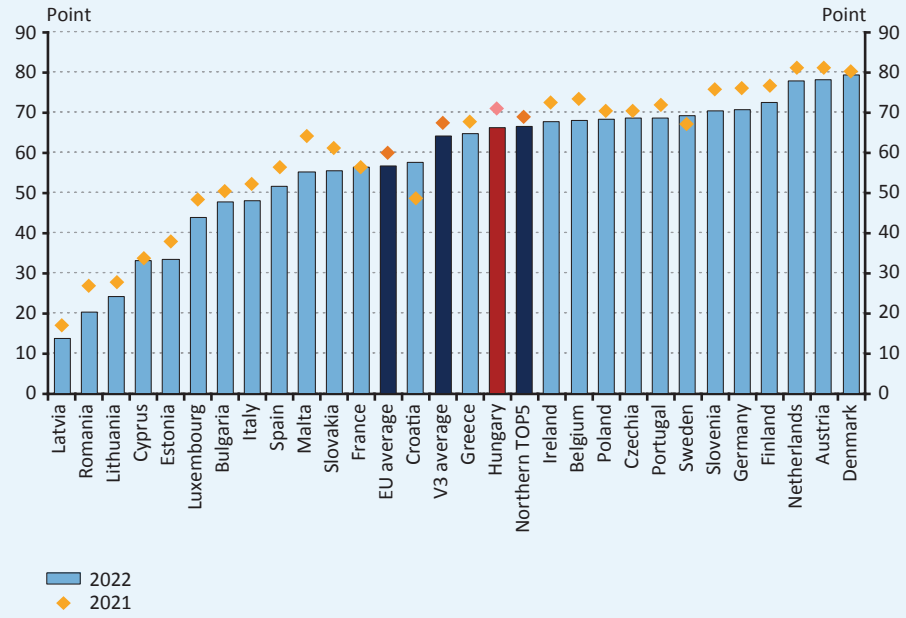
Source: UN, Eurostat.

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, mostly due to the global financial and economic crisis of 2008 and the opening of the western European labour markets. According to the UN's data, the number of Hungarian citizens living habitually abroad was 714,000 in 2020. However, Hungary is regarded as a moderate emigrant country compared to both the core countries and the countries of the regions: the ratio of Hungarian population living abroad (7.3 per cent), at present is the lowest in the Central and Eastern European region and materially lags behind the EU average (11.8 per cent). In 2019 and 2020, contrary to previous years, the number of Hungarian immigrants (returnees) born in Hungary exceeded the number of emigrants (by 1,300 and 3,800, respectively).

4.6 REGIONAL AND SOCIAL CONVERGENCE

Economic and regional inequality may influence the sustainability of economic growth. A key to sustainable growth is to ensure that broad groups of the society can benefit from the advantages of economic growth. Inequality may be regarded as a natural concomitant of market economy and competition, and even an incentive; however, the excessive degree thereof may destroy social cohesion and mobility, thereby jeopardising the sustainability and inclusive nature of economic growth and convergence. By contrast, inequality kept at a moderate level is less likely to give rise to social conflicts, it fosters equal opportunity, social mobility and the increasing of labour productivity, being fundamental pillars of economic and social development effective in the long run and of successful catching-up. In the Regional and social convergence area, with 65.9 points Hungary finished 13th, in the middle of the EU ranking. Hungary's score equals the average of the Northern TOP5 countries (66.0 points), and exceeds the EU (56.3 points) and Visegrád (63.6 points) averages. As in the vast majority of EU countries, the indicator for Hungary declined compared to the previous year, and the performance of only three countries improved.

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 over the past decade in several economic indicators, but inequalities remain significant. As in the Central and Eastern European region, the dominance of the capital can be observed in Hungary as well, while the development level of the individual regions is fundamentally influenced by their location within the country (in Hungary there are strong differences between the east and west). The difference between the dynamically developing centres and the peripheries developing more slowly strengthened after the political transition in Hungary[4]. As a result of the government measures and the regional development programmes in the 2010s, the differences between the counties declined in several economic indicators, but they are still significant. In addition, because of the coronavirus pandemic, regional disparities have slightly increased in the last two years in some indicators (e.g. labour market indicators).

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

The development level of Budapest considerably exceeded the level of the counties also in 2020; in addition, as the only NUTS 3 region in Hungary, only the development of the capital exceeds the EU average. The GDP per capita of Budapest was more than twice the national average and one and a half times the EU average in 2020, while that of the least developed Nógrád County was only 45 per cent of the national average and a third of the EU average. In an EU comparison, the positions of most of the counties and of the capital improved in the past years, but the majority of the Hungarian counties (15 counties) are in the last quarter of the EU ranking. The development gap between counties in Hungary was the highest in 2009, then steadily declined until 2015 and has remained almost stable since then. The fall in inequality was contributed to by the decline in Budapest's economic superiority and the decreasing lag of several regions, primarily those involved in vehicle manufacturing[5].

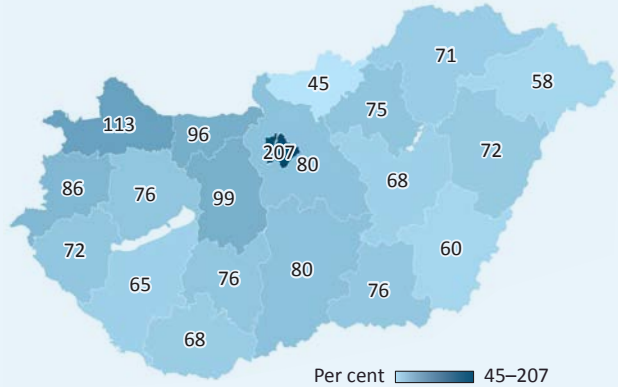
The larger inflows of foreign direct investment, the presence of advanced business services and manufacturing, significantly contributed to the development of counties in the past decade. In 2021, investment activity and industrial production expanded again in the majority of the counties with the lifting of the containment measures and the restart of the economy, but major regional disparities can still be observed. In 2021, the value of investments per capita was also the highest in Budapest – 2.6 times higher than the national average – while it was the lowest in Nógrád County. Industrial output per capita was the highest in Győr-Moson-Sopron and Komárom-Esztergom counties, more than double the national average, while the indicator of some counties was below half the national average.

Labour force indicators improved in many counties in 2021, but regional differences increased slightly. With the exception of Nógrád, the employment rate was up in each county and Budapest as well, the unemployment rate declined in most of the counties, and except Baranya, the number of vacant jobs increased everywhere compared to the previous year. Less developed are still characterised by higher than the average labour reserves (unemployed and public employees) and lower than average labour demand (job vacancies).

As regards the income and wealth inequalities, Hungary traditionally belongs to the countries of lower inequality both in a global and EU comparison. The income Gini index was stable in the past years, and declined slightly at the time of the coronavirus crisis. The index exceeds the average of the V3 countries, but is lower than the EU average. The value of the Gini coefficient based on wealth, also being lower than the EU average, is substantially influenced by real estate ownership, since in Hungary home ownership traditionally prevails. The AROPE index, measuring the ratio of the population exposed to the risk of poverty or social exclusion, fell at the 3rd fastest rate in the EU over the last decade and, although it increased slightly during the COVID-19 crisis, it remains better than the EU average.

[5] Source: HCSO (2019): Tér-kép, 2018

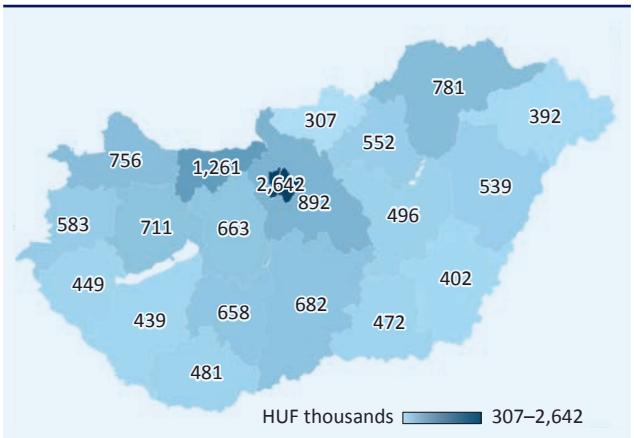
4.6.62 GDP per capita as a percentage of the average by counties (2020)



Source: HCSO.

In Hungary, the development disparities between counties decreased over the past decade, but there are still substantial inequalities. In terms of GDP per capita, major difference can be identified between the development level of the capital and the countryside. In 2020, as in the previous year, the development of Budapest was 207 per cent of the national average, one and a half times the EU average in purchasing power parity terms. By contrast, the GDP per capita of the least developed Nógrád County was only 45 per cent of the national average and only a third of the EU average. The index of Győr-Moson-Sopron, Fejér and Komárom-Esztergom counties exceeds or is around the national average, while the development level of most counties is between 60 and 80 per cent. Compared to the previous year, in 2020 the relative development of Jász-Nagykun-Szolnok County increased to the greatest degree (4.5 percentage points), while that of Komárom-Esztergom declined the most (4.9 percentage points) compared to the national average. The development ranking of counties and the disparities across them did not change significantly compared to the previous year.

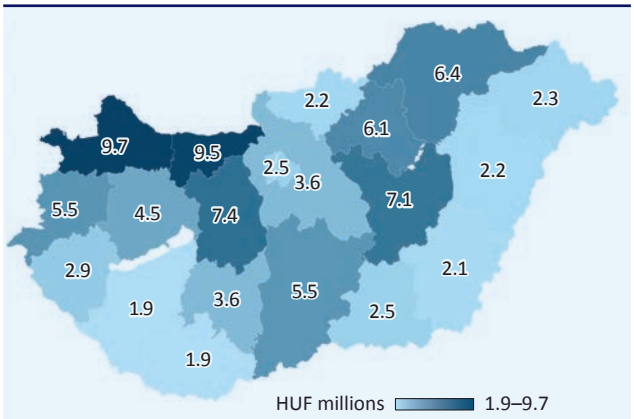
4.6.63 Investment per inhabitant by counties (2021)



Source: HCSO.

In 2021, with the lifting of the containment measures and the restart of the economy, investment expanded again compared to the previous year. Investment per inhabitant increased in 12 counties and in Budapest as well compared to 2020, to the greatest degree (34 per cent) in Bács-Kiskun County as a result of development projects in manufacturing. The greatest downturns took place in Nógrád (-36 per cent) and Komárom-Esztergom Counties (-33 per cent). The previous year's high base played a role in the decline of the latter, but this county still has the second highest indicator after Budapest. The value of investment per capita was the highest in Budapest (HUF 2.6 million), which exceeds the national average 2.6 times. The lowest investment activity was registered in Nógrád County (HUF 307,000).

4.6.64 Industrial production per inhabitant by counties (2021)

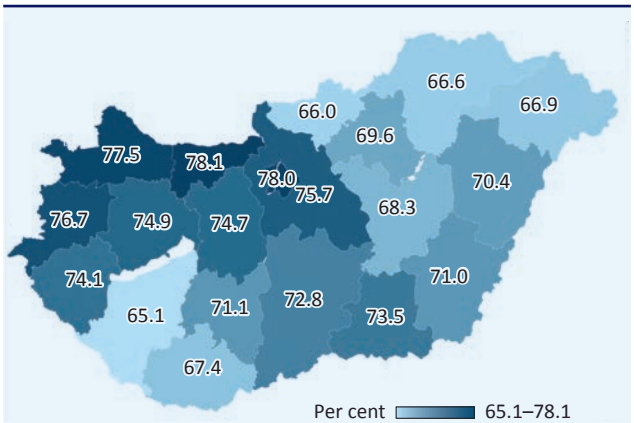


Note: Data of enterprises employing at least 5 persons by place of business.

Source: HCSO.

Following the downswing in 2020 due to the coronavirus crisis, industrial production in Hungary expanded again in 2021. Except Vas and Bács-Kiskun, all the counties and the capital as well made positive contributions to the more than 9 per cent growth of the industry. Compared to 2020, the highest growth (18–20 per cent) took place in Pest and Veszprém Counties, and the volume of production exceeded the pre-pandemic 2019 level in 12 counties. In 2021, industrial production per capita was still the highest in Győr-Moson-Sopron and Komárom-Esztergom counties (HUF 9.7 and 9.5 million respectively), more than double the national average (HUF 4.2 million). At the same time, the indicator did not even reach half of the national average in Baranya, Somogy and Békés Counties. In terms of industrial production per capita, on the whole, the disparities across counties declined in 2021.

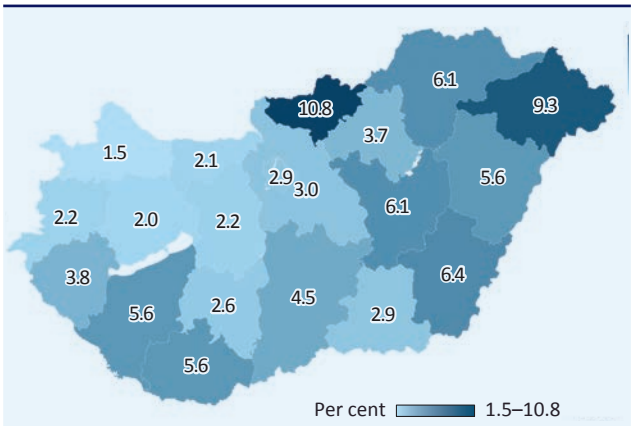
4.6.65 Employment rate by counties in the 15–64 age group (2021)



Source: HCSO.

In parallel with the lifting of the containment measures introduced in view of the coronavirus pandemic and with the restart of the economy, employment trends also improved in 2021, and the national employment rate rose from 72 per cent in 2020 to 73 per cent. Except Nógrád County, the employment rate was up in all the counties and in Budapest as well compared to the previous year. In addition, the employment rate exceeded even the pre-crisis 2019 level in the capital and the majority of the counties as well, but the disparities across counties increased slightly. Compared to 2020, the employment rate of those aged 15–64 years increased to the greatest degree (5.2 percentage points) in Komárom-Esztergom County, reaching the highest indicator (78.1 per cent) in the ranking. Employment rates continue to be the highest in the Transdanubian counties and Central Hungary (74–78 per cent) and the lowest in Southern Transdanubia and Northern Hungary, around 66 per cent on average.

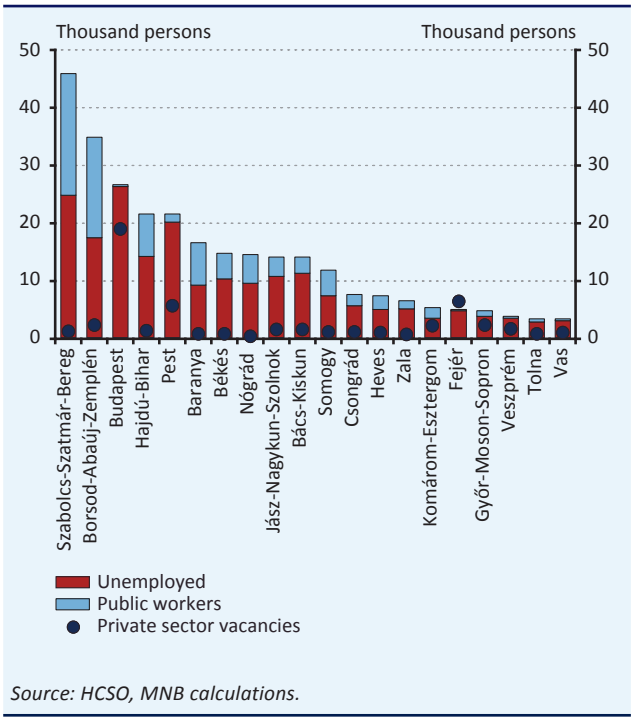
4.6.66 Unemployment rate by counties in the 15–64 age group (2021)



Source: HCSO.

As an average of 2021, the national unemployment rate remained nearly unchanged compared to the previous year, declining by 0.1 percentage point to 4.1 per cent in the age group of 15–64 years. Unemployment was down in 10 counties and the capital and up in 9 counties. The rate declined to the greatest degree in Baranya and Jász-Nagykun-Szolnok Counties (1.6–1.7 percentage points), while Nógrád showed the highest growth (3 percentage points). On the whole, the difference across counties increased in 2021, and the rate is still the lowest in Transdanubia and the highest in the northern counties. In 2021, the unemployment rate was also the lowest in Győr-Moson-Sopron County at 1.5 per cent, while the highest was in Nógrád County at 10.8 per cent, and Szabolcs-Szatmár-Bereg County also had a rate above 9 per cent.

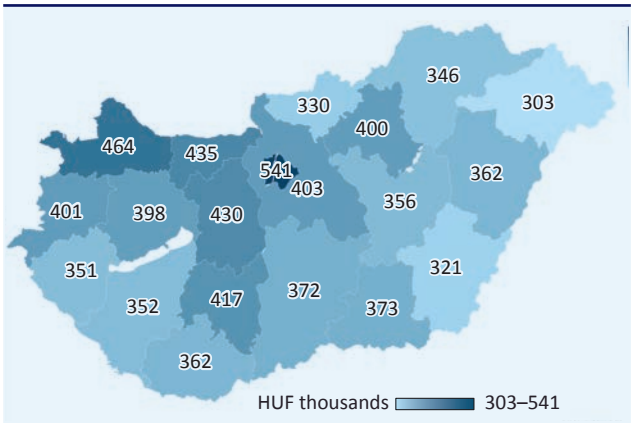
4.6.67 Vacancies in the private sector and labour reserve (unemployed and public workers) by counties (2021)



Source: HCSO, MNB calculations.

The territorial distribution of labour reserves and vacant jobs is still uneven across counties. In 2021, with the restart of the economy, the number of both the unemployed and public employees (281 thousand people), who constitute the labour reserves, declined on the whole, while the number of vacant jobs (50 thousand) in the private sector increased. The number of unemployed declined in 10 counties and Budapest, while that of public employees was down in 14 counties. Compared to 2020, the number of vacant jobs increased everywhere, except Baranya County. Less developed counties are still characterised by higher than the average labour supply and lower than average labour demand (vacancies). In 2021, the number of job vacancies per 100 unemployed person was the highest in Fejér County (136), and the lowest in Nógrád and Szabolcs-Szatmár-Bereg counties (3 and 4). In Fejér County, but especially in Budapest, labour demand and supply are both high, indicating a high degree of labour market friction.

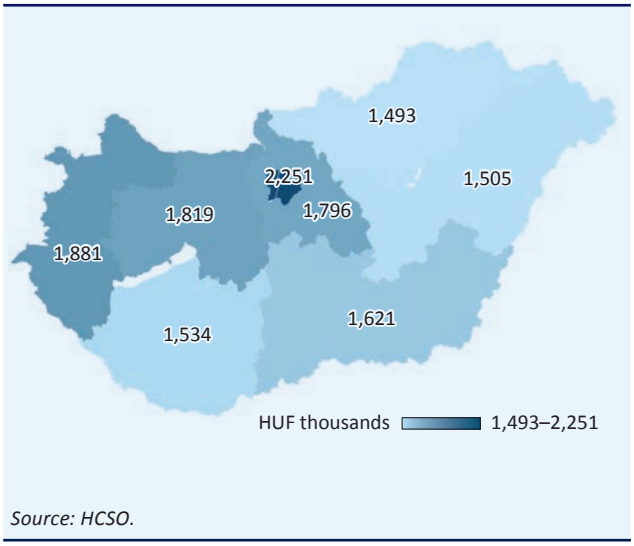
4.6.68 Monthly gross average wage by counties (2021)



Note: Full-time employees at enterprises employing at least 5 persons.
Source: HCSO.

Wage increases continued in all counties in 2021. Compared to the previous year, the monthly average gross wage of full-time employees increased the most in Borsod-Abaúj-Zemplén County (10.9 per cent) and the least in Budapest (7.6 per cent). In 2021, the gross average wage was still the highest in Budapest, at HUF 541,000, and the indicator of Győr-Moson-Sopron County (HUF 464,000) also exceeded the national average (HUF 439,000). There are still major wage differences: the average wage in the capital exceeds that in Szabolcs-Szatmár-Bereg County (HUF 303,000) 1.8 times, which is significantly influenced by the differences in the structure of employment. However, wage differentials between counties have decreased slightly compared to the previous year.

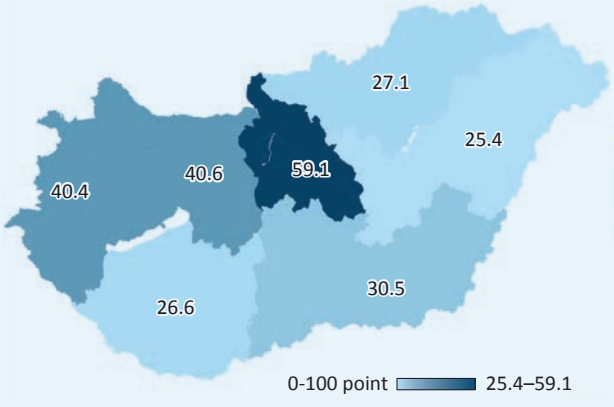
4.6.69 Annual net household income per capita by regions (2020)



Source: HCSO.

The per capita income of Hungarian households increased in every region even in 2020, the year of the outbreak of the coronavirus pandemic. Net per capita income grew to the greatest degree (22.4 per cent) in Western Transdanubia and the least (3.6 per cent) in Northern Hungary. Households' incomes continue to vary significantly by regions, similarly to wages. In 2020 the annual per capita net income of households was the highest in Budapest, with HUF 2.25 million, which is 1.5 times higher than in the North-Hungary region (1.5 million), which has the lowest indicator. The income disparity between regions has decreased slightly compared to 2019. In addition to regional disparities, there are also differences by type of settlement: the larger the population of a settlement, the higher the per capita income of a household.

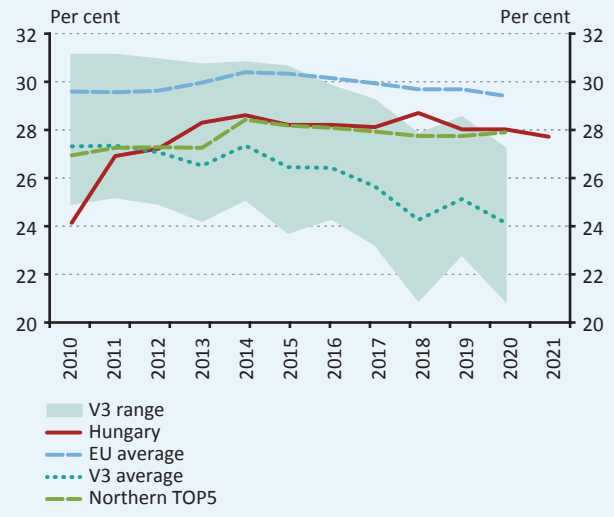
4.6.70 Regional Competitiveness Index (RCI) by regions (2019)



Source: European Commission.

The Regional Competitiveness Index compares the performance of the NUTS 2 regions of the European Union based on 11 factors, covering basic economic factors (e.g. institutions, education, health care), efficiency (e.g. labour market efficiency) and innovation (e.g. technological readiness). Among the Hungarian regions, Central Hungary scored the highest (59 points), placing this region in the middle of the EU ranking. The RCI also identifies significant regional disparities in Hungary, with the more developed western regions scoring around 40, while the South Transdanubian and eastern regions score on average below 30. The Hungarian regions' performance lags behind the EU average mainly in health care indicators, while Hungary performs the best in labour market efficiency, around the EU average. The extent of the differences between regions places Hungary in the middle of the EU ranking in terms of RCI.

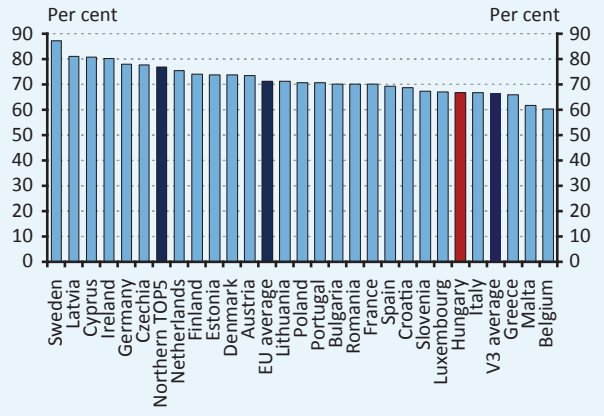
4.6.71 Income Gini index



Note: The years indicate the year following the reference year.
Source: Eurostat, HCSO.

The income Gini index, one of the most common indicators of economic inequalities within the society, has been stable in Hungary for around 28 per cent since 2013. The Gini index fell slightly to 27.7 per cent during the COVID-19 crisis. The Hungarian indicator is below the EU average (29.4 per cent), and similar to the Northern TOP5 average, but above the average of the other Visegrád countries (24 per cent). The rise in Hungary's Gini index following the 2008 global economic crisis may have been the combined effect of the gradual increase in the capital income of those with higher income and the permanent deterioration in the position of those with lower income, more exposed to the crisis. In the following years, the rise in the inequality index stopped as disposable incomes stabilised and employment increased significantly. Job protection and creation wage subsidy programmes may have contributed to the decline in the index, which continued during the COVID crisis as well.

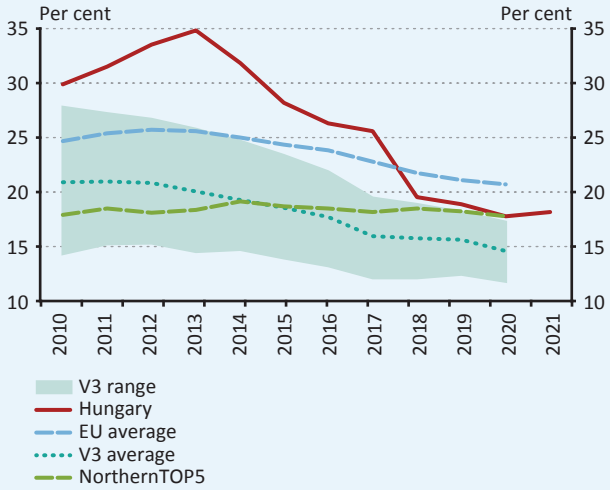
4.6.72 Wealth Gini index (2020)



Source: Credit Suisse (2021): Global wealth databook 2021.

In 2020, wealth inequalities rose slightly globally and in most EU countries as a result of the coronavirus pandemic. Overall, the increase in wealth inequalities was attributable to the improvement in the position of people belonging to the higher wealth categories (mainly due to increases in equity prices and house prices) and to the unchanged or worsening position of those in the lower wealth categories. Hungary's wealth Gini index rose slightly, by 0.2 percentage point to 66.5 per cent in 2020, according to Credit Suisse estimates. The EU average increased by 0.1 percentage point, while the V3 average rose by 2.9 percentage points. The Hungarian indicator is still better than the EU average (71.1 per cent) and slightly exceeds the average of our Visegrád competitors (66.2 per cent). Real estate fundamentally influences the value of the wealth Gini. In Hungary, similarly to the Central and Eastern European countries, the proportion of homeowners significantly exceeds the proportion of those renting a home. Roughly 90 per cent of the Hungarian households own their home, which is one of the highest ratios in the European Union.

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



Note: The years indicate the year following the reference year.

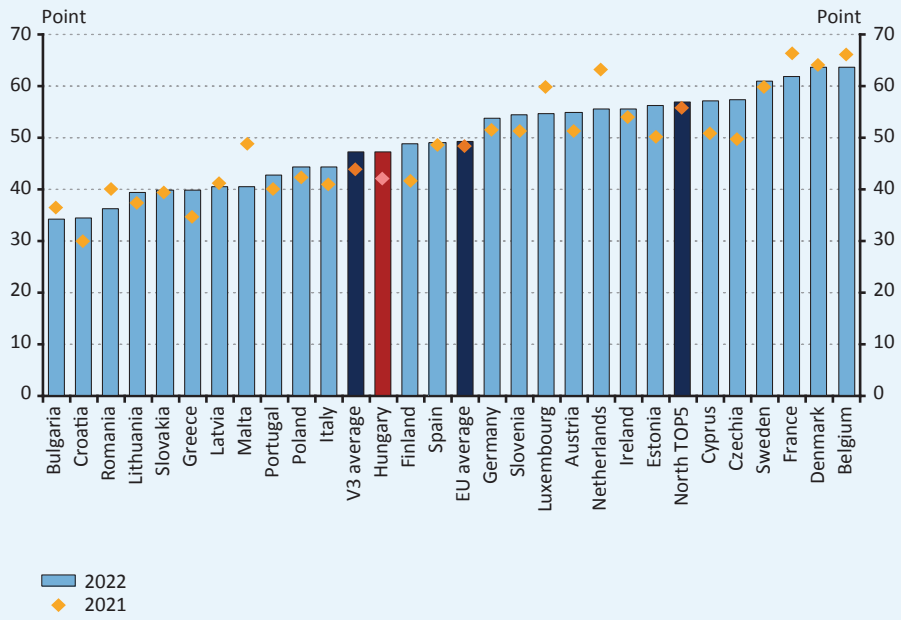
Source: Eurostat, HCSO.

The AROPE indicator, which measures the proportion of the population at risk of poverty or social exclusion, showed that Hungary registered the third biggest fall in the last decade in the EU after Bulgaria and Latvia. Compared to the previous year, the indicator rose slightly as a result of the coronavirus crisis, and stands at 18.2 per cent at present. The figure for Hungary is still more favourable than the EU average, and similar to the average of the Northern TOP5 countries, while slightly exceeds the average of the Visegrád countries. In Hungary, the risk of poverty or social exclusion mainly affects the long-term unemployed and those with primary education. All the three AROPE sub-indicators increased compared to the previous year: relative income poverty, severe material deprivation and very low work intensity affected 12.7 per cent, 8.3 per cent and 3.7 per cent of the population, respectively. In spite of the unfavourable effects of the pandemic, the number of those affected in all the three dimensions declined from 112 thousand to 93 thousand, representing 1 per cent of the total population.

4.7 FAMILY-FRIENDLY PROGRAMME

One of the key issues of long-term economic growth is the quality and quantity of the human capital that is active in the labour market. Over the long term, the quantitative factors of human capital are mostly determined by demographic developments, of which the decrease in and ageing of the population represent the greatest challenges for almost all developed countries, including Hungary. Based on the population projections, if the present demographic trends continue, in the next decades the Hungarian population will decline further and the number of the working age population may decrease by 400,000 people by 2030 compared to 2020. However, successful economic convergence in the long run is difficult to achieve with decreasing population. The lower number of births compared to the previous decades also impacts the structure of the population as it results in younger generations of fewer people compared to the older generations. The fall in the number of the working age population entails a decline in labour supply, which has negative effect on economic growth With a view to reversing the unfavourable demographic trends, it is important to strive for social policy that can efficiently support the realisation of plans to have children. With 47.0 points, Hungary finished 16th in the area of the Family-friendly programme among the 27 EU Member States in 2022. Compared to 2021, Hungary's score increased by 5.4 points, i.e. moving up 1 position. Following the increase, the score for Hungary is slightly higher than the regional average (46.9 points), but is 2.0 points below the average of the EU countries (49.0 points).

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



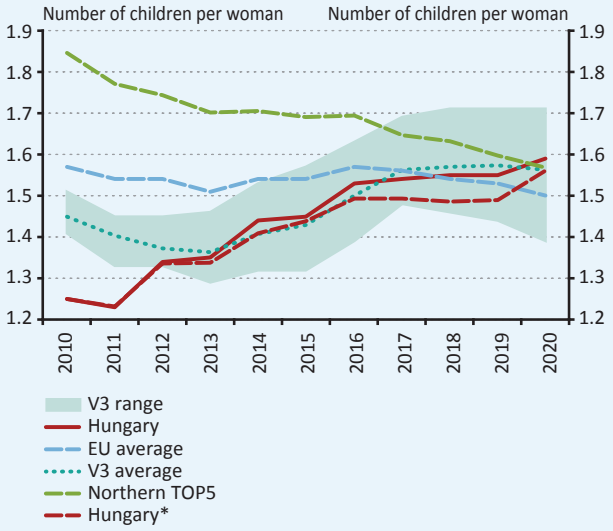
Source: MNB.

Boosting the fertility rate is a precondition for reversing the unfavourable demographic trend. In order to ensure constant population size a fertility rate of around 2.1 should be achieved and maintained in the long run. At present the ratio does not reach the reproduction threshold value in any of the member state of the European Union, and the average of the EU countries even declined slightly in recent years. In the past period the trends in Hungary developed positively, since the fertility rate rose significantly from the historic low of 1.23 registered in 2011 to 1.59 today, higher than the EU and regional average. However, the fertility ratio still falls short of 2.1, i.e. the value necessary for the reproduction of the population. Between 2016 and 2019, the stagnation of the fertility rate was accompanied by a decline in the number of births, caused by the considerable decline in the number of women in childbearing-age. On the other hand, it is a favourable development that in 2020 92,000 children were born in Hungary, up by 3,000 compared to 2019, and the high birth rate (93,000 new-borns) was maintained in 2021. Nevertheless, numbers of births were less favourable in 2022 H1 than in the previous years, a major contributor to which may have been the 3rd wave of the COVID pandemic in the spring of 2021. In addition to its 330-point Competitiveness Programme, in order to achieve the necessary demographic turn, in its 144-point programme entitled 'Sustainable Balance and Convergence' published in May 2022 the Magyar Nemzeti Bank formulated various complementary proposals as well.

Another determinant factor of the population size is life expectancy at birth, the rise of which also increases the volume of available human capital. Similarly to EU trends, life expectancy at birth in Hungary declined by 2.0 years as a result of the coronavirus pandemic, dropping to the 2009 level. At present, Hungarian women and men live 4.8 years and 6.1 years shorter, than the EU average.

As regards the demographic trends, in addition to the decline in the size of the population, ageing also represents increasing challenge. The ageing of the population is caused by the low fertility rate and the gradually rising life expectancy. The ageing of the population can be captured by several indicators, one of which is the ratio of inhabitants older than 65 years within the population. The proportion of population aged 65 and over shows an increasing trend in the developed countries. In Hungary, the ratio was 20 per cent in 2021, which was slightly lower than the EU average, but exceeded the average value of the Visegrád countries. The ageing of the population – ceteris paribus – increases the ratio of the inactive per active employee, which may have negative impact on the growth prospects and the sustainability of the balance of social benefit systems in the long term.

4.7.74 Total fertility rate

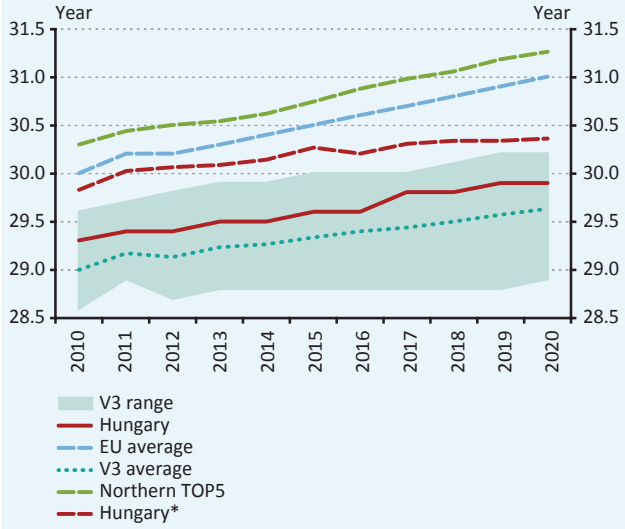


*Note: The Hungarian fertility rate published by Eurostat (1.59 in 2020) differs slightly from the figure published by the Hungarian Central Statistical Office (HCSO) (1.56 in 2020) because according to the 'habitual residence', used since 2013, it takes into consideration children born to mothers residing in Hungary, and thus it also takes into account children born abroad, but registered in Hungary. *HCSO data.*

Source: Eurostat, HCSO.

Total fertility rate is a hypothetical number of children calculated for women of childbearing-age (15–49 years) on the basis of the number of births in the given year. In order to ensure constant population size a fertility rate of around 2.1 should be achieved and maintained in the long run. The low number of live births is a major challenge in almost all developed countries. In the European Union at present none of the member states is able to reach the reproduction threshold value, and the average of the EU countries even declined slightly in recent years. However, the trends in Hungary developed positively, since the fertility rate rose significantly from the historic low of 1.23, registered in 2011 to around 1.5-1.6 since 2016. According to the Eurostat data, the Hungarian fertility rate (1.59) exceeded the EU average (1,50) in 2020. It is a positive development that in 2020, despite the decline in the number of women of childbearing age, the number of births increased significantly, by 3,000, compared to the previous year. Compared to 2011, Hungary's fertility rate increased to the largest degree in the European Union until 2020, which have been attributable to the substantial strengthening of the family support system after 2010 and the sustained improvement in the economic environment.

4.7.75 Mean age of women at childbirth

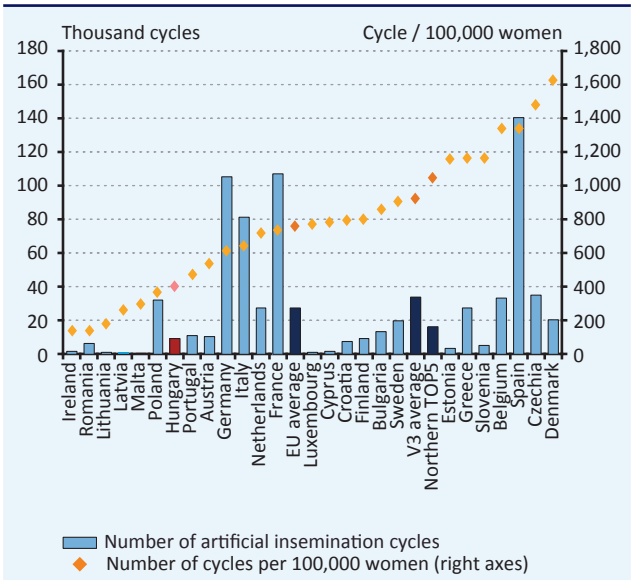


*Note: The Hungarian data (29.9 for 2020) published by Eurostat differs from the figure published by HCSO (30.4 for 2020), because according to the 'habitual residence definition, used since 2013, it takes into consideration the number of children of mothers residing in Hungary, and thus it also takes into consideration the children born abroad, but registered in Hungary. *HCSO data.*

Source: Eurostat, HCSO.

In the past decades the age at childbirth substantially increased. According to Eurostat, in 2020, the average age of mothers at childbirth was 29.9 years in Hungary, which is a rise of 0.5 year in the last 10 years. The Hungarian figure is lower than the EU average (31.0 years), and it essentially corresponds to the average of the V3 countries (29.6 years). The value of the fertility rate is reduced by the gradual increase in the age of birth-giving, i.e. the postponement of having children to older age. When the increase in the age of childbirth stops and the postponed plans to have children are realised, the value of the fertility rate rises compared to the previous period.

4.7.76 Number of artificial insemination cycles (2018)

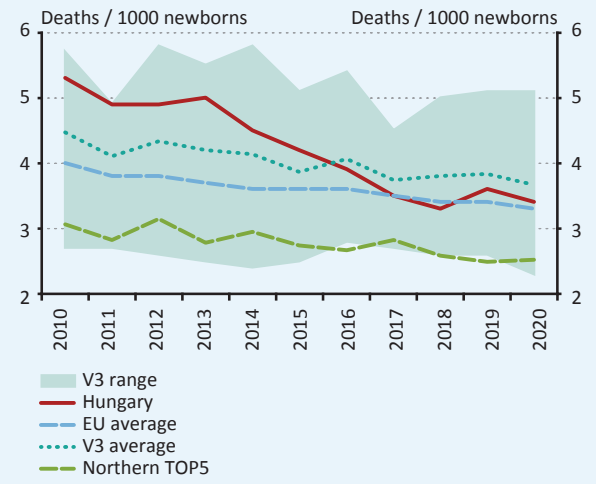


Note: Database relies on registers and does not provide full coverage. Projected on the number of women in child-bearing age (age group of 15–49 years). No data are available for Slovakia. Croatia 2017, Cyprus 2016.

Source: ESHRE, Eurostat.

Based on the data of the European Society of Human Reproduction (ESHRE) – built on 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 in reproductive age (age group of 15–49 years) 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 we have no precise data as to the number of children born in Hungary through artificial insemination. 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.

4.7.77 Infant mortality

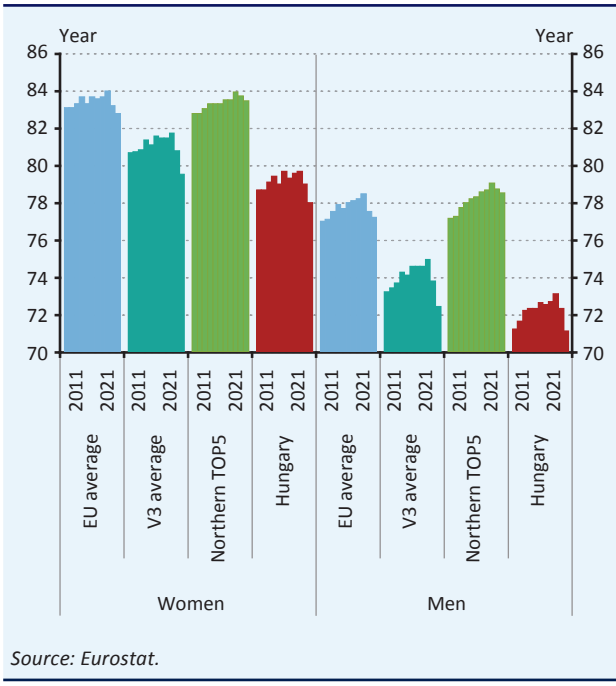


Note: Number of deaths before the age of 1 year per 1000 new-born children.

Source: Eurostat.

An internationally accepted indicator of a country's health care and social system is infant mortality, which shows the ratio of deaths before the age of 1 year to 1000 new-born children. According to WHO data, infant mortality in the world was 29 deaths / 1000 new-born babies, corresponding to 4.0 million death in total (WHO, 2022). By contrast, the level of infant mortality is only 3.3 in the European Union. Infant mortality in Hungary declined considerably in the past decade (from 5.3 to 3.4), and thus it is already more favourable than the average of the other Visegrád countries (3.7). At the same time, the most developed Nordic countries were able to reach even better results (2.5 on average). The decline in infant mortality in Hungary was primarily attributable to the fall in the death of 0-day-old babies (infant mortality in this group fell from 1.2 to 0.5 between 2010 and 2017). Further contributors were the decline in the ratio of children born with a low birth weight (below 2500 grams) and the increase in the chances of survival of children born with a very low weight (below 1500 grams) (HCSO, 2019).

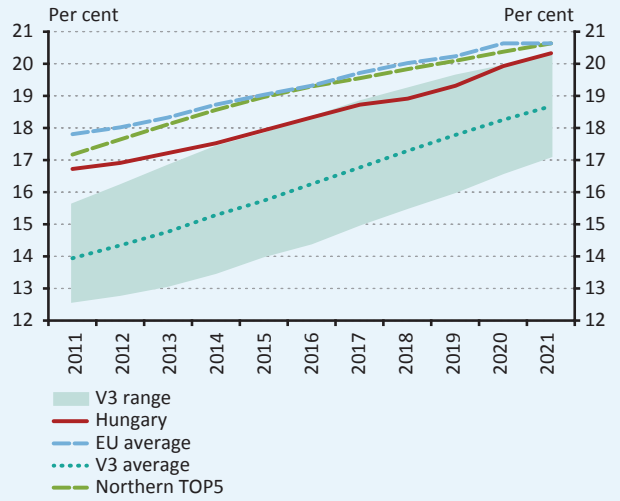
4.7.78 Life expectancy at birth



Source: Eurostat.

Life expectancy summarises the mortality statistics of the current population. Life expectancy at birth shows how many years an individual born in the reporting year can expect to live under the given year's mortality conditions. Life expectancy considerably increased in the past decades in the more advanced countries, including Hungary, with important contribution by the continuous improvement in health care and health awareness. Life expectancy at birth in Hungary was 74.5 years in 2021, which is a decrease of 2.0 years compared to 2019. During this period, life expectancy at birth declined by 1.2 years on average in the EU and 2.4 years in the other Visegrád countries. The fall in life expectancy is due to the increase in mortality in 2020 and 2021 compared to 2019, as a result of the coronavirus pandemic. Hungarian women's life expectancy is currently 4.8 years below the EU average, while men's life expectancy is 6.1 years below the EU average.

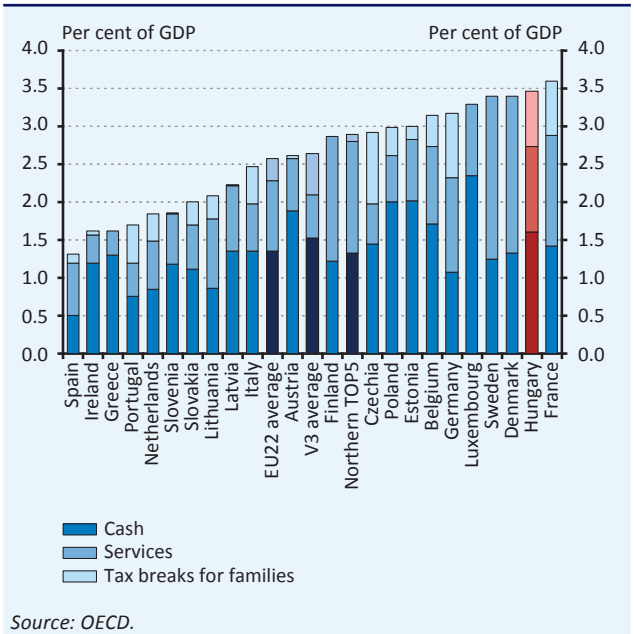
4.7.79 Proportion of population aged 65 and over



Source: Eurostat.

One measure of the ageing of the population is the ratio of those older than 65 years within the population, which shows an increase in all countries under review. The rise in the older generation within the population is attributable to two factors: on the one hand, the lower number of births compared to the previous decades, and on the other hand the rise in life expectancy. In Hungary, the ageing of the society shows a similar trend to the EU average, although at a lower level. In the V3 countries, the proportion of population aged 65 and over is lower (18.7 per cent) than the Hungarian (20.3 per cent) and the EU (20.6 per cent) average, but in recent years its growth rate was faster than in the countries of the EU.

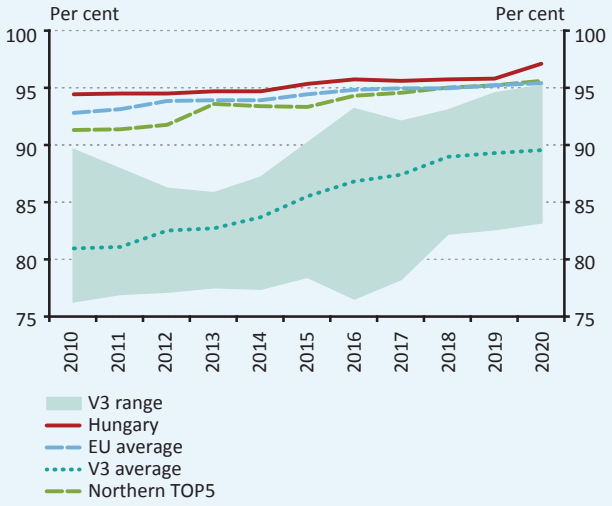
4.7.80 Public spending on family benefits as a percentage of GDP (2017)



Source: OECD.

In Hungary, the spending on family benefits is high in an international comparison. According the last available international data, in 2017 the expenditures on family benefits amounted to 3.5 per cent of GDP in Hungary, which was the second highest value – after France – among the OECD countries. Within the Hungarian family support expenditures, cash benefits amounted to 1.6 per cent and benefits in kind (services) to 1.1 per cent of GDP, while Hungarian families received support in the form of tax allowance in an amount corresponding to 0.7 per cent of GDP. The Hungarian figure for 2017 materially exceeds the value of 2.3 per cent of the OECD countries and 2.6 per cent of the member states of the European Union. Since the latest available data, Hungarian family support expenditures may have increased further due to the introduction of exemption of women with four children from personal income tax in 2020 as well as the extension of the tax allowance for families with two children.

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

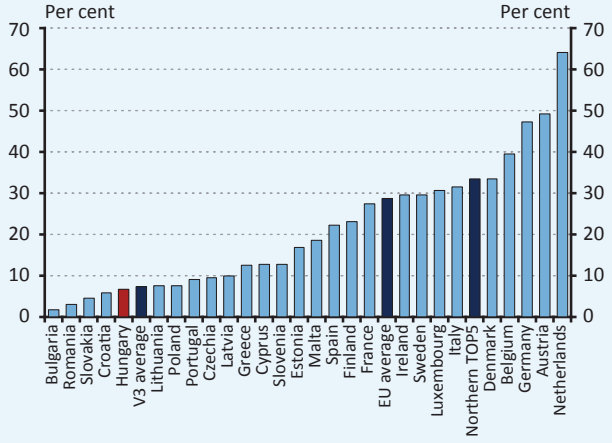


Note: Pupils aged between 4 years and the starting age of compulsory education.

Source: Eurostat.

The ratio of children in early childhood education in Hungary is higher than the EU and regional averages. In Hungary 97 per cent of the pupils between the age of 4 and school age participated in education corresponding to their age according to the International Standard Classification of Education (ISCED). Since 2015 it is mandatory in Hungary to enrol in the kindergarten from the age of 3, while exemption may be requested from this for children over the age of 5 for a variety of reasons (e.g. family circumstances, evolution of skills). The relevant regulation was tightened from September 2020 (exemption may be applied for from the age of 4, but based on fewer reasons), which has led to an increase in the proportion of children in education in our country. The rise in ratio of children enrolled in early childhood education in the other Visegrád countries is clearly attributable to the results of Poland, which increased its ratio from 78 to 95 per cent in 10 years.

4.7.82 Ratio of women in part time employment (2021)



Note: Women in the age group of 15–64 years.

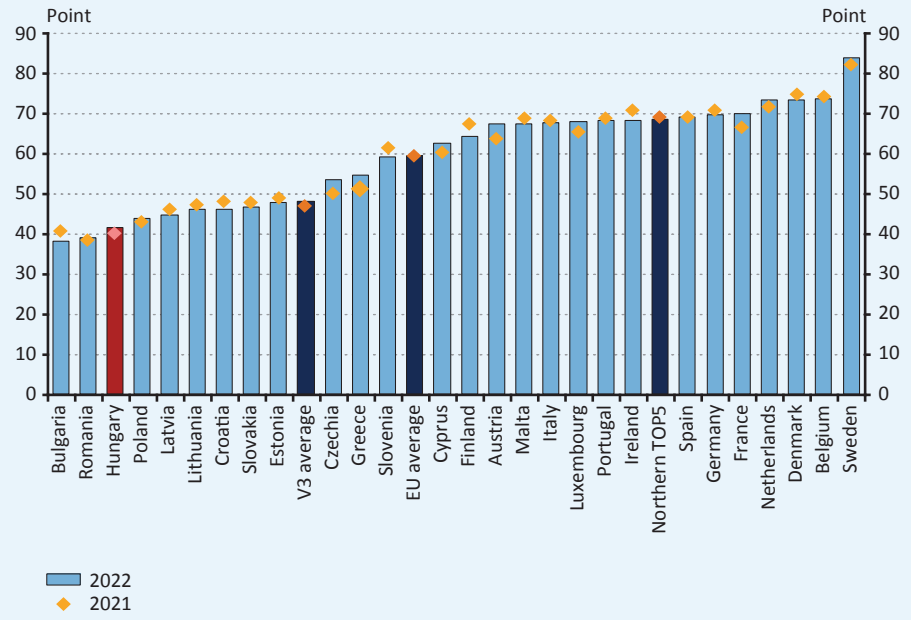
Source: Eurostat.

Return to the labour market after childbirth may be fostered by the penetration of atypical forms of employment. These include, for example, part time employment and teleworking, which facilitate the harmonisation of the home and work duties. According to a 2019 analysis by the HÉTFA Research Institute, the availability of flexible employment options has a positive effect on the birth of first and second children. However, in 2021, the ratio of women employed as part-timers was merely 6.7 per cent in Hungary among women aged 15–64. Although this is similar to the average for the other Visegrád countries (7.3 per cent), it is significantly lower than the EU and Northern countries averages (28.8 and 33.5 per cent respectively).

4.8 HEALTHY SOCIETY

Health is part of national wealth forming the basis of the countries' most important resource, i.e. the human capital. The health status of the population is not only personal and family matter, but also one of the particularly important national economy issues, since the health status influences – through the quality and quantity of the available labour force – the country's economic efficiency and competitiveness. Chronic illnesses reduce both the active time spent in work and the productivity of labour force, while premature mortality also causes major damage to the national economy. For this very reason, protection of existing health is advantageous for the society from individual and economical perspective as well. Although the impact of the coronavirus is not yet evident in the values of a several indicators presented in this chapter, the pandemic also highlighted the importance of health to society. Hungary ranked 25th out of the 27 EU Member States in the Healthy society with 41.4 points in 2022. Compared to the previous year, Hungary's score increased by 1.5 points, a 1 position improvement. The Hungarian score remains significantly below the regional (47.7 points) and EU (59.3 points) averages.

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



Source: MNB.

A convergence reserve can be identified in the health status of the Hungarian population compared to the countries of similar development level in the region, which – in addition to the gradual ageing of the society – lays increasing burden on the health care system, already struggling with numerous challenges. From the perspective of health care, the prevention of illnesses is the simplest and most economical way to ensure the adequate health status of the population. However, the pursuit of a healthy lifestyle is not yet sufficiently present in the Hungarian population, which is also evidenced by the morbidity and mortality rates. The ratio of the obese adult population (25 per cent) is the 3rd highest in Hungary among the EU countries. Due to this, in Hungary quite a lot of people suffer from illnesses that could be partly prevented by healthier lifestyle (e.g. high blood pressure and diabetes). At the same time, it should be noted that the childhood vaccination system for the prevention of infectious diseases is of outstanding quality in Hungary even by worldwide standards; therefore, these diseases do not pose problems in Hungary.

In 2020, the number of healthy life years in Hungary significantly exceeded the average of the other Visegrád countries in the case of both sexes, but fell short of the EU average. On average, Hungarian women and men live in health for 63.5 and 61.6 years, an increase of 0.7 year for women and 0.9 year for men compared to the previous year. At the same time, mortality data paint a less favourable picture than that. Almost half of all deaths in Hungary can be attributed to some sort of behaviour risk. In this indicator Hungary is the second worst performer in the European Union. The number of deaths that can be prevented by proper preventive programmes or avoided by proper treatment was also the second highest in Hungary among the EU countries. The standardised death rate of malignant neoplasms is the highest in Hungary within the EU counties, both in the whole population and in the working age population. The unfavourable Hungarian mortality statistics is also attributable to the fact that a large part of the diseases diagnosed only in a late stage, which increases the costs of treatments and reduces the efficiency of those.

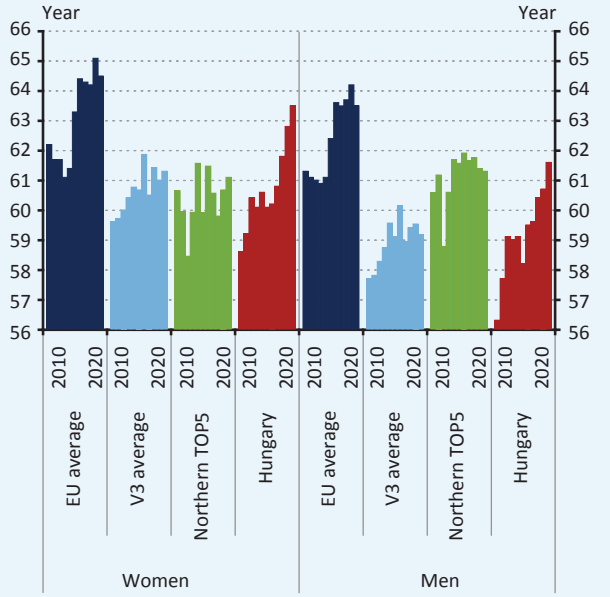
Hungary's health care expenditure as a percentage of GDP (6.4 per cent) is the 3rd lowest in the European Union. Expenditures in Hungary were well below the averages of the other Visegrád countries (7.1 per cent) and the EU countries (9.9 per cent) in 2019. The average level of the health care expenditures as a percentage of GDP has not changed significantly since 2010 in the European Union and in the region, while Hungary registered a moderately decreasing trend. In Hungary, 68 per cent of the health care expenditure comes from public sources, which is lower than the average of the European Union and the Visegrád countries by 12 and 10 percentage points. One of the problems of the Hungarian health care system is that the private health care expenses are spent not through health funds or supplementary private health insurances. Households' out-of-pocket health care expenditures amount to 1.8 per cent of GDP, which exceeds both the regional (1.2 per cent) and the EU average (1.5 per cent).

Hungary can be considered below average in the European Union in terms of the availability of human resources in the health sector, which is a challenge for all developed countries. The number of practising doctors and especially nursing professionals as a percentage of the population is lower than the EU and region averages. In Hungary, there are 2.0 nursing professionals (nurses and midwives) per doctor, which is about the same as the regional (2.3) and EU (2.3) average, but in countries with a truly developed health care system, the ratio is nearly twice as high. In Hungary, the number of newly graduated doctors per 100,000 inhabitants is in line with the EU average and slightly higher than the average of other Visegrád countries, while the number of newly graduated nursing professionals as a percentage of the population is significantly higher than the EU and regional averages.

The Hungarian health care system has a large volume of efficiency reserves, exploiting which could improve the sustainability of the system even without increasing the expenditure level. The average length of stay in hospital is longer than the EU average by 2 days, which is mostly attributable to the inadequate cooperation between the social and health care system. 69 per cent of very common cataract removals were performed in Hungary in 2020 in same-day care, which is still lower than the EU average (88 per cent) despite a significant increase (more than doubling) over the past 10 years. Furthermore, it represents major efficiency reserves that – primarily due to the popularity of over-the-counter medicines – the level of pharmaceutical expenditures as a percentage of GDP is the third highest in the European Union.

The Covid-19 pandemic has posed unprecedented challenges to societies, economies and health care systems around the world. It is not easy to compare the pandemic management performance of different countries for a number of reasons. For example, the number of cases detected depends on the extent of testing, the administration of deaths varies between countries, and the type of vaccine used determines how many doses of the vaccine are needed to develop adequate protection. For this reason, we have included two indicators in the present assessment that provide a comparable and objective picture and the analysis of which is expected to be relevant in the longer term as well, after the containment of the pandemic. The number of excess deaths since the outbreak of COVID-19 places Hungary in the middle range of the EU. The Hungarian vaccination programme is considered one of the fastest within the EU, as Hungary managed to vaccinate its population faster than most EU countries, however vaccination coverage is below the EU average.

4.8.83 Healthy life years

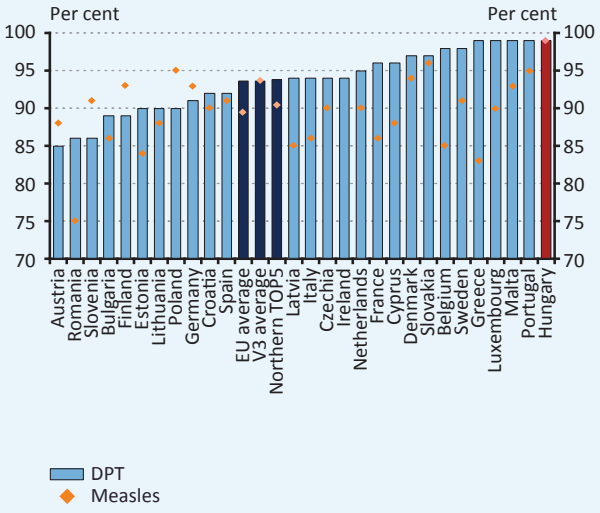


Note: The 2012 data for Sweden and the 2013 data for Finland are missing.

Source: Eurostat.

The healthy life years indicator tries to boil down the health status of a given society into a single ratio by taking into consideration the population's mortality (death statistics) and morbidity (assessment of the inhabitants' own status). In spite of the coronavirus pandemic, the increase in healthy life years observed in Hungary in the past decade continued in 2020. In 2020, a woman spent an average 63.5 years in health, while a man spent 61.6 years in health on average. Compared to 2011, in Hungary the indicator rose by 4.3 years for women and by 3.9 years for men, representing the 6th and 4th greatest increases, in the European Union. In Hungary, healthy life expectancy at birth significantly exceeded the average of the other Visegrád countries in the case of both sexes (women: 61.3 years; men: 59.2 years), but fell short of the EU average (women: 64.5 years; men: 63.5 years). In the European Union, healthy life expectancy declined by an average 0.6 year for women and 0.7 year for men in 2020, with the coronavirus pandemic as a major contributor.

4.8.84 Immunisation rates for childhood vaccinations (2021)

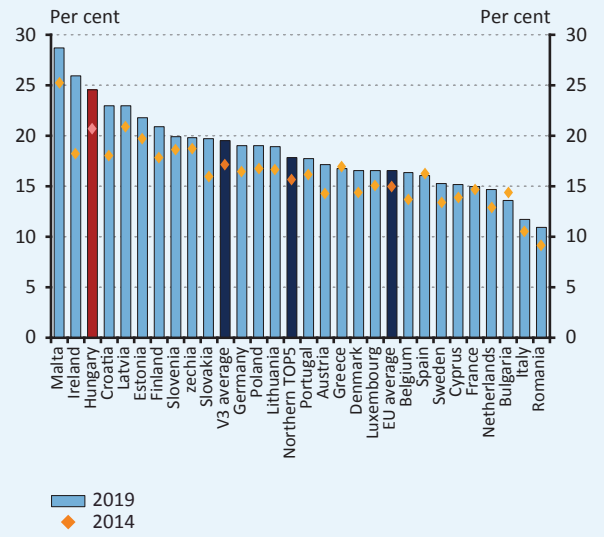


Note: DPT vaccination coverage: the ratio of children that received all the three doses of the combined vaccination against diphtheria, pertussis and tetanus among the 12–23-month-old children (DPT3). Measles vaccination coverage: the ratio of children who received both doses of the vaccination against measles in the age group recommended according to national vaccination programmes (MCV2). No data on measles vaccination coverage is available for Ireland.

Source: UNICEF.

In Hungary the children's vaccination rate can be deemed outstandingly high even by worldwide standards. In Hungary immunisation is practically complete (99 per cent) in the case of the DTP (diphtheria, pertussis and tetanus) and measles vaccination in the age group examined. The average of the EU countries is 94 and 89 per cent, while in the other Visegrád countries the vaccination rate is also only 94 and 94 per cent. Hungary is the only country in the European Union that was able to achieve 99 per cent immunization in the case of both vaccinations in 2021. The low vaccination rates of certain countries contributed to the fact that measles, which formerly almost fully disappeared, in several European countries (e.g. Romania, Belgium, Ireland) once again caused epidemic in recent years.

4.8.85 Ratio of obese adult population

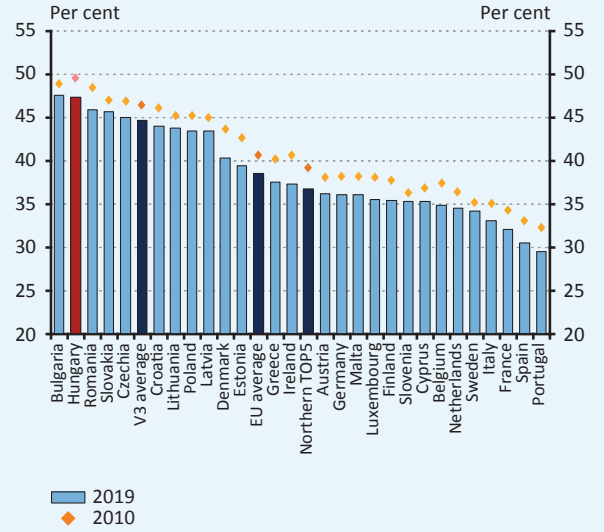


Note: BMI > 30.

Source: Eurostat.

Obesity (BMI > 30) is an increasingly serious problem in European countries as it contributes significantly to the increase in health expenditures through the related illnesses (such as diabetes and hypertension) and to the decline in the potential economic performance. In the European Union, 17 per cent of the population older than 18 years are obese, while the average of the Visegrád countries (20 per cent) was slightly higher than that in 2019. In Hungary 25 per cent of the adult population may be deemed obese, which is the 3rd highest value in the EU, after Malta (29 per cent) and Ireland (26 per cent). In 2014 only 21 per cent of the Hungarian population was obese; accordingly, the ratio rose by 4 percentage points in 5 years. The prevention of obesity is one of the most efficient ways of improving the health status. Striving for healthy nutrition, regular exercise and curbing smoking and alcohol consumption could substantially contribute to the improvement of the Hungarian health care results.

4.8.86 Share of mortality driven by behavioural risks (2019)

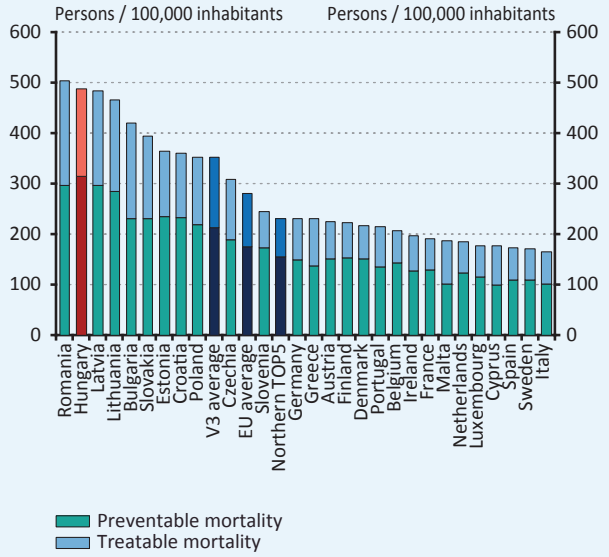


Note: Behavioural risks cover the risks related to nutrition smoking, alcohol consumption and low level of exercise.

Source: IHME.

In Hungary, almost half (47 per cent) of all deaths can be linked to some sort of behaviour risk, which is the second highest value in the European Union. The average of the V3 countries in this ratio was 45 per cent, while the average of the EU countries was 39 per cent in 2019. In 2019, 61,000 deaths in Hungary were linked to behaviour risk. Compared to 2010, the ratio of deaths related to behaviour risks declined by 2 percentage points in Hungary. At the same time, most of the decline took place in the first half of the decade, and no major change in the indicator was achieved in the past 5 years. Behaviour risks cover the risks related to nutrition, smoking, alcohol consumption and low level of exercise. when examining these factors separately we found that Hungary is among worst performing EU countries in almost all factors.

4.8.87 Avoidable mortality (2019)

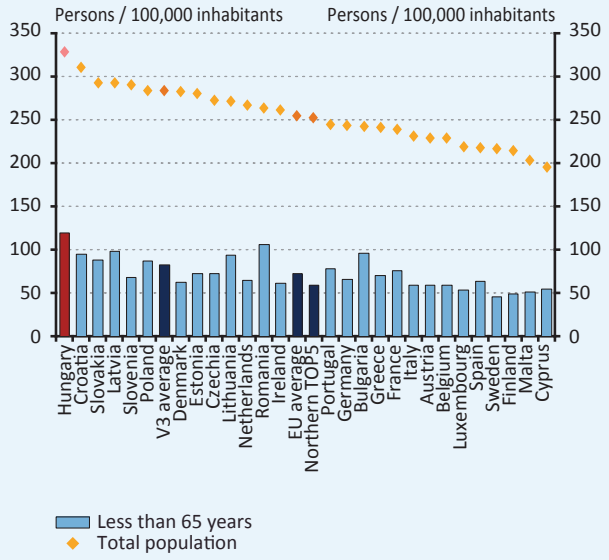


Note: Age-standardised mortality rate per 100,000 inhabitants. France, 2017.

Source: Eurostat.

The concept of avoidable mortality covers deaths which could have been prevented or avoided by the proper application of the existing achievements of medical science. Within that there are two groups: preventable deaths are death that could have been avoided by proper prevention and treatable deaths are deaths that could have been avoided by proper health care interventions. In 2019, Hungary had the second highest standardised avoidable mortality in the European Union (489 persons / one hundred thousand inhabitants), one place worse than the previous year. The Hungarian mortality rate is higher than the EU average (280) by 73 per cent and exceeds the average of the other Visegrád countries (352) by 38 per cent. Although between 2011 and 2019 the Hungarian mortality rate declined by 12 per cent, a similar decrease was observed in the average of the EU and the V3 countries, and thus Hungary still has a convergence reserve in this indicator.

4.8.88 Standardised death rate – Malignant neoplasm (2019)

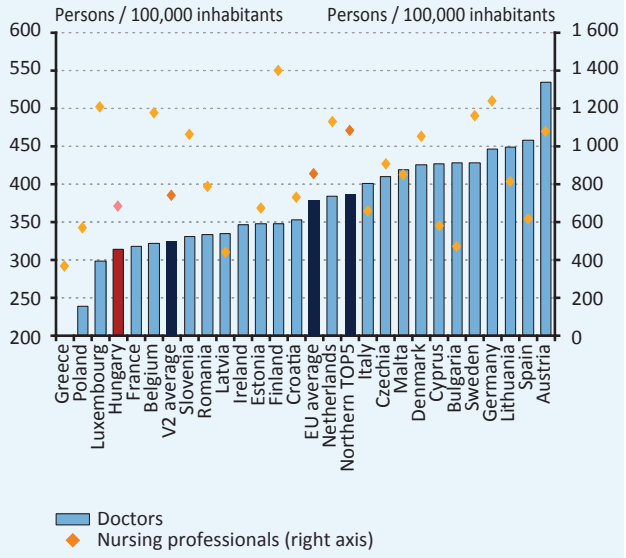


Note: Age-standardised mortality rate per 100,000 inhabitants. France, 2017.

Source: Eurostat.

The standardised mortality rate shows what a country's mortality rate would be like if its distribution by age corresponded to the standard European population. The standardised mortality rate of malignant tumours is still the highest in Hungary within the European Union. In 2019 in Hungary the number of deaths per 100,000 inhabitants was 328 within the whole population and 119 in the below-65 age group. Both values are much higher than the averages of the countries of the region (283 and 83) and the EU (254 and 73). Nevertheless, in Europe and within that also in Hungary, there is a decreasing trend in the mortality rate of malignant neoplasm. Between 2011 and 2019, the mortality rate related to malignant neoplasm decreased by 20 per cent among patients below 65 years (from 149 to 119); however, even this decrease was not sufficient for moving upper in the ranking of EU countries. The expansion of screening examinations could play a prominent role in reducing deaths due to malignant tumours as timely diagnosis would improve the chances of survival in the case of most tumours.

4.8.89 Number of practising doctors and nursing professionals per thousand inhabitants (2020 or latest available data)

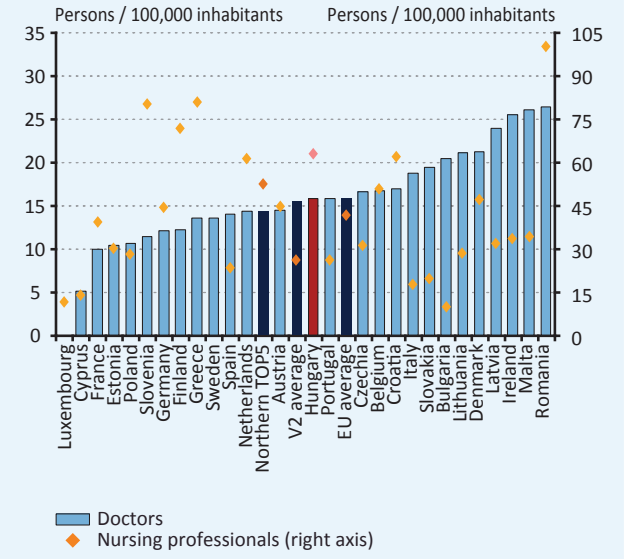


Note: The number of nursing professionals includes nurses and midwives. No data are available in the case of any of the indicators for Portugal and Slovakia.

Source: Eurostat.

In 2020, the number of practising doctors per 100 thousand inhabitants in Hungary was the 3rd lowest (314) among the EU countries for which data are available. The figure for Hungary is slightly below the average of Poland and Czechia (324), but well below the average of the EU countries (379). The value is influenced by the decline in population as well as by the delayed retirement and ageing of doctors. Moreover, the indicator shows the number of physicians who have a licence to practice in the given country, but not all of them play a role in the provision system (e.g. career changer) or not actually work in that country. The number of practising nurses and midwives per 100,000 inhabitants in Hungary (682) is also below the average of the Czech Republic and Poland (738) and the EU average (854). In Hungary, there are 2.2 nursing professional per doctor, which is slightly lower than the regional (2.3) and EU (2.3) average, but in countries with a truly developed health care system, this ratio may be twice as high (e.g. Finland 4.0; Luxembourg 4.0)

4.8.90 Number of newly graduating doctors and nursing professionals per thousand inhabitants (2020 or latest available data)

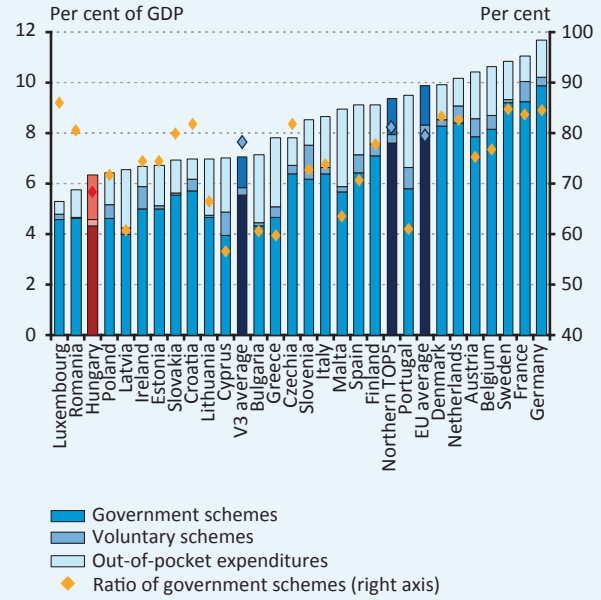


Note: The number of nursing professionals includes nurses and midwives. For Sweden, there are no data on the number of nursing professionals.

Source: Eurostat.

The resupply of health care professionals is a problem in all developed countries, while the need for this type of service will increase as the proportion of older people in society rises. In Hungary, the number of newly graduated doctors per 100,000 inhabitants is in line with the EU average (16) and slightly higher than the average of other Visegrád countries (15). The number of newly graduated nursing professionals and midwives per 100 thousand inhabitants (62) is still significantly higher than the EU (41) and V3 averages (26). The proportion of new graduates in Hungary is 5.0 per cent of the number of practising doctors, which corresponds to the regional average (4.8 per cent) and slightly exceeds the EU average (4.2 per cent). In the case of nursing professionals this ratio is 9.2 per cent in Hungary, which is two and a half times the regional average (3.5 per cent) and significantly higher than the EU average (4.9 per cent). The relatively high proportion of new graduates and the lower than international average proportion of practising nursing professionals together point to a problem of career change of nursing professionals in Hungary.

4.8.91 Health care expenditures as a percentage of GDP by financing scheme (2019)

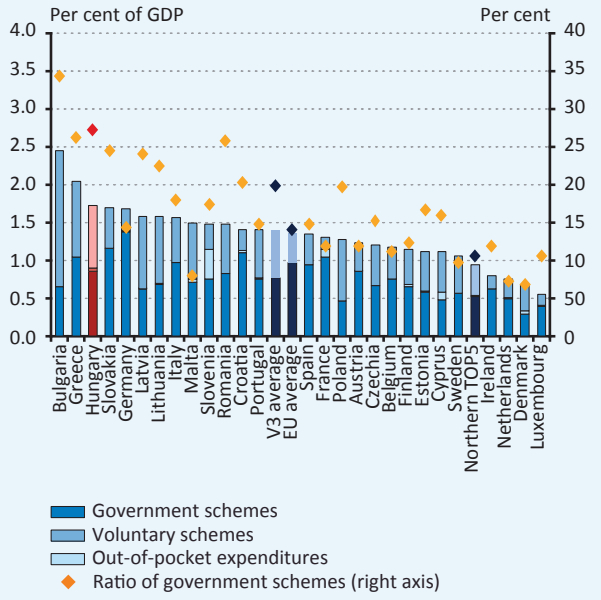


Note: Malta 2018.

Source: Eurostat.

In 2019, Hungary's health care expenditures as a percentage of GDP (6.4 per cent) were the 3rd lowest in the European Union, and fell significantly short of the averages of the other Visegrád countries (7.1 per cent) and of the EU (9.9 per cent). The average level of the health care expenditures as a percentage of GDP has not changed significantly since 2010 in the European Union and in the region, while Hungary registered a moderately decreasing trend compared to the 2010 level of 7.5 per cent. In Hungary the public health care expenditures amounted to 4.3 per cent of GDP, lower than both the regional (5.5 per cent) and the EU average (7.9 per cent). By contrast, in Hungary the households' out-of-pocket health care expenditures (1.8 per cent), exceed both the EU (1.5 per cent) and the V3 average (1.2 average). All this means that in Hungary, 68 per cent of the health care expenditure comes from public sources, which is lower than the average of the European Union and the Visegrád countries by 12 and 10 percentage points. Voluntary schemes cover 3.5 per cent in Hungary, which is lower than the regional (4.3 per cent) and international level (4.9 per cent). The data presented here do not yet include the expenditures related to the containment of the coronavirus pandemic, which will be seen in the statistics only as of next year.

4.8.92 Pharmaceutical expenditures as a percentage of GDP by financing scheme (2019)

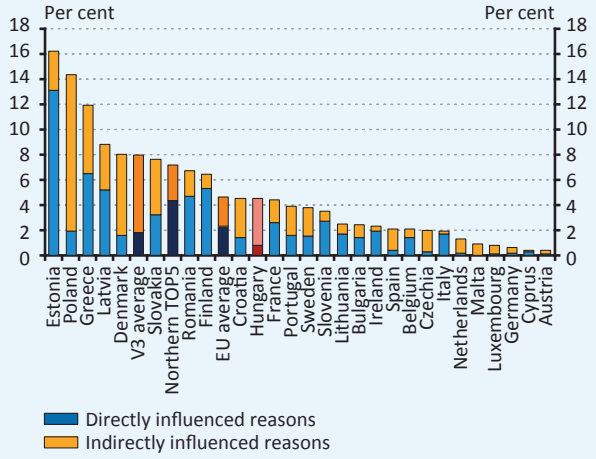


Note: Malta 2018.

Source: Eurostat.

Hungary's pharmaceutical expenditures as a percentage of GDP is the 3rd highest one in the European Union. In 2019, Hungary spent 1.7 per cent of GDP on the purchase of medicines, which is substantially higher than the 1.4 per cent average of both the V3 and the European Union. Within total health care expenditure Hungary allocated 27 per cent for the purchase of pharmaceuticals, while this is only 14 per cent in the EU on average. The difference primarily comes from the medicines purchased from households' out-of-pocket expenditures, which amounted to 0.8 per cent of GDP in 2019, which is double the EU average (0.4 per cent). This category covers the over-the-counter medicines and the charge to be paid by the people for medicines bought with a prescription. The inadequate health status of the population, the low level of adherence, the structural problems of the provision system, the slight regulation of medical sales representatives and the penetration of medicine advertisements all contribute to the high pharmaceutical expenditure in Hungary.

4.8.93 Self-reported unmet needs for medical examination (2020)

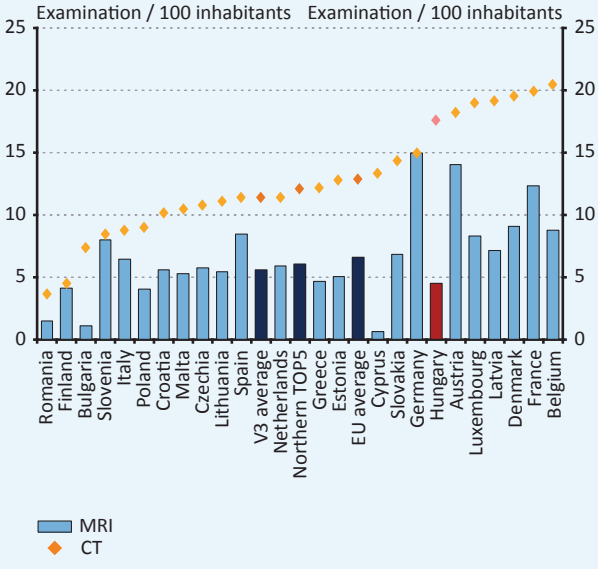


Note: The ratio of those who reported that they had unmet health care needs in the previous 12 months. Population over the age of 16 years. Italy 2019.

Source: Eurostat.

The volume of unmet health care needs is an important indicator of the health care systems' protection function, which shows what part of the population had such health care needs in the previous 12 month, which could not be satisfied for some reason. In Hungary, the ratio of the unmet health care needs was 4.5 per cent in 2020, less than half the 2011 figure (9.2 per cent). In the same period, the EU average fell from 6.7 per cent to 4.6 per cent, while the average of the other Visegrád countries increased from 7.5 per cent to 8.0 per cent. The reasons influenced directly by the health care system ('too expensive', 'too far to travel' or 'waiting list') accounted for only 0.8 percentage point for Hungary, which is substantially lower than the EU average of 2.3 percentage points. On the other hand, the indirectly reasons primarily influenced by the health awareness of the population (e.g. "no time", "fear of doctor, hospital, examination or treatment", "wanted to wait and see if problem got better on its own') together amounted to 3.7 percentage points in Hungary, compared to the 2.3 percentage point EU average. The effects of the lockdowns due to the coronavirus pandemic that affected the health care system cannot yet be seen in the domestic data, but in other countries (such as Poland or Greece) the ratio of unsatisfied health needs already increased sharply in 2020.

4.8.94 Number of CT and MRI examinations per 100 inhabitants (2020)

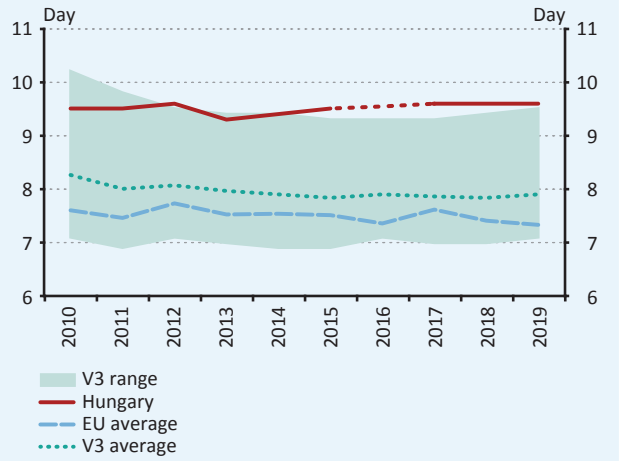


Note: No data are available for Ireland, Portugal and Sweden. Cyprus and Germany 2019.

Source: Eurostat.

CT and MRI examinations are among the most frequently applied imaging diagnostic methods, and thus the number of such examinations as a percentage of the population is an important indicator of the access to the health care system. In 2020, hospitals and emergency medical services carried out much more CT examinations per 100 inhabitants in Hungary (17.6) than the EU (12.8) and regional (11.4) averages. By contrast, the number of MRI examinations as a proportion of the population is slightly lower (4.5) in Hungary than the regional average (5.6), but much below the average of EU countries (6.6). Compared to the previous year, in the first year of the COVID pandemic (2020), CT use and MRI use in Hungary dropped by 5.3 per cent and 17.4 per cent. The former figure is lower than the EU average (6.1 per cent), but the latter is more than the double of that (8.0 per cent). On the whole, the degree of the access of the Hungarian population to modern imaging diagnostic examinations corresponds to the EU average, although the number of MRI examinations could be increased in Hungary.

4.8.95 Inpatient average length of stay

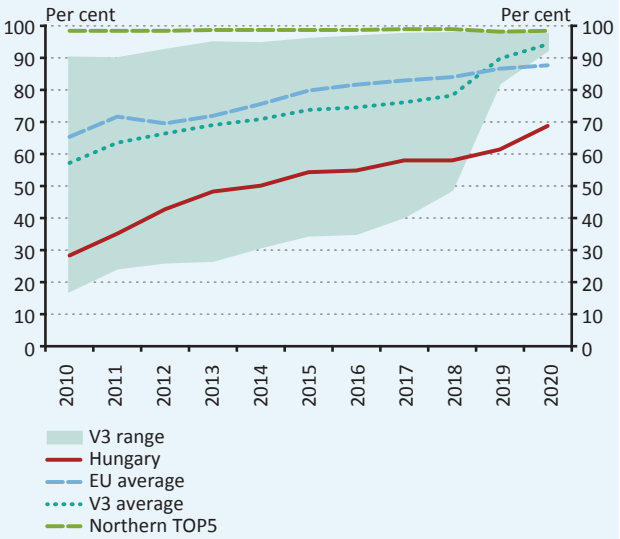


Note: No data available for Hungary in 2016 and Slovakia in 2013.The Northern TOP5 average is not shown due to lack of data.

Source: Eurostat.

In Hungary the average length of stay in hospital was 9.6 days, which exceeds the EU average (7.3 days) by 2.3 days and the regional average (7.9 days) by 1.7 days. As in the EU, in the Visegrád region, there is a basically stagnating trend in this indicator, but there is a noticeable difference between the Czech Republic and Slovakia (both 7.1 days) and Hungary (9.6 days) and Poland (9.5 days). The average length of stay in hospital is primarily influenced by chronic care in Hungary. The Hungarian analyses, prepared by a slightly different methodology, show that in acute care the number of days of treatment per hospital case was 4.8 days in 2019. while in chronic care it was 32.5 days (Statistical Yearbook 2019 of the National Health Insurance Fund of Hungary). All this suggests that in Hungary there is inadequate cooperation between the social and health care provision system, and those elderly, chronic patients are also treated in the health care system, whose condition would not necessarily require this.

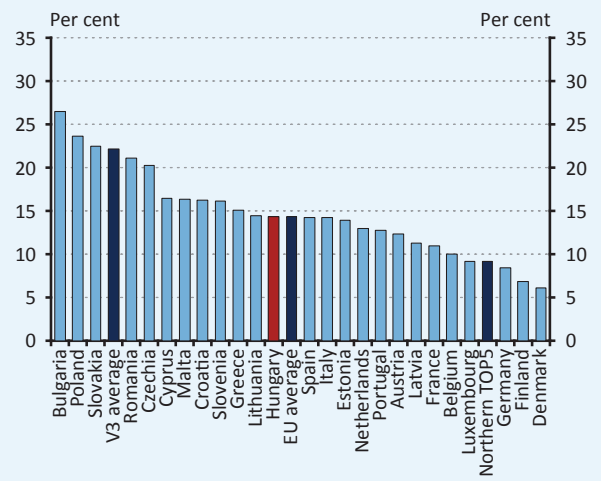
4.8.96 Ratio of cataract surgeries performed in same-day surgery and outpatient care



Source: Eurostat.

Cataract surgeries are among the most frequent surgeries performed in developed countries, where there is no technical obstacle to performing the surgery without staying in hospital. In Hungary 69 per cent of the cataract surgeries were performed as same-day surgery in 2019, which is by 40 percentage points more than in 2010. Of the Visegrád countries, Poland had the lowest ratio of surgeries performed in same-day care up to 2018 (49 per cent), but by 2020 they managed to raise this ratio to 92 per cent by directing the patients from hospitals to places of same-day care. In Slovakia (93 per cent) and in Czechia (98 per cent) the vast majority of the surgeries have already been performed in this way. The expansion of the same-day surgeries represents major efficiency reserve in the Hungarian health care system, which could contribute to the reduction of the hospital focused approach.

4.8.97 Excess mortality since Covid19 (between 14 February 2020 and 17 July 2022)

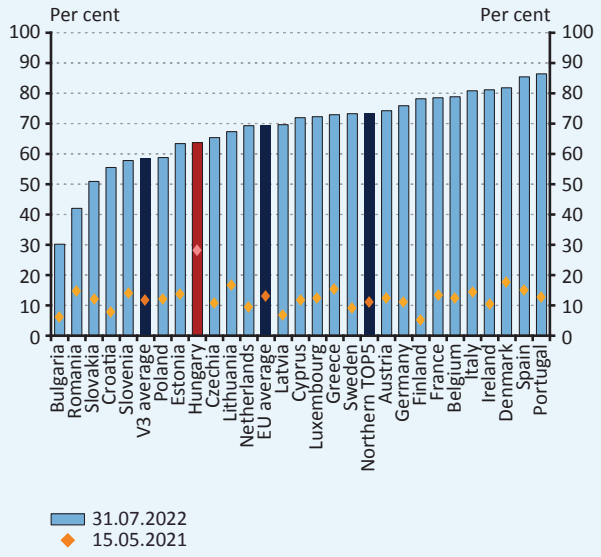


Note: The excess mortality since Covid19 is the total (not only COVID-19) number of deaths since the first Covid19 death in the EU (14/02/2020, France) divided by the average number of deaths in the reference period (2016-19), based on actual weekly mortality data, using the latest available data for each country. No data are available for Ireland.

Source: Eurostat, MNB calculation.

Since countries' diagnostic and administrative practices differed significantly during the Covid19 pandemic, the most objective way to characterise the impact of the pandemic on each country is the excess mortality rate. Since the first Covid19 death in Europe (14 February 2020, France), considering all causes of deaths, in Hungary 14.4 per cent more people died higher than it would have been expected based on the average of previous years (2016-2019). The excess mortality rate in Hungary is slightly higher than the EU average (14.3 per cent), but significantly lower than the average of the other Visegrád countries (22.1 per cent), which are among the 5 worst performing EU countries. The statistics for all deaths from Covid19 in Hungary show a more negative picture than excess deaths. In addition to administrative factors, the difference in the two mortality rates is mainly due to the generally poor health status of the Hungarian population (e.g. high rates of obesity, diabetes and hypertension), as a result of which Hungary has an inherently high mortality rate compared to the EU.

4.8.98 Share of people fully vaccinated against Covid19 (31 July 2022)



Note: Depending on the type of vaccine available against the disease, different amount of doses are required to achieve full protection.

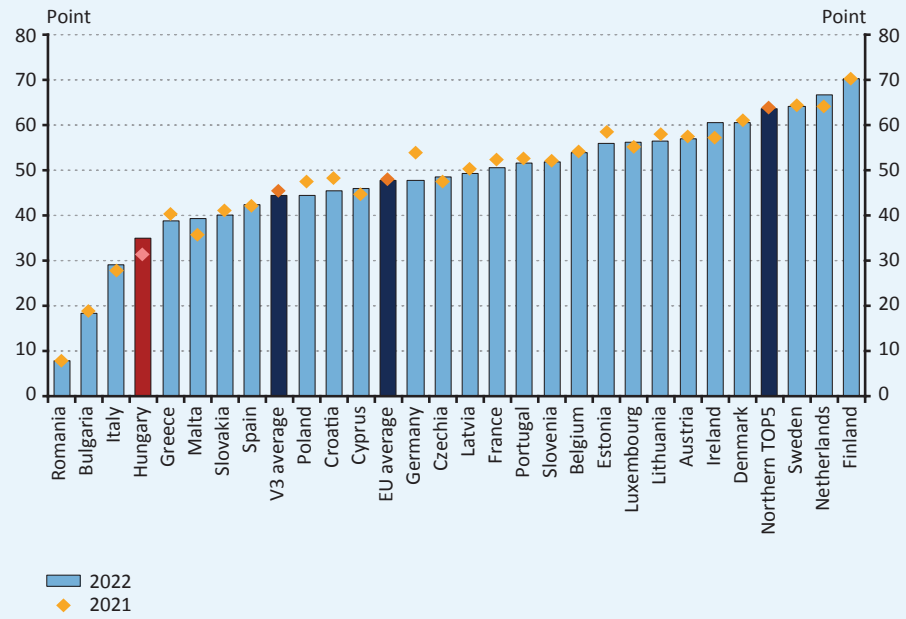
Source: Our World in Data.

One of the most efficient ways of protecting people against Covid19 is vaccination. Several indicators can be used to assess vaccination coverage (e.g. number of doses administered, number of people receiving at least one vaccination), of which here we analyse the percentage of people who received one full round of immunisation within the population. Until end-July 2022, 64 per cent of the Hungarian population received at least one vaccination in line with the initial protocol. This ratio falls short of the EU average (70 per cent), but is higher than the average of the other Visegrád countries (58 per cent). The rapid upturn in the vaccination programme in Hungary in the spring of 2021 allowed an earlier lifting of the containment measures, significantly contributing to the dynamic recovery of the Hungarian economy from the crisis.

4.9 KNOWLEDGE-BASED SOCIETY

Through the quality and productivity of the available workforce, education has a major impact on the economic performance and competitiveness of a country. At the same time, it is not easy to measure the efficiency of the educational system, as in the case of a university graduate – starting from the kindergarten – we can speak about at least 18 years of education, where it is difficult to clearly determine the exact value added of the individual levels of education. With 34.6 points, Hungary finished 24th in the area of Knowledge-based society among the 27 EU Member States in 2022. Compared to the previous year, Hungary's score rose by 3.5 points, although this rise did not result in higher ranking. Hungary's score is still significantly below the averages of the countries of the region (44.0 points) and of EU countries (47.4 points).

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 curriculum as expected of them, at the same time, 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 students from grade 4 focus mainly on checking the curriculum learnt. In these tests, Hungarian students performed above the average of regional and EU countries. By contrast, in the PISA tests, which examine how students can use the learnt curriculum in real life examples, the Hungarian results hold growth reserve compared to both the regional and European average levels. However, in the latest, 2018 PISA tests the declining trends of the previous years turned, and thus the average score of Hungarian students is only slightly below the EU average. The improvement in the Hungarian results is mostly attributable to the fact that the ratio of underperforming students (those who do not reach the minimum target level in any of the assessed areas) significantly declined, but it is still higher than the international average. At the same time, the Hungarian results are still very much determined by the social and economic background of the students.

In 2019, Hungary spent 3.8 per cent of GDP on education expenses, which is slightly lower than the average of the other Visegrád countries (4.2 per cent), but it is well below the EU average (4.4 per cent). Public expenditures in Hungary amount to 3.1 per cent, which is also lower than the regional (3.7 per cent) and EU (3.9 per cent) averages, whereas private funding is higher in Hungary (0.7 per cent) than the international averages (0.5 per cent). However, financial reward for the teaching profession in Hungary lags behind – similarly to the regional practice – that of other occupations requiring

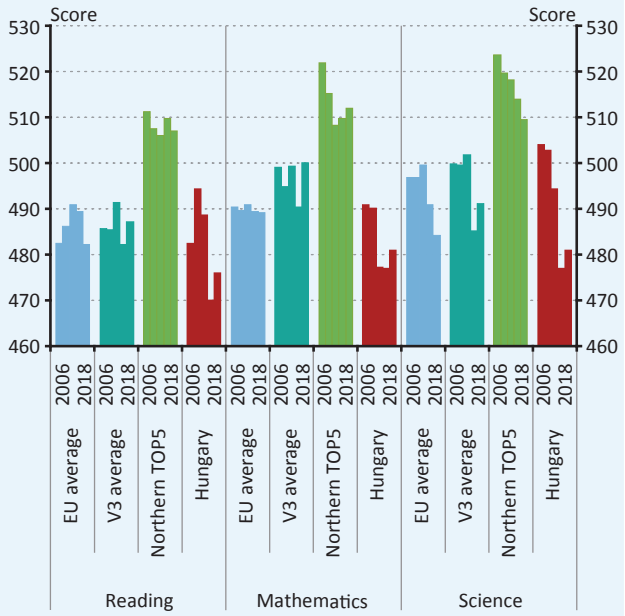
tertiary education degree. The average wage of public education workers amounts to 61–66 per cent of those holding tertiary education degree, the lowest among OECD member EU countries.

In Hungary, the degree of early school leaving without qualification is almost twice as high as the average of the other Visegrád countries, while the ratio of those holding a tertiary education degree is one of the lowest among the EU countries. 12.0 per cent of the young people in the age group of 18–24 years do not participate in further education despite having only primary education or less. The improvement of this ratio would be important because for young people without upper secondary school leaving examination certificate or vocational qualification it is much more difficult to find a job in the labour market, and many of them become economically inactive for a long time. In Hungary, in the age group of 25–34 years, the ratio of tertiary education graduates was 33 per cent in 2021, the highest in the last decade, but still only the 3rd lowest value in the European Union. The EU average in this indicator rose by 8 percentage points within 10 years from 33 per cent registered in 2011, while the other Visegrád countries achieved similar improvement (from 30 per cent to 38 per cent). It is partly due to this fact that the wage premium of the tertiary education degree in Hungary is outstanding in an international comparison. The number of STEM graduates per one thousand inhabitants aged 20–29 years was 23.5 in Hungary in 2020, which was the 6th highest in the EU. The spectacular rise compared to the previous year (12.3) was the consequence of the fact that between the spring of 2020 and August 2021 even those could receive their degrees, which may have been 'stuck' for years, who had not passed the language exam required for receiving the degree. All this points out that in the future it will be especially worth dealing with the developing of the foreign language knowledge of STEM students, since the 2020 results and other tertiary education statistics also show that STEM studies are not unpopular in Hungary.

Based on the international rankings of tertiary education institutions, the Hungarian universities are not in the vanguard of the world, while the ratio of international students studying in the Hungarian tertiary education institutions exceeds the average of the EU. At present none of the Hungarian universities belongs to the world's top 500 tertiary education institutions in the QS university ranking, but 11 Hungarian universities are included in the overall ranking of more than 1,400 institutions. Despite this, the proportion of foreign students studying in bachelor's and master's courses in Hungary was above the regional and EU averages in the years preceding the coronavirus outbreak. One of the most interesting questions of the coming years will be how higher education, and especially international mobility within that, will be rearranged by the pandemic all over the world.

The numeracy competence of the adult population exceeds the international average, while there is a room for growth in foreign language and financial skills. Participation in lifelong learning affected 6 per cent of the adult population in Hungary, which corresponds to the regional level (5 per cent), but in order to maintain the dynamic economic growth it would be necessary to catch up with the EU average (11 per cent) in this area. Hungary also joined the OECD's Programme for the International Assessment of Adult Competencies (PIAAC), the results of which show that the skills of Hungarian employees (numeracy, literacy) correspond to the average level of the European Union, which confirms that the lower productivity of Hungary cannot be attributed to lack of the employees' basic skills. However, the foreign language skills of the Hungarian population are below both the EU and the regional average, which reduces the access of the individual employees to knowledge-sharing channels, and represents major competitive disadvantage for the Hungarian economy. In addition, it is also a problem that one quarter of the young Hungarians and one half of the total population do not have at least basic digital skills. Growth reserve can be identified in the financial literacy of the Hungarian population; however, there are comprehensive interventions in Hungary in this area (e.g. according to the amended National Core Curriculum, basic financial skills are included in several subjects from September 2020), which is expected to increase the population's skills level in the long run.

4.9.99 Results of PISA tests

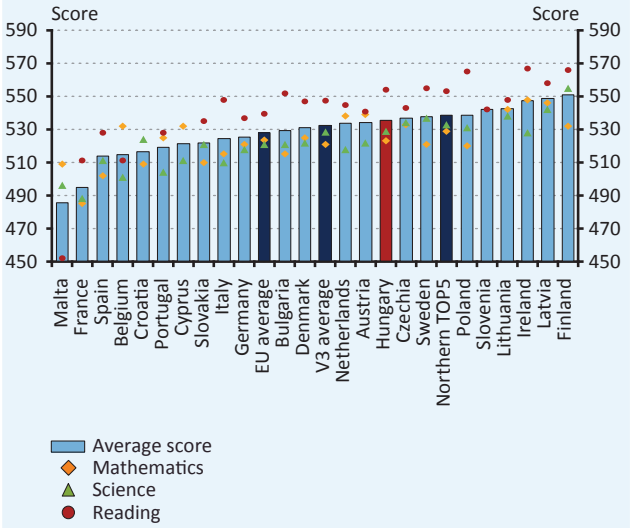


Note: Students at age of 15 years.

Source: OECD.

The PISA test organised by the OECD every 3 years examines the competences of 15-year- old students in 3 selected areas (mathematics, science, reading). In the latest, 2018 tests, Hungarian students achieved higher scores in all three areas than in the 2015 tests. Despite the rising scores, Hungary's results are still lower than the average of the countries of the region and the EU in all three areas. In 2018, the average results of the V3 countries improved to a larger degree than those of Hungary (by 7 points on average versus Hungary's 5 points), while the average of the EU countries declined by 5 points. The improvement in the Hungarian results is mostly attributable to the fact that the ratio of underperforming students (those who do not reach the minimum target level in any of the areas) declined by 3 percentage points to 15.5 per cent, but it is still higher than the international average (14.0 per cent). In Hungary the results are still very much determined by the social and economic background of the students. The difference between the performance of the second and the ninth decile of students was the largest in Hungary (126 points) among the EU countries. The results of the 2021 tests are expected to be made public at the end of 2022.

4.9.100 Results of TIMSS and PIRLS tests (2019, 2016)

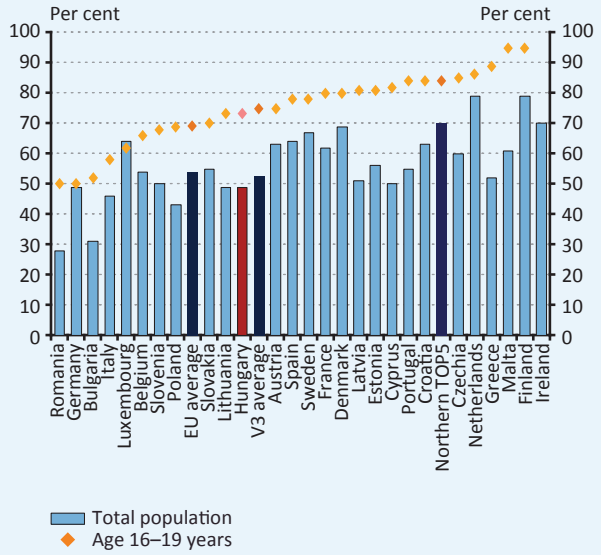


Note: Among fourth-grade pupils. TIMSS (mathematics and science) 2019, PIRLS (reading) 2016. Estonia, Greece, Luxembourg and Romania are not included in any of the tests, while Slovenia is only missing out in the PIRLS reading test.

Source: IEA.

The TIMSS and PIRLS surveys conducted by the specialised institution of Boston College measure the knowledge of 4th grade (and with a more limited scope the 8th grade) students every 4 years. The TIMSS survey performed in 2019, assessed the students' mathematical and science knowledge, while the PIRLS survey conducted in 2016 measured literacy. The Hungarian fourth-grade pupils scored 535 on average in the three areas, being the 9th highest one among the participating 23 EU countries, whose average is 528. Among the V4 countries, Poland scored the highest (539 points), while Czech and Slovak students scored 537 and 522 points, respectively, on average. At EU level Hungarian students achieved average score in maths (523 points), while they scored slightly higher in science (529 points) and significantly higher in reading (554 points). However, compared to the 2015 TIMSS survey, Hungarian students' scores decreased by 6 points in mathematics and 13 points in science. The diverging results of the TIMSS and PIRLS tests, which focus on the verification of the learnt curriculum, and the PISA test aiming to measure skills, suggest that Hungarian students learn the curriculum as expected of them, while in the case of real life examples they are unable to use their knowledge to an adequate degree.

4.9.101 Digital skills (2021)

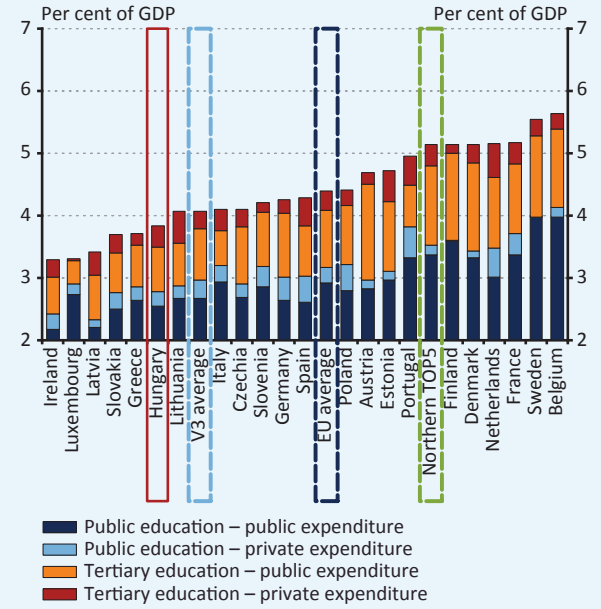


Note: Ratio of those with at least basic digital skills. No data available for Ireland for the age group of 16–19 years.

Source: Eurostat.

Based on the Eurostat's composite index measuring the level of digital skills, 73 per cent of the Hungarian youth aged between 16 and 19 years have at least basic digital skills (e.g. they have already copied a folder on the computer or found information about a service in the internet), which is around the average for the other Visegrád countries (75 per cent) and slightly higher than the EU average (69 per cent). Since the first survey, conducted in 2015, no major progress has been seen in Hungary or the EU average, which indicates that the European education systems were still not able to adjust sufficiently to the expectations of the digital age. Less than half of the total Hungarian population (49 per cent) has adequate digital skills, which is somewhat less favourable than the regional (53 per cent) and EU (54 per cent) averages. Developed Nordic countries are among the leaders in Europe in both age groups (total population: 70 per cent; age group of 16–19 years: 84 per cent).

4.9.102 Education expenditures as a percentage of GDP (2018)

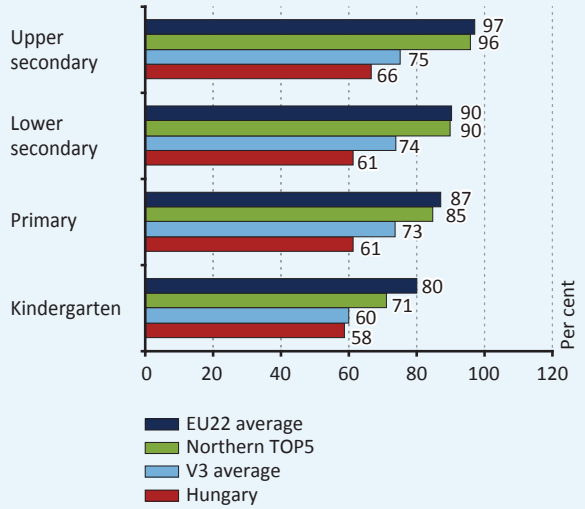


Note: Expenditures from international sources are shown among the private expenditures.

Source: OECD.

In 2018, Hungary spent 3.8 per cent of GDP on education expenses, which is slightly lower than the average of the other Visegrád countries (4.1 per cent), and 0.6 percentage point lower than the EU average (4.4 per cent). The rate of public expenditures in Hungary is 3.3 per cent, which is also broadly in line with the regional average (3.5 per cent), but falls short of the EU average (3.8 per cent). Hungary allocated 2.5 per cent of GDP to public education and 0.7 per cent to tertiary education from public sources. In Hungary, nearly 15 per cent of all expenditure came from private sources. The level of tertiary education spending in Hungary has increased significantly since 2018, but the ratio of private funding in Hungarian tertiary education is likely to continue to rise as a result of institutional model changes.

4.9.103 Teachers' wages as a percentage of the average wage of tertiary education graduates (2020)

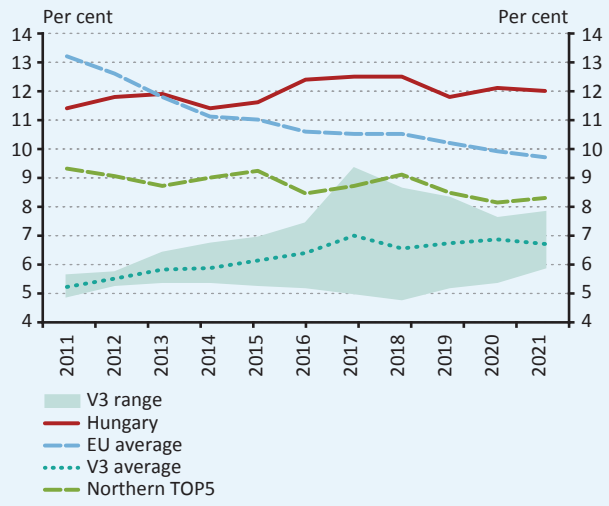


Note: As a percentage of the average wage of graduates holding tertiary education degree, employed full time throughout the year, in the age group of 25–64 years.

Source: OECD.

Of the OECD member EU countries, the wage of Hungarian teachers is the lowest compared to the average wage of tertiary education graduates. In Hungary the average wage of teachers working in schools amounts to 61–66 per cent of those holding tertiary education degree. This falls short of the average of the other Visegrád countries (73–75 per cent), and it is significantly lower than the average level of the EU countries, being 87–97 per cent of the graduates' average wage. In Hungary the introduction of the teachers' career path model in 2013 substantially increased teachers' wages, but the Hungarian teachers' wages failed to keep pace with the dynamic wage growth in the economy.

4.9.104 Early leavers from education and training

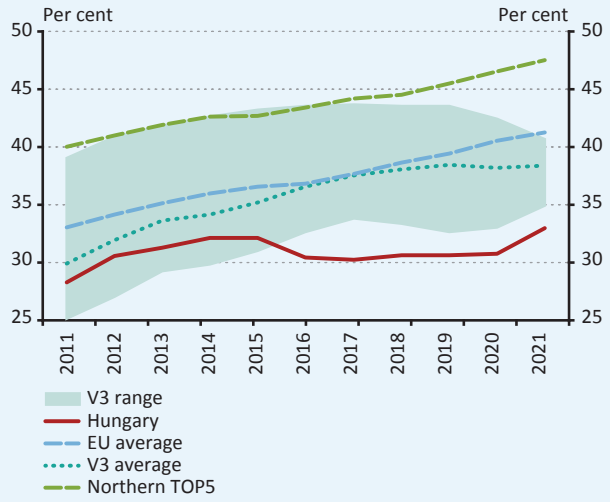


Note: Ratio of those having primary education at most and do not participate in further education in the age group of 18–24 years.

Source: Eurostat.

Early school leavers are people aged 18–24 who finished only elementary school at most and do not participate in any further education or training. In Hungary the rate of early school leaving without qualification was 12.0 per cent in 2020, almost double the average of the other Visegrád countries (6.7 per cent). In the Europe 2020 strategy, the European Union has set 10 per cent as the target to be realised; after 10 years of gradual decline, the EU average has already realised by now (9.7 per cent in 2020). By contrast, in Hungary the level of early school leaving rose from 11.4 per cent registered in 2011 to 12.0 per cent in the last 10 years. The other Visegrád countries also registered a growth (from 5.2 per cent to 6.7 per cent); nevertheless, Hungary's regional competitors still achieve considerably better results. For young people with no secondary or vocational qualification it is much more difficult to find a job in the labour market, and many of them become economically inactive for a long time.

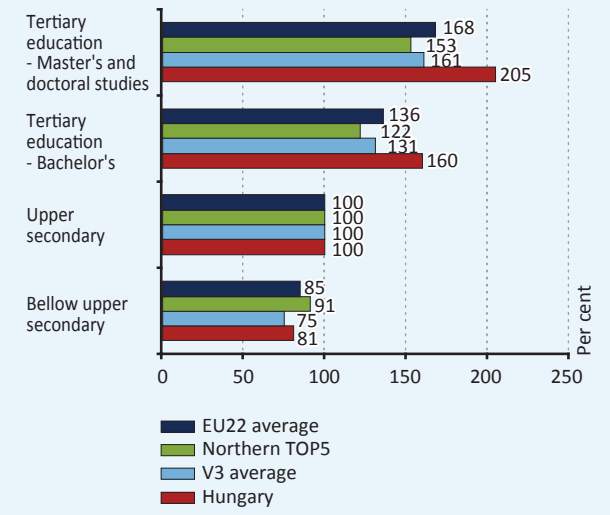
4.9.105 Tertiary educational attainment in the age group of 25–34 years



Source: Eurostat.

In Hungary, in the age group of 25–34 years the ratio of tertiary education graduates was 33 per cent in 2021, the highest in Hungary in the past decade but still only the 3rd lowest value in the European Union. The EU average rose by 8 percentage points within 11 years from 33 per cent registered in 2011, while the other Visegrád countries achieved similar improvement (from 30 per cent to 38 per cent). By contrast, in Hungary the rise of 4 percentage points (from 28 to 32 per cent) between 2011 and 2014 was followed by a moderate decline. The high increase in Hungary in 2021 (from 30.7 per cent to 32.9 per cent) was significantly attributable to the fact that in consideration of the coronavirus pandemic between the spring of 2020 and August 2021 even those could receive their degrees, which may have been 'stuck' for years, who had not passed the language exam required for receiving the degree. As a result of the measure, nearly 140 thousand students received their degrees without passing a language exam. The increase of the ratio of tertiary education graduates is indispensable for the change of economic model, since the availability of highly qualified employees in sufficient number is essential for the operation of the economic model driven by innovation.

4.9.106 Relative earnings of workers by educational attainment (2019)

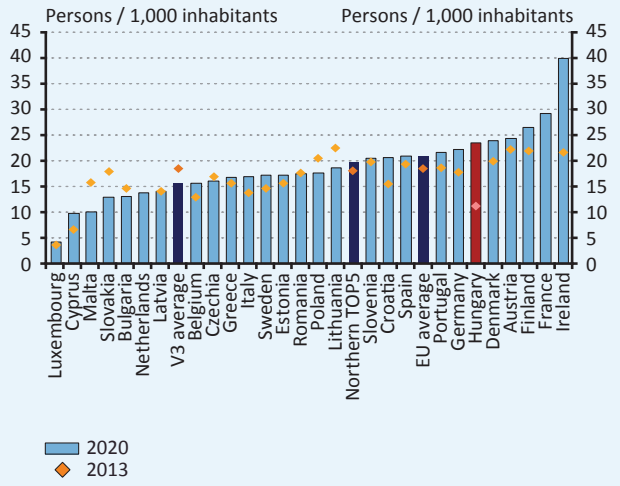


Note: Upper secondary = 100.

Source: OECD.

In Hungary, due to the relatively low ratio of graduates, the wage premium of a tertiary education degree – compared to the wage of those with upper secondary education – is high in an international comparison. A bachelor degree earns by 60 per cent higher average wage for the employee, while the wage with masters or doctorate degree is more than twice higher than the wage of those with upper secondary school qualification. This latter value is the highest among the EU member states, which means that it is particularly worth investing in tertiary education in Hungary. The employment data also show that it is worth continuing studies in tertiary education, since the employment rate of graduates (86 per cent) is higher than that with upper secondary school qualification (79 per cent) (OECD Education at a Glance 2021).

4.9.107 Ratio of STEM graduates

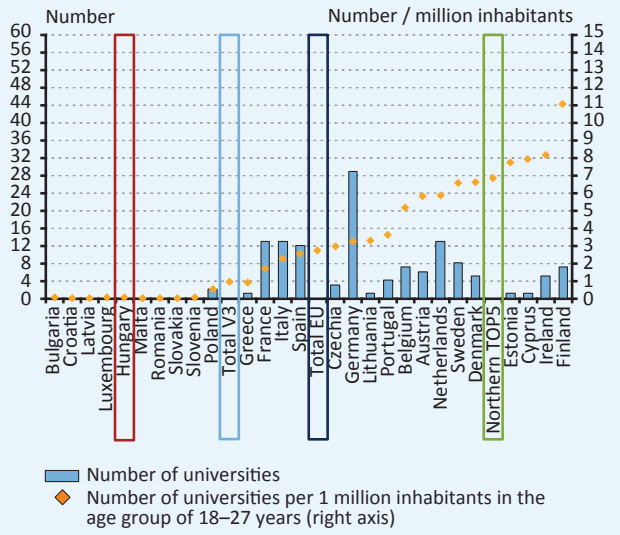


Note: STEM graduates include those who earned their degree in the area of natural science, mathematics, statistics, infocommunication, engineering, production and construction. Per thousand inhabitants in the age group of 20–29 years. No 2013 data are available for France and the Netherlands.

Source: Eurostat.

Compared to 2019, the number of STEM graduates as a proportion of the population nearly doubled in 2020. Hungary had 12.3 new STEM graduates for thousand inhabitants aged 20–29 in 2019. The Hungarian value was the 4th lowest in the EU overall lower than the regional (16.4) and EU (17.9) averages. Compared to that, with a value of 23.5, Hungary was the 6th in the ranking of EU countries in 2020. The spectacular domestic growth was the consequence of the fact that between the spring of 2020 and August 2021 even those could receive their degrees, which may have been 'stuck' for years, who had not passed the language exam required for receiving the degree. All this points out that in the future it will be especially worth dealing with the developing of the foreign language knowledge of STEM students, since the 2020 results and other tertiary education statistics also show that STEM studies are not unpopular in Hungary. The ratio of STEM graduates in the economy has major effect on innovation, and thus increasing the number of them can contribute to the changeover to the innovation-driven economic model.

4.9.108 Number of tertiary education institutions ranked in the world's top 500 universities (2022)

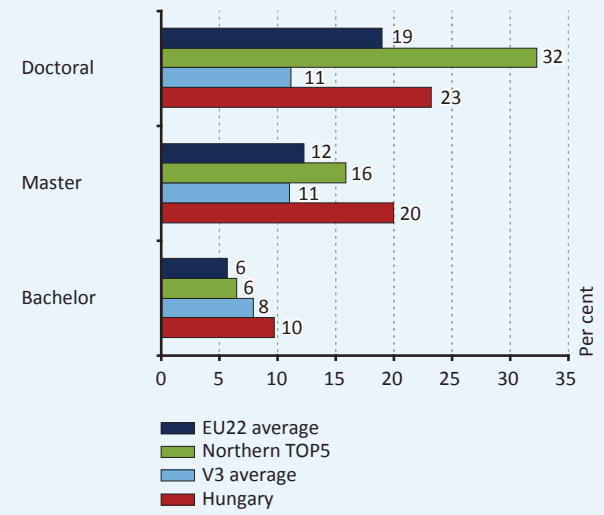


Note: Based on the ranking applicable to the academic year of 2022/2023. Calculated based on the number of inhabitants on 1 January 2021. In total, 131 universities in the European Union, 5 in the V3 countries and 34 in the Northern TOP5 countries are among the world's top 500 universities.

Source: QS World University Ranking.

Based on the international rankings of tertiary education institutions, the Hungarian universities are not among the highest ranked institutions of the world. According to the QS World University Ranking no Hungarian institution is included among the world's top 500 universities (the University of Szeged is ranked 551-560). The whole QS ranking, consisting of more than 1,400 universities, contains 11 Hungarian universities in total. The best tertiary education locations are strongly concentrated in space: the top 500 universities of the world include 29 in Germany and 13-13 in France, Spain and the Netherlands. The new EU member states that joined since 2004 can claim only 8 such institutions in total (Czechia 3, Poland 2, and each of Estonia, Lithuania and Cyprus 1). When examining the number of top universities as a percentage of the population, the best tertiary education systems are in Finland, Ireland, Cyprus and Estonia.

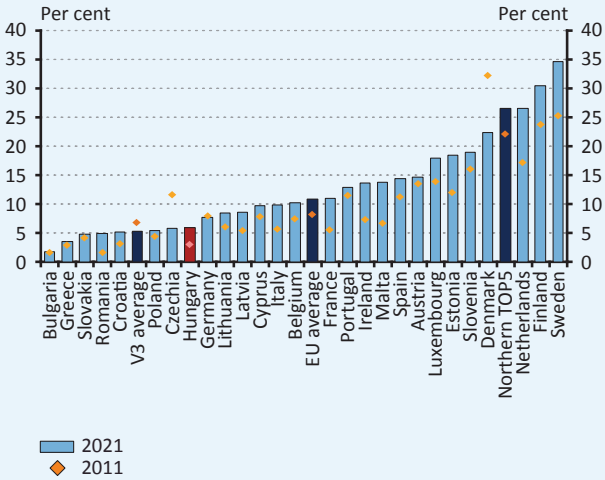
4.9.109 Ratio of international students by the level of tertiary education (2019)



Note: The Netherlands 2018.
Source: OECD.

One important measure of the perception of Hungarian tertiary education system is the ratio of international students. In this area Hungary improved its results further, and thus it already significantly outperforms its regional competitors, and also exceeds the average EU level. The ratio of foreign students in Hungarian undergraduate education rose by further 1 percentage points to 10 per cent, exceeding the EU (6 per cent) and regional averages (8 per cent). The indicator's value for master level is also higher in Hungary (20 per cent) than the EU average (12 per cent) and almost the double of the average for the other Visegrád countries (11 per cent). In the area PhD training, involving substantially fewer students, the ratio of international students in Hungary is also higher than the EU and Visegrád averages. In 2019, altogether 13 per cent of the students came from abroad in Hungary, which exceeds both the regional (9 per cent) and the EU average (8 per cent). In 2010, the ratio of international students in Hungary was merely 5 per cent, which has increased more than 2.5 times in the past decade. Nevertheless, the data presented do not yet contain the effect of the coronavirus pandemic. One of the most interesting questions of the coming years will be how higher education, and international mobility within that, will be rearranged by the pandemic.

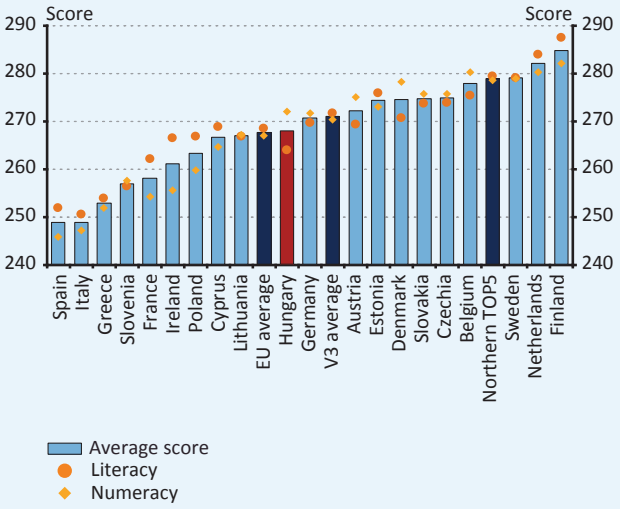
4.9.110 Participation in lifelong learning



Note: In the age group of 25–64 years.
Source: Eurostat.

According to the Eurostat definition, in the age group of 25–64 years those are considered to be participants in lifelong learning who received training or education in the 4 weeks preceding the survey. The continuous training of employees becomes increasingly important in order to keep abreast with technological progress. In Hungary 6 per cent of the adult population participated in lifelong learning in 2021, which slightly exceeds the average of the other Visegrád countries (5 per cent), but just over half the EU average (11 per cent). Compared to 2020, the Hungarian figure in 2021 became higher by 1 percentage point, and now is the double of the 2011 level (3 per cent). There are major differences in this indicator between the European countries: while in the most developed Northern countries the average ratio of those participating in regular continuing training is 27 per cent, in Bulgaria this ratio is only 2 per cent.

4.9.111 Results of the PIAAC test assessing adult competencies (2011-2017)

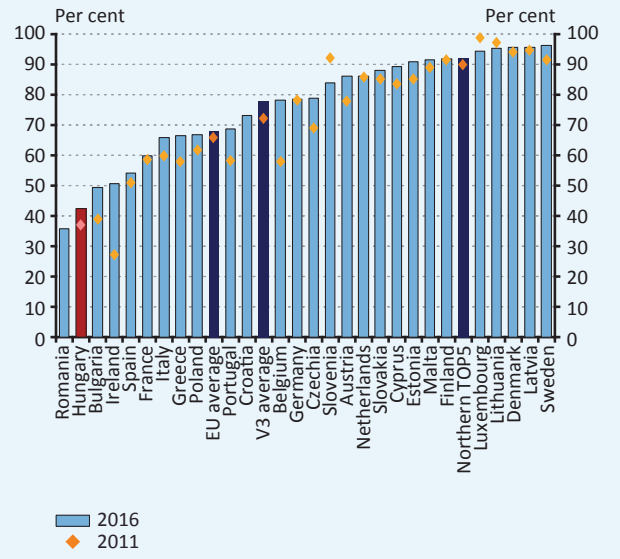


Note: In the age group of 16–65 years.

Source: OECD.

Between 2011 and 2017, the OECD assessed in its member states the basic competencies of the population aged between 16 and 65 years in the area of literacy and numeracy in three phases in total. Based on the assessment, the skills of the Hungarian population roughly correspond to the average level of the countries of the region and the EU. In the literacy test Hungary scored 264, which exceeds the EU average by 4 points, but is lower than the average of the other Visegrád countries by 8 points. In the area of numeracy Hungary scored 272, which was slightly exceeded by the EU (268) and the V3 (270) average. However, it should be noted that – contrary to the PISA tests measuring the skills of young people – in the tests assessing the adult population the ratio of the underperformers (i.e. those not reaching the minimum target) in Hungary (14 per cent) was only moderately higher than the EU average (13 per cent). The results of the PIAAC test show that the skills of Hungarian employees correspond to the average level of the European Union, which confirms that the lower productivity of Hungary cannot be attributed to lack of the employees' basic skills. The next round of the PIAAC test starts in 2022, and its findings are expected to be made public in 2024.

4.9.112 Ratio of people speaking at least one foreign language

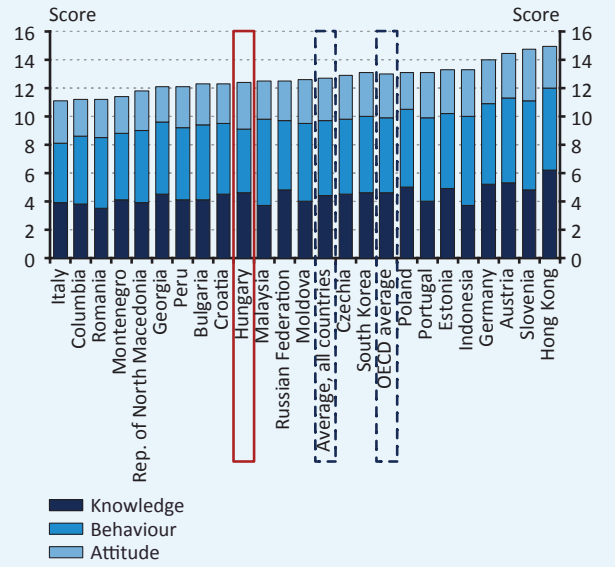


Note: In the age group of 25–64 years. No data are available for Romania and Croatia for 2011.

Source: Eurostat.

In 2016, Hungary had a significant convergence reserve compared to the averages of the countries of the EU and the region in terms of the people who, by their own admission, speak at least one foreign language. A mere 42 per cent of the Hungarian population spoke at least one foreign language, while the ratio of those who spoke at least two foreign languages did not reach 14 per cent. By contrast, in the European Union on average 68 per cent of the population spoke at least one foreign language, while this ratio was 78 per cent on average in the other Visegrád countries in 2016. The high average value of the V3 countries is greatly attributable to the fact that in Slovakia – partly due to historical reasons – 88 per cent of the population speaks at least one foreign language, while 28 per cent of the population speaks 3 or more foreign languages. The absence of foreign language skills substantially reduces the opportunities of the employees, as they have no or only limited access to several knowledge sharing channels (e.g. specialist literature, internet sources). This in practice reduces knowledge, learning and innovation capacity, which curbs economic development.

4.9.113 Financial literacy (2020)



Note: in the age group of 18–79 years The Northern TOP5 average is not shown due to lack of data.

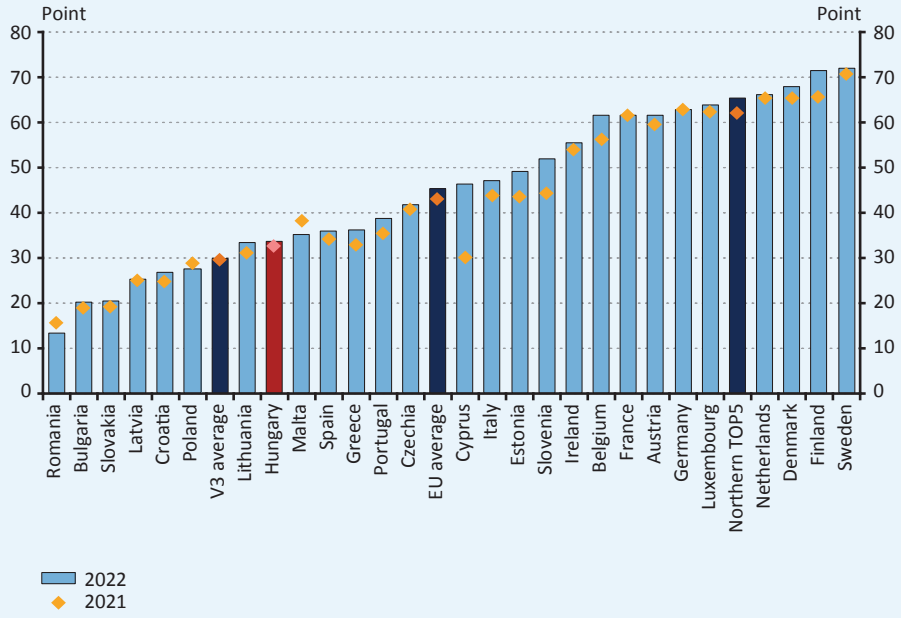
Source: OECD/INFE.

In 2020, the OECD's International Network on Financial Education (INFE) repeatedly conducted a wide-ranging survey to assess financial literacy in each country. Out of the 23 countries in the survey, Hungary came 14th with a score of 12.3, slightly lower than the 12.5 it had scored in the previous (2014) survey. Hungary is in the front of middle range (8th place) in financial knowledge, at the end of the ranking (22nd place) in financial behaviour and among the leaders (2nd place) in financial attitude, which corresponds to the results of the previous survey. Hong Kong finished 1st in the test, followed by Slovenia, Austria and Germany in the ranking. Of the maximum reachable 21 points, even the one that received the highest score (Hong Kong) reached only 14.8 points, while the average of participating OECD countries was 13.0 points, thus there is plenty of room for improving financial literacy in all countries. The raising of financial literacy supports the unfolding of financial opportunities, while the low level of it curbs growth. From September 2020, basic financial skills were included in several subjects, which is expected to increase the population's skills level and behaviour in the long run in Hungary.

4.10 RESEARCH, DEVELOPMENT AND INNOVATION

There is progress in Hungary in the area of research and development and innovation (R&D&I) activities, but still significant growth reserves can be identified in this area, and its exploitation would facilitate the increase in productivity as well. The shift from an investment-driven to an innovation- and knowledge-driven growth model calls for a further increase in R&D expenditure and R&D personnel. However, the research, development and innovation ecosystem does not only depend on funding and headcount conditions, but also on the expansion and development of the innovation capacities of enterprises, the existence of skills of using the latest technologies, and thereby the penetration of digitalisation and automation across the economy. It would promote the convergence of SMEs regarding their innovation performance if the number of domestic companies cooperating with each other and with other institutions for innovation purposes increased. In 2022, Hungary was ranked 20th among the 27 EU Member States in the Research, development and innovation area with 33.5 points, the lowest score out of the 14 areas under review. Compared to 2021, Hungary's performance increased by 1.2 points, and its level exceeds the V3 average (29.6 points), but is below the EU (45.2 points) and the Northern TOP5 (65.0 points) averages.

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.

In Hungary, research and development expenditures as a percentage of GDP increased to 1.6 per cent in 2020. Although it is higher than the average of other Visegrád countries, it is still below the national target of 1.8 per cent undertaken for 2020. In Hungary, the R&D expenditures-to-GDP ratio increased from 1.13 percent to 1.61 percent between 2010 and 2020. Although R&D expenditures are the second highest in Hungary following Czechia in the Visegrád region, the 1.8 per cent target set for 2020 was not achieved. Achieving the 2.0 per cent level recommended in the MNB's Competitiveness Programme and the 3.0 per cent level set forth in the Research and Development Strategy for the period between 2021 and 2030 shows the possibility of major progress in this area. While the degree of Hungarian business R&D expenditures is the 10th highest in the European Union, and government support to corporate R&D expenditures in Hungary is the 4th most generous across EU Member States, the decline in higher education and state R&D expenditures as a percentage of GDP was the 6th greatest in Hungary within the European Union between 2010 and 2020. The ratio of R&D employment exceeds the V3 average, and came close to the EU average, but is lower than the average of the most sustainable Nordic countries, indicating further domestic reserves in the expansion of scientific employment.

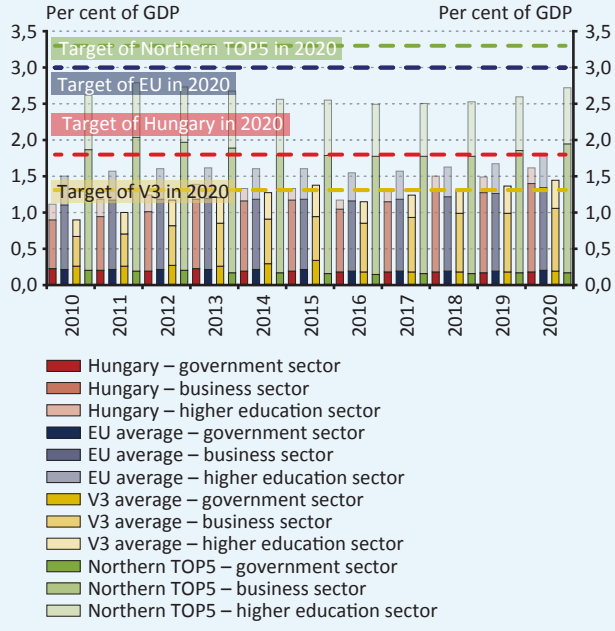
The number of new patents registered in Hungary annually is considerably lower than the EU and Visegrád average, which – under increasing research and development expenditures – implies that with increasing R&D expenditure,

resources are not being used efficiently. Firstly, the low – and in the past decade decreasing – Hungarian value is attributable to the fact that large multinational companies register new technological achievements in their respective home countries even if they were not developed there. Secondly, most of the knowledge-intensive business research activity is carried out in the core countries of the EU. In addition, the lack of favourable taxation of incomes from intellectual property rights also limits the increase in the number of patents. In the past decade, research efficiency in Hungary decreased more intensively than in other Visegrád countries and in the EU, evidenced by the permanent fall in the number of patents per one unit of research and development expenditure.

The innovation capacity of the Hungarian SME sector is in the bottom third of the EU Member States, significantly lagging behind the EU average and the most sustainable Nordic countries, and being in a similar position as the other Visegrád countries. In Hungary, the ratio of SMEs engaged in product innovation (20 per cent) has risen by some 10 percentage points since 2013, slightly exceeding the average of the Visegrád partner countries (17 per cent), but still falling short of the averages of the EU (29 per cent) and the Northern TOP5 countries (37 per cent). Hungarian SMEs' willingness to cooperate with other companies or institutions for the purpose of innovation also means competitiveness reserves. The improvement in innovation indicators reflects the gradual adoption of new technologies, robotisation and digital solutions. Only one tenth of the Hungarian SME sector uses advanced digital business solutions. The innovation capacity of Hungary is usually characterised not only by single indicators, but also by composite indices. According to the 2021 results of the Bloomberg Innovation Index and the Global Innovation Index, Hungary's innovation performance is behind the Northern TOP5 and EU countries, in a similar position to those of the other Visegrád countries.

The level of development of the Hungarian Internet infrastructure is competitive in international comparison, but this technological advantage is not sufficiently exploited in everyday life by companies, households or the public administration. The digitalisation process represents a new aspect of research, development and innovation, serving as a basis for the introduction of the latest technologies and thereby contributes to the increasing of productivity of the business sector. The EU Digital Economy and Society Index (DESI) and the IMD Digital Competitiveness Ranking are used to measure the maturity of digitalisation. On the basis of the former, Hungary's ranking is lower than that of the most sustainable Northern and EU averages, and is similar to the Visegrád average. Hungary is ahead of its Visegrád competitors in the DESI ranking of internet access indicators, but still has significant growth reserve in the use of digital solutions in enterprises, in the use of e-governance and in the digital skills of the workforce. Similar conclusions can be drawn also from the IMD Digital Competitiveness Ranking.

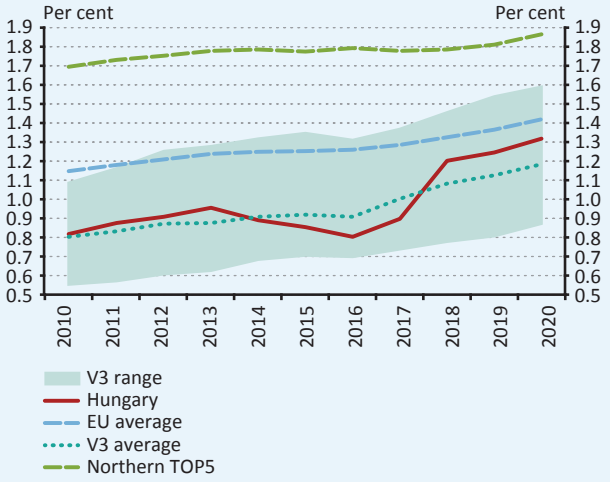
4.10.114 Research and development expenditures in the economy and by sectors



Source: Eurostat.

In Hungary the research and development expenditures as a percentage of GDP rose by 43 per cent between 2010 and 2020. Thus, the ratio of the R&D expenditures relative to gross domestic product (1.61 per cent) is the second highest in Hungary, after Czechia, among the countries of the Visegrád region. However, this figure falls short of the European Union's average of 1.8 per cent, the 1.8 per cent target set by the Hungarian government for 2020 and also of the 2.0 per cent target included in the MNB's Competitiveness Programme. Hungarian R&D expenditures increased by nearly 9 per cent between 2019 and 2020. The rise in the total expenditure level was mostly caused by the increase in the research expenditures of the business sector. At the same time, the decline in government and higher education R&D expenditures as a percentage of GDP was the 6th greatest between 2010 and 2020. Pursuant to the Hungarian government's R&D&I strategy for 2021–2030 the objective is that Hungarian R&D expenditures should reach 3 per cent of GDP by 2030, which would facilitate the transition to an innovation- and knowledge-driven model.

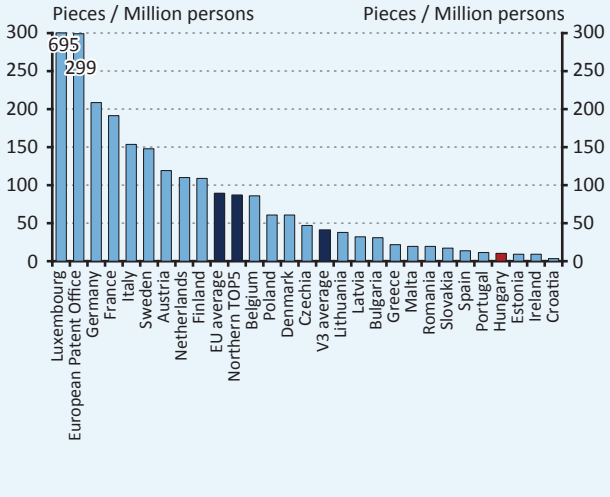
4.10.115 Research and development personnel as a proportion of the labour force



Source: Eurostat.

The higher number of the research and development employees supports the more efficient use of the R&D funds, thereby contributing to the increasing of productivity and to the development of knowledge intensive industries. It is positive that the Hungarian figure, which followed a declining trend between 2014 and 2016, has been once again increasing since 2017. In 2018, the ratio of R&D employees in Hungary returned to the level observed between 2009 and 2013, exceeding the Visegrád average, and in 2020 the ratio of R&D employees in total employment increased to 1.3 per cent. In 2020, the ratio of researchers was only 0.1 percentage point lower in Hungary than the EU average, but compared to the most sustainable Nordic countries an 0.6 percentage point lower ratio was observed. The increase in R&D headcount may be facilitated by the development of the research and innovation ecosystem as well as by a further rise in researchers' wages.

4.10.116 Total patent grants (2020)

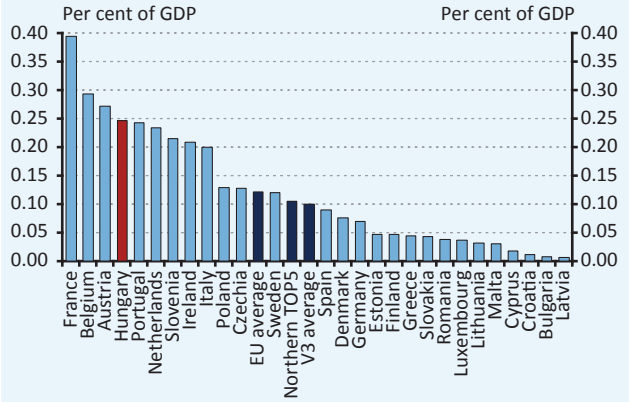


Note: The value belonging to Luxembourg is 695. The value belonging to the European Patent Office is 299. No data are available for Cyprus and Slovenia.

Source: World Intellectual Property Organisation, World Bank.

In Hungary, the number of patents per 1 million people registered in a year (10 ea) reaches only nearly one tenth of the EU average (89 ea) and one quarter of the Visegrád average (41 ea). This is partly the consequence of the more active R&D activity in Western European countries, and partly due to the fact that foreign-owned enterprises – even if they carry out research in Hungary – register new patents in home country of the company. The payment of the maintenance fees of the patents submitted during the coronavirus pandemic was temporarily suspended for 3 years by the state, but at the same time the lack of favourable accounting of the income obtained from patents also prevents the domestic patent activity from becoming more intensive. In 2020, according to professional fields the number of patent applications per 1 million people was the highest in the pharmaceutical industry (88 ea), digital communication (42 ea) and biotechnology (36 ea) in Hungary, which does not mean an automatic registration of the patents by the authorities. It only means that their evaluation process was started. In Hungary, the number of registrations, i.e. positive evaluations of new patents compared to the population was the highest in the pharmaceutical industry (1.3 ea), the organic chemical industry (1.2 ea) and the basic material chemical industry (0.9 ea) in 2020. Green and digital transition represents an exceptional opportunity to boost patent activity in these and other segments.

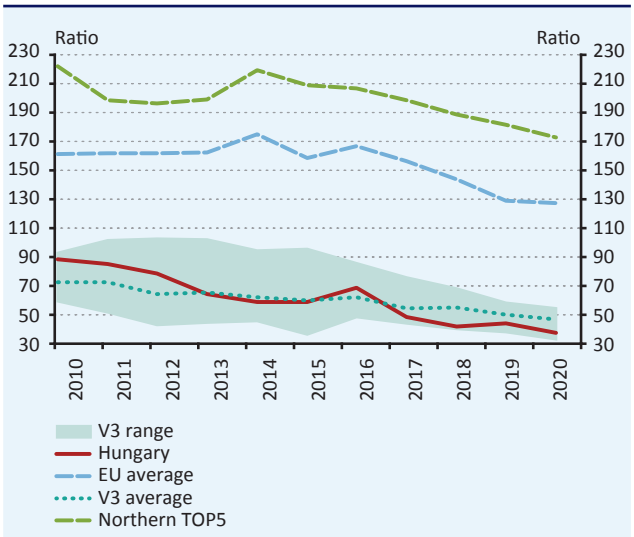
4.10.117 Direct and indirect government funding of R&D expenditure of enterprises (2019)



Note: Data are available for 2016 for Romania and 2018 for Spain.
Source: OECD.

Increased R&D spending, and thereby growth in business innovation and patenting activities, can be facilitated by supporting R&D spending of private sector through direct budgetary and indirect tax systems. In Hungary, public support for business R&D spending (0.25 per cent of GDP) is the fourth most generous in the European Union. The costs of corporate research and development are deductible from the corporate tax base and as part of the development tax allowance, investments in research and development exceeding HUF 100 million are deductible from the calculated corporate tax. Furthermore, R&D expenditure can be also deducted from the local business tax base. There is also an allowance for the social contribution tax of researchers. R&D grants to enterprises may help increase business R&D spending.

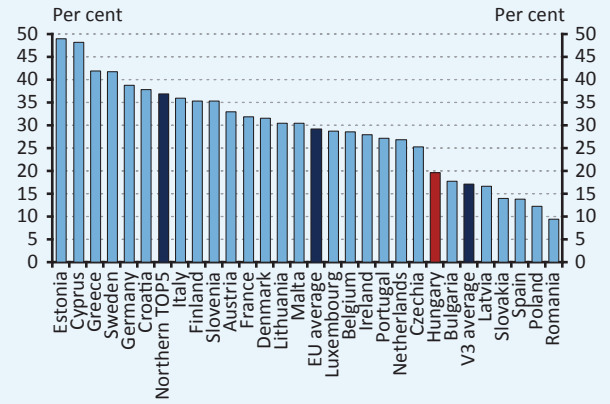
4.10.118 Efficiency of R&D expenditures



Source: Eurostat, World Intellectual Property Organisation, MNB.

The efficiency of the research and development expenditures becomes measurable by the number of patents per one unit of R&D expenditure. The higher number of patents per one unit of research and development expenditure implies more efficient use of funding. Research efficiency of Hungary was above the average of its Visegrád competitors until 2012, close to the average between 2013 and 2016, and then fell below the V3 average from 2017. The declining efficiency in research and development is a global phenomenon; creating new ideas and innovations and their marketing is an increasingly costly process. In the case of Hungary the value of the indicator may be further reduced by the fact that regarding some of the results of their development foreign-owned companies apply for patents outside Hungary, but the research and development take place at sites in Hungary.

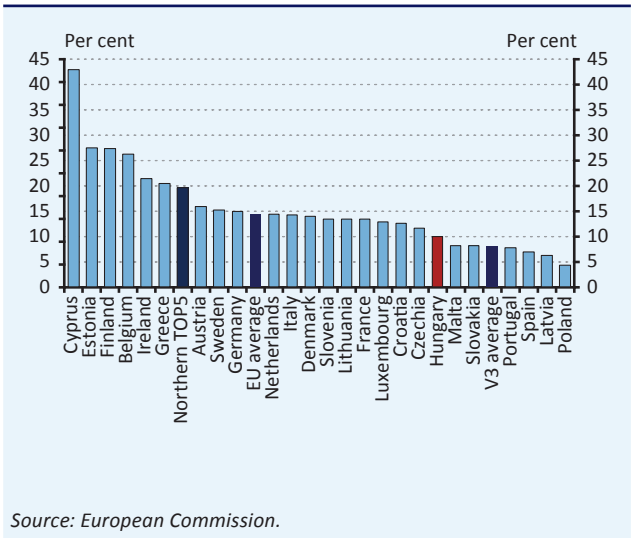
4.10.119 SMEs with product innovations (2020)



Source: European Commission.

The ratio of Hungarian SMEs launching new products was lower than the EU average in the period of 2013–2020, but in 2020 the Hungarian ratio slightly exceeded the V3 average. When analysing the change of the result in time, the value of the indicator rose by almost ten percentage points compared to 2013. Only 12 per cent of Hungarian SMEs use advanced digital business solutions (ERP, CRM, e-invoicing, cloud technology, big data, 3D printing, industrial or service robots), which is lower than the regional average of 18 per cent and half the EU average of 24 per cent. Based on the results, the application of these technologies is unable to keep pace with the development of digital networks in Hungary and in the EU member states alike. In order to increase the value of the indicator, it is not necessary to perform basic researches and more complex developments, as it can be also increased by the practical implementation of the already existing innovative solutions in the production of enterprises. The ratio of SMEs conducting product innovation is one of the indicators in the Summary Innovation Index of the European Commission. In the Summary Innovation Index 2021, Hungary is ranked 22nd among the 27 EU Member States. The strengthening of Hungary's research and development and innovation activity would contribute to its upgrading in the global value chains.

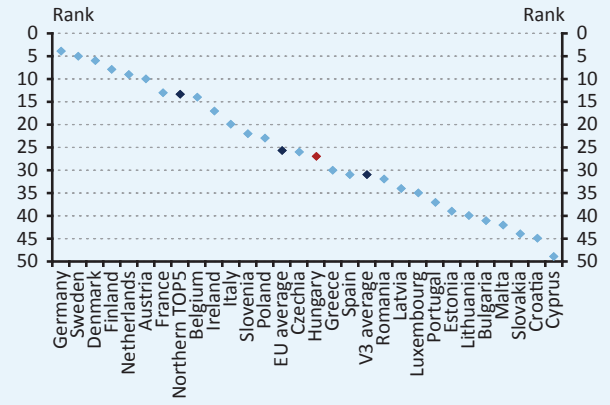
4.10.120 Ratio of SMEs collaborating with other companies or institutions for innovation (2020)



Source: European Commission.

In addition to the number of innovations by SMEs, the efficiency and productivity of the domestic business sector is also determined by the extent of the SMEs' cooperation with one another and with other institutional, higher education actors of the innovation ecosystem for the purpose of developing new products or manufacturing processes. The 10 per cent ratio of Hungarian SMEs cooperating with other companies or institutions for the purpose of innovation is lower than the 15 per cent EU average or the 20 per cent average of the most sustainable Nordic countries. The 8 per cent V3 average is exceeded by the domestic ratio, which nearly doubled between 2013 and 2020, although from a low value. The increasing number of cooperating SMEs is a measure of the maturity of the domestic corporate sector, and its value may be raised further through the strengthening of entrepreneurial culture as well as by the increasing of the number of financial schemes that support SME innovation tied to cooperation conditions.

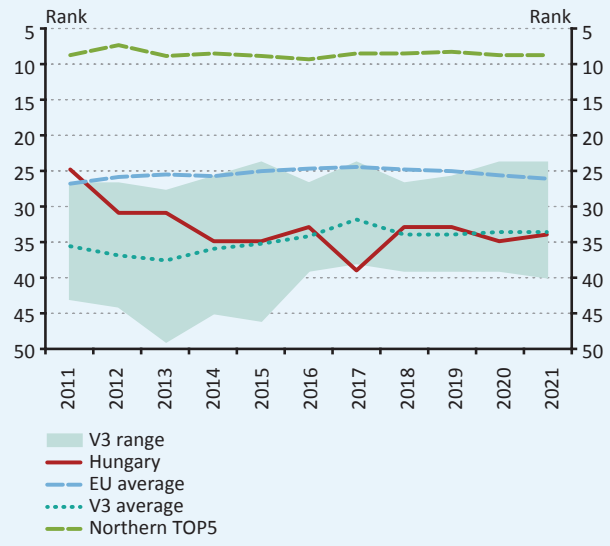
4.10.121 Bloomberg Innovation Index (2021)



Source: Bloomberg.

The Bloomberg Innovation Index assesses and ranks the innovation performance of countries in seven categories based on statistical indices, and then based on results achieved in the categories it compiles an aggregate score and ranking. Hungary is 27th among the 111 ranked countries. According to the Bloomberg Innovation Index, innovation maturity of Hungary slightly exceeds that of the other Visegrád countries and falls short of the average ranking of EU only minimally. Major growth reserve may be identified in relation to catching up with the most sustainable Nordic countries, which are 13th in the ranking. In the areas of intensity of research and development and presence of high-tech companies, the Hungarian ranking exceeds the averages of both the EU and the region. However, in the areas of higher education efficiency, patenting activity and labour productivity, which are closely linked to innovation capacity, Hungary has convergence reserve when compared to the EU and V3 averages.

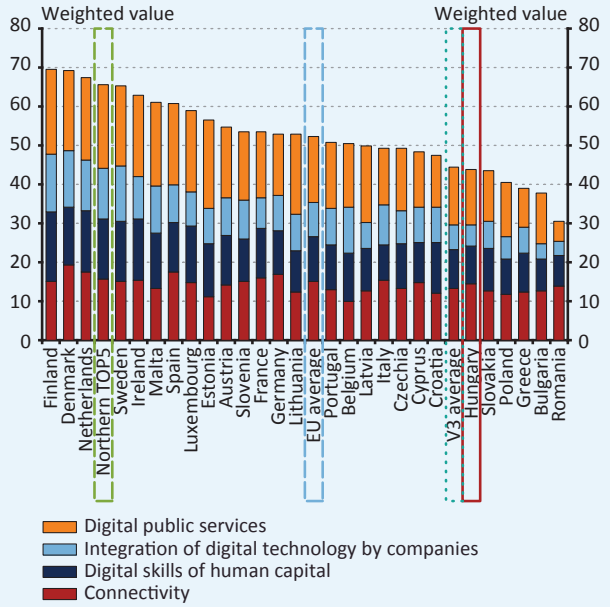
4.10.122 Global Innovation Index



Source: Cornell University, INSEAD – The Business School for the World, World Intellectual Property Organisation.

The Global Innovation Index is a composite competitiveness index measuring innovation performance and the conditions of it in 7 areas, ranking 132 countries. 78 per cent of the assessed 81 indicators are objective and 22 per cent of them are subjective, survey-based values or values based on composite indicators of other organisations. In addition to the innovation performance, the index also assesses the institutional environment, the quality of human capital, the business environment and the quality of infrastructure. Hungary takes the 34th place in the ranking, which is the same as the average position of other Visegrád countries (34th) and lagging behind the average of the EU by nine places (25th). Hungary achieved the best ranking (20th) in the knowledge and technological performance area, while its ranking is the worst (65th) in the sophistication of market economy operation. Hungary's performance is excellent in terms of the share of creative goods within total trade as well as in terms of the number of environmental (ISO) standards acquired and the number of researchers in the corporate sector. Nevertheless, there is ample room for progress in the area of creating affiliated undertakings and strategic alliances, of increasing the number of trademark applications and in the rise in the number of venture capital transactions related to the financing of innovation.

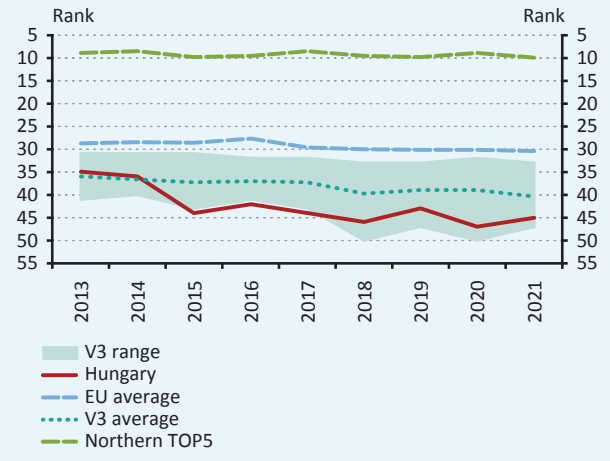
4.10.123 EU Digital Economy and Society Index (2022)



Source: European Commission.

The Digital Economy and Society Index calculated by the European Commission (EU DESI) evaluates the digital development of EU Member States by giving equal weighting of 25 per cent to each of the components – digital skills of human capital, internet access, integration of digital technology by companies and digital public services. Improving one position compared to 2021, Hungary is the 22nd in the ranking within the European Union in 2022. Hungary's digital maturity is lower than the EU and Northern TOP5 averages, but nearly corresponds to the V3 average. Of the four components, Hungary's performance is the best in the area of connectivity (13th), but in integration of digital technology by companies (25th), digital skills of human capital (23rd) and e-governance (21st) there is still ample room for growth. Based on these, progress is equally needed in the digitalisation of the business and public sectors as well as in the improvement of digital skills of individuals.

4.10.124 IMD Digital Competitiveness Ranking



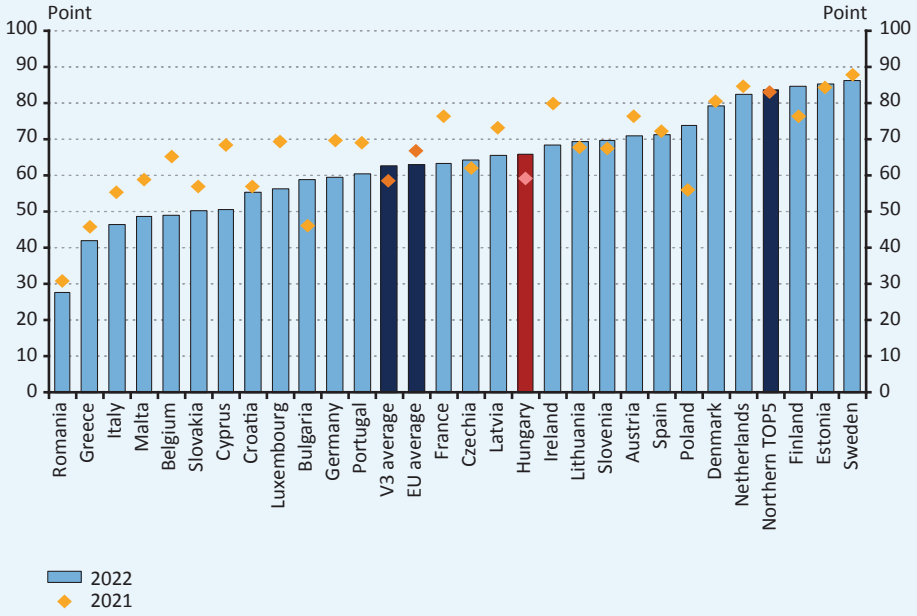
Source: IMD.

The IMD Digital Competitiveness Ranking measures the digital maturity and preparedness of individual countries based on 52 indicators, 60 per cent of which is based on statistical data, and 40 per cent is the result of questionnaire-based survey. The assessed 64 countries corresponds to the range of advanced economies analysed in the general competitiveness ranking of the IMD. Both Hungary and the Visegrád region are behind the EU average. Hungary's ranking improved by two places from 2020 to 2021. In the internet speed indicator (4th), Hungary improved 9 places and became one of the countries with the fastest internet speeds in the world, according to IMD. Nevertheless, the number of mobile broadband Internet subscriptions as a proportion of the population is still low (54th), although compared to 2020 Hungary's ranking improved 4 positions in this indicator. Hungary improved 11 places in the ranking in the indicator 'enterprise supporting nature of technological regulations' (39th) and 7 places in 'research activity stimulating innovation' (39th), and there was some minor progress in the area of R&D expenditures and headcount as well (25th each). Similarly to the EU DESI, the IMD Digital Ranking also shows that the widespread use of the achievements of corporate digital technologies and e-governance as well as the related necessary development of citizens' and firms' digital skills may contribute to the strengthening of the digital economy.

4.11 EFFICIENT GOVERNANCE

In its capacity as employer, regulator and service provider, the state stands out from economic agents. Therefore, the efficient functioning of the sector is essential for the improving of competitiveness. The state influences the behaviour of economic agents through various channels. For example, its regulatory activity has a direct effect on the business environment. Complying with these rules is a task that requires an extreme amount of resources; the maintenance of bureaucracy deprives the main economic agents of a certain amount of resources. Efficiency is an important aspect during the operation of the state, which means that it is desirable to create an optimal environment for economic agents that entails the weakest distorting effect. In the area of Efficient governance, with 64 points Hungary finished 12th among the 27 EU countries; compared to 2021, Hungary's performance increased by 5.2 points. Hungary achieved a higher score than the averages of the V3 countries (62.8) or the EU countries (62.9). Nevertheless, significant growth potential is identified in this area.

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

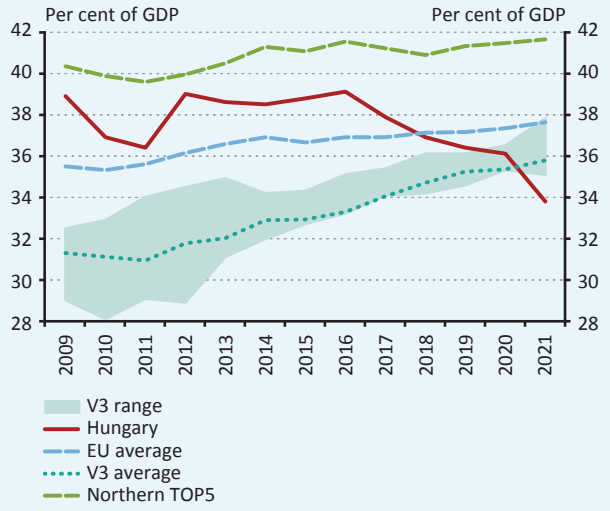


Source: MNB.

An important means of improving efficiency is the extension of e-government, which is in progress in Hungary, but further efforts are needed in many areas. There was special focus on the extension of e-government in Hungary in the past years, but even the example of Estonia, which shows the best practice, demonstrates that this is an extremely long process. An interesting duality is observed in Hungary: while according to the UN E-Government Development Index Hungary achieved the 2nd lowest performance in the European Union, online public administration is popular among the people. On the whole, there has been progress in some segments, but if the area is examined in a wider sense, significant growth reserve can be identified. For example, it would support the use of electronic services if a greater portion of the data of the forms submitted through the Internet was completed automatically, thus saving time for the users.

The gradual decline in the ratio of unpaid VAT strengthens the effectiveness of the measures that aim at whitening the economy. At the same time, the continuation of the favourable trend would be supported by the extension of digitalisation. As a result of conscious planning, the Hungarian tax system became fundamentally restructured in the past 10 years, shifting from taxes on labour towards taxes on consumption. The transition was facilitated by digitalisation as well; the introduction of the online cash register system, the Electronic Public Road Trade Control System (EKÁER) and online invoicing now allows the tax authority to see any invoice. As a result of the measures listed above, the efficiency of tax collection improved, and VAT revenues also increased dynamically. According to the estimation of the European Commission, between 2010 and 2019, within the European Union the 4th biggest decline in the ratio of unpaid VAT took place in Hungary. The draft VAT return may be one of the next important milestones in the extension of digitalisation. If it is implemented, the bureaucratic burdens on economic agents will decline further.

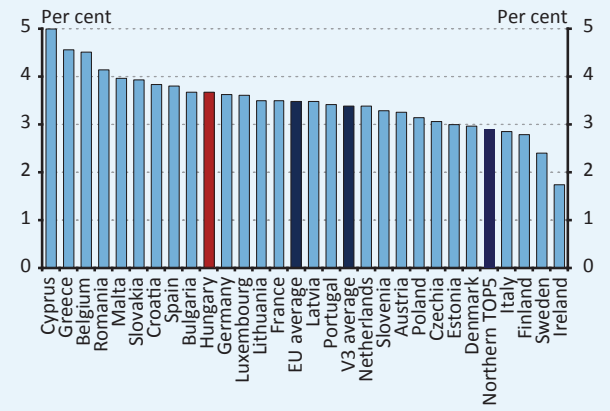
4.11.125 Tax centralisation



Source: AMECO.

Tax centralisation shows the degree of tax and contribution revenues compared to GDP. The index alone does not provide a complete picture of the structure and efficiency of a country's tax system, as in most cases it is a matter of preference whether a country considers higher-than-average or lower-than-average tax and contribution revenues acceptable. Nevertheless, the index adequately reflects the tax burden on the economy. The Hungarian tax centralisation declined from 39 per cent in 2009 to below 34 per cent by 2021, which is already lower than the EU (37.6 per cent) or regional (35.8 per cent) averages. As a result of the tax structure as well as the economic stimulus and whitening reforms after 2010, Hungary was able to depart from the increasing trends seen in the EU, and reduced the size of the tax burden considerably.

4.11.126 Public administration wage cost as a percentage of GDP (2020)

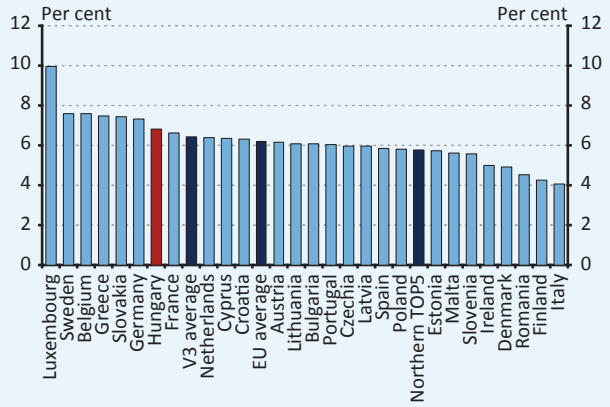


Note: The Hungarian figure does not include the estimated wage bill of public workers (members of Public Work Scheme). France data for 2019.

Source: Eurostat, MNB.

The maintenance of public administration is one of the extremely important tasks of the state, and as this activity may require significant resources, special attention needs to be paid to cost efficiency. One of the determinants of the administrative costs is the wage cost, which is directly related to the headcount of bureaucracy. In 2020, the wage cost of the administration in Hungary corresponded to 3.7 per cent of GDP, which was slightly higher than the averages of the EU countries (3.5 per cent) and the V3 countries (3.4 per cent). Wage costs as a percentage of GDP varied within a broad range across the European Union, with Cyprus showing the highest value (5 per cent) and Ireland showing the lowest one (1.7 per cent). The average of the Northern TOP5 countries was 2.9 per cent, while the figure for Austria was also not far from 3 per cent.

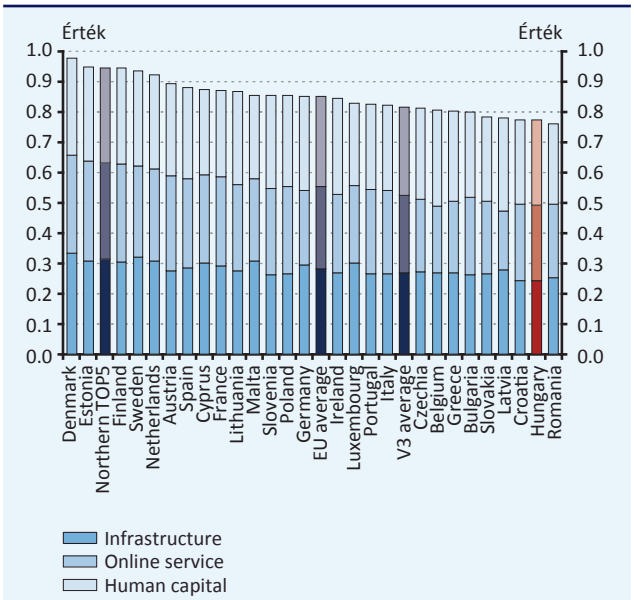
4.11.127 Ratio of public administration employees (2021)



Note: Net of armed forces occupations and elementary occupations.
Source: Eurostat, MNB.

In order to attend to administrative tasks, the state inevitably needs to take a certain amount of human resources from other areas of the economy. However, in order to improve competitiveness, the optimum headcount needs to be identified, with which the workforce, and thus public administration is able to perform its tasks. In 2021, 6.8 per cent of the employed in Hungary worked in the narrowly defined public administration. In comparison, the average for the V3 countries was 6.4 per cent, while the average for the European Union was 6.2 per cent. The difference is even greater if the figure for Hungary is compared to the Northern TOP5 countries, where 5.8 per cent of the employed work in public administration. In Hungary, the higher than average employment results in higher than average operating costs. In order to increase competitiveness, it is expedient to expand e-governance as widely as possible, which will ultimately contribute to reaching the optimum level of the number of employed.

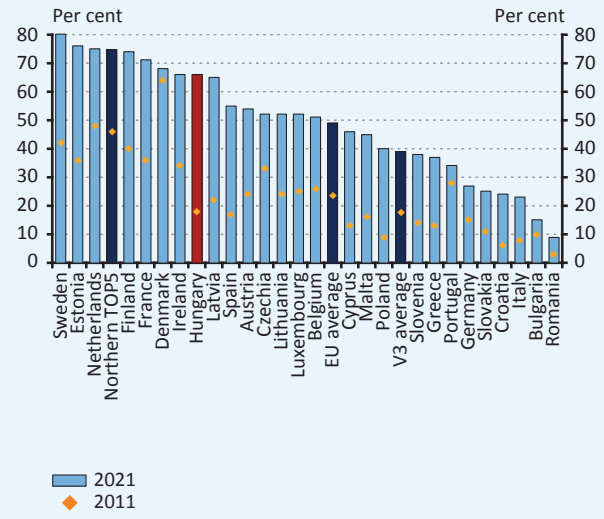
4.11.128 UN E-Government Development Index (2020)



Source: UN.

The United Nations (UN) has prepared its complex survey of e-governance since 2003, presenting its findings compressed into an aggregate indicator, the E-Government Development Index (EGDI). The indicators used for the ranking of countries can be classified into three main pillars: online services, infrastructure and human capital. Based on the EGDI index, which contains subjective and objective indicators as well, Hungary was able to precede only Romania in the EU ranking in 2020. Hungary's total score was 0.77, while the V3 and EU averages amounted to 0.82 and 0.85, respectively. It is important to emphasise that the data for 2020 do not yet contain recent years' improvements in e-governance (single basis for the IT systems of the central public administration, facial identification, continuous expansion of scope).

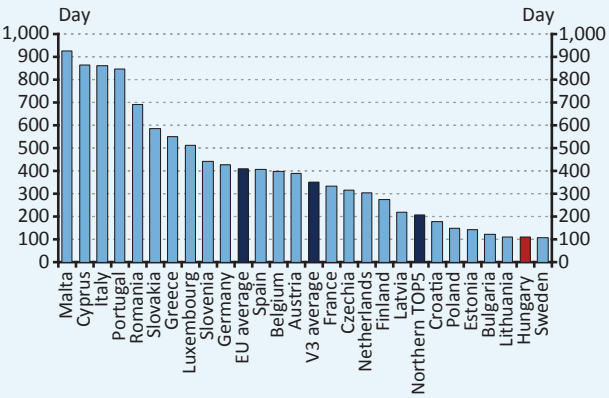
4.11.129 Public administration through the internet



Source: Eurostat.

An important achievement of the extension of e-governance, which aims at the improvement of competitiveness, is if the availability of online administration increases dynamically. The containment measures against the coronavirus and the reduction of physical contacts greatly contributed to the redirection of administration into digital space. The e-governance participation indicator shows the proportion of the population that submitted a completed form electronically in the last year. Major progress was observed in Hungary between 2011 and 2021, when the ratio of the users of the service increased from 18 per cent to 66 per cent. The 48 percentage point increase is unprecedented in the European Union. 29 percentage points of the increase took place from 2020 to 2021, which was a multiple of the improvement in the indicators for the V3 (12 percentage points) and the EU (7 percentage points). This suggests that Hungary better adapted itself to the emergency caused by the pandemic. The improvement in Hungary's performance is explained, inter alia, by the measures taken upon the outbreak of the pandemic and during the emergency. For example, during the emergency various documents remained usable in Hungary even after their official expiry. The main question is whether this favourable trend will subsist when the restoration has taken place. If yes, it really shows that people move towards online administration permanently as well.

4.11.130 Time needed to resolve administrative cases at first instance (2020)

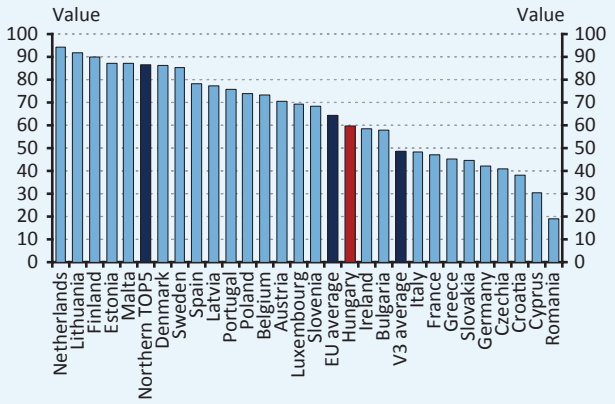


Note: No data are available for Denmark and Ireland.

Source: European Commission.

The judicial system plays a key role in administrative procedures; the data available about courts give important feedback about the efficiency of the system. The European Commission regularly discloses its Justice Scoreboard, where one of the key indicators is the time elapsing until the judgement of first instance in administrative cases. According to the available 2020 data, Hungary's performance in this indicator was the 2nd best in the EU; on average, only 110 days were needed in these cases. Hungary's performance was outstanding within the European Union; the averages for the V3 and EU countries were 351 and 411 days, respectively, which means that courts in the region need 3–4 times more time for the judgement in administrative cases. This established practice provides competitive advantage for Hungary, and its maintenance is necessary for continuing the economic convergence.

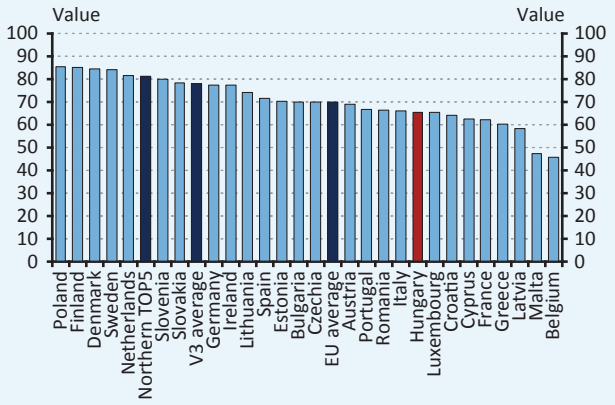
4.11.131 Pre-filled forms (2022)



Source: European Commission.

The increasing of competitiveness is also supported by e-governance by reducing the time required for arranging matters by displaying the already uploaded customer data This is measured by the indicator used in the EU-DESI index as well, the pre-filled forms In the case of this indicator they examine how widespread the automatic completion of data in electronic forms is in various life situations (e.g establishing a company, car purchase, family, career, studying) On the scale of 0–100, Hungary reached a value of 59.7 Although it was slightly below the EU average (64.5), it exceeded the V3 average (48.7) In the leading countries (Netherlands, Lithuania), almost all the data are automatically uploaded by the system during administration; in fact, no external intervention is needed.

4.11.132 Open access to data in Europe (2020)

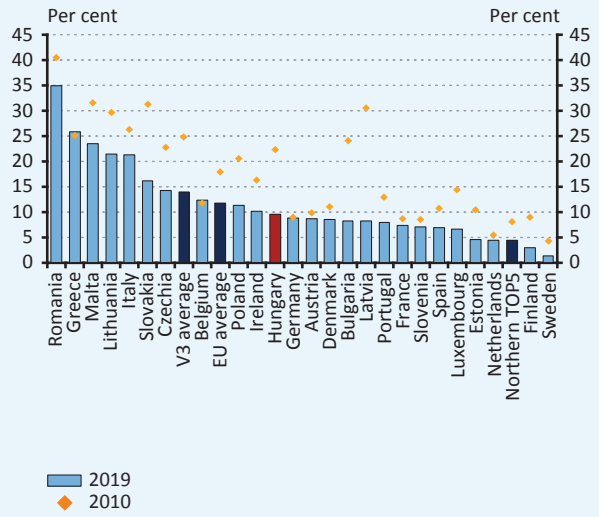


Note: The degree of data availability is rated on the basis of accessibility and coverage on a scale of 0–100.

Source: Open Data Watch.

Measuring is indispensable for the assessment of a country's competitiveness position Accordingly, the availability of the data used for the measuring is of key importance The availability of open data indicator published by the Open Data Watch organisation quantifies to what extent the official statistical data about a given country are accessible and to what extent they provide wide coverage The aggregate value for Hungary was 65.3, while the EU average is 69.8, and the V3 average is even higher, 77.8 A major contributor to the performance of the latter country group was Poland with its value of 85.3, which was the highest among the 27 EU member countries Compared to its aggregate performance, Hungary achieved a slightly better performance in accessibility (67), with weaker performance in coverage (63) In terms EU comparison, official statistics need to be strengthened in both areas, which may improve the evaluation of Hungary's competitiveness position as well.

4.11.133 Ratio of unpaid VAT



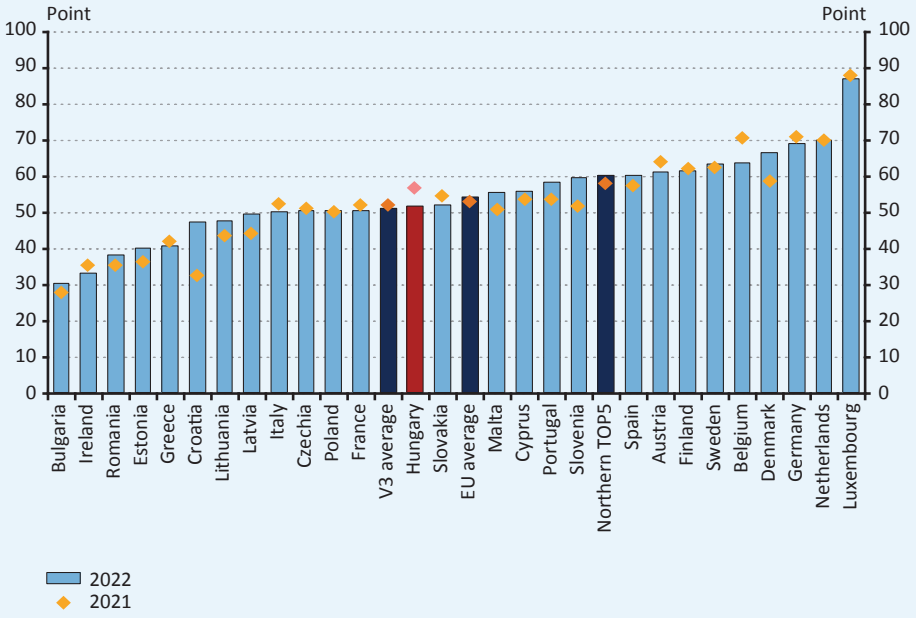
Note: Data for Cyprus and Croatia are missing.
Source: European Commission.

An indicator of the degree of tax avoidance is the ratio of unpaid VAT, which shows how much VAT was actually collected compared to the VAT revenue that can be collected theoretically. In the past decade, many important measures were introduced in Hungary to reduce the shadow economy. The introduction of online cash registers, the EKÁER and online invoicing significantly reduced the proportion of unpaid VAT. According to the latest estimate of the European Commission, the VAT gap in Hungary amounted to 9.6 per cent in 2019, i.e. lower than the averages of the EU (11.7) and V3 (13.9) countries. In Hungary, the VAT gap declined by 12.7 percentage points between 2010 and 2019, reaching the 4th best performance behind Latvia, Bulgaria and Slovakia.

4.12 MODERN INFRASTRUCTURE

High-quality traditional and modern infrastructure is key to Hungary's long-term sustainable convergence. Infrastructure development reduces transport costs, attracts investments that enhance the economy and facilitates the mobility of the labour force within the country. Data may become the main resource of the 21st century, the fast and safe transmission of which becomes a measure of competitiveness. Therefore, the penetration of state-of-the-art internet technology and information security solutions is of critical importance. The state has a key role in the development of a competitive infrastructure. In 'Modern infrastructure', Hungary was ranked 15th among the 27 EU Member States in the Modern infrastructure area with 51.5 points. Compared to 2021, Hungary's performance decreased by 4.8 points. Hungary reached a higher score than the average of the V3 countries (50.7 points), but a lower one compared to the averages of the EU (54.0 points) and the Northern TOP5 (60.0 points) countries.

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

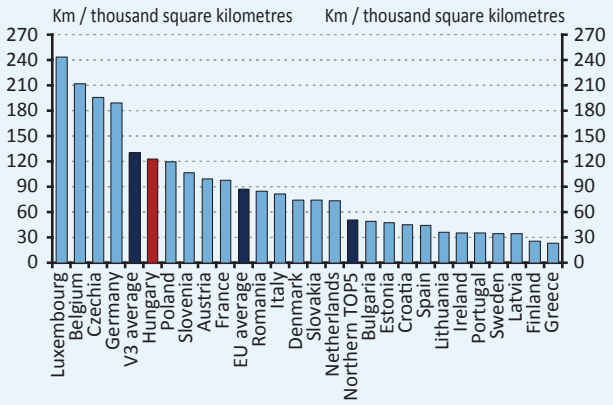


Source: MNB.

The density of the rail and road networks is adequate in Hungary, but in terms of their quality there is room for improvement in many aspects. Hungary's railway network was the fifth densest one in 2020 in the EU. However, in the railway network the ratio of high-speed, electrified and double-track sections is low, which reduces the speed, convenience and attractiveness of this type of transport. Within the public road network, the density of highways corresponds to the average of the EU, but its length and international interconnectedness should be improved. At other parts of the public road network there are more significant quality problems with the condition of the road surface: almost half of the national roads are in poor condition. City traffic is also hindered by traffic congestions. In 2021, the average time lost daily in traffic congestion in Budapest rose back to 21 minutes, i.e. to the degree observed prior to the coronavirus pandemic. This loss of time is the 5th highest among EU capitals, resulting in losing around 1 per cent of the capital's added value and in deterioration in the health condition of the workforce.

In terms of the speed of the domestic internet infrastructure and the penetration of landline internet Hungary is a leader in the EU, but in the penetration of the 5G technology and mobile internet subscriptions Hungary has reserves in competitiveness. In terms of the speed and penetration of fixed broadband internet, Hungary is among the leaders in the EU. The first exceeds the average of Visegrád countries and the EU by thirty-five and seventeen megabits per second, respectively, while the latter is almost twice the Visegrád and half of the EU average. However, following the initial impetus, in the past two years the 5G service expanded only to a lesser degree compared to other EU countries. In 2022, in the penetration of 5G-capable frequencies licensed and put to use by service providers Hungary is the 16th, while in terms of 5G coverage it is the 22nd among the 27 EU Member States. In addition to the 5G infrastructure, increase in the number of mobile internet subscriptions, which is the lowest in the EU compared to the population, also represents a growth reserve. In addition, 7 per cent of the electricity fed into the Hungarian electricity network is not used, i.e. it is recognised as net loss, which is higher than the EU and Visegrád averages of 5 per cent.

4.12.134 Density of the railway network (2020)

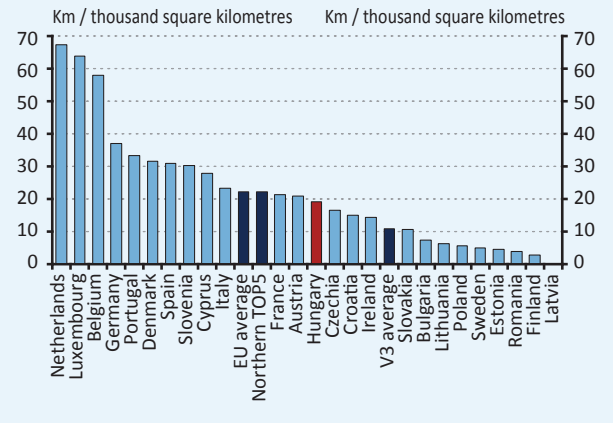


Note: There are no data available for Cyprus and Malta.

Source: Eurostat, World Bank.

The density of the railway network is the quantitative attribute of the fixed-track infrastructure. The Hungarian railway network is the 5th densest in the European Union, outpacing – among others – the national coverage of the Austrian, French and Swedish railway network, and also exceeding the average of the EU. However, the number of railway lines represents a competitive advantage only if the quality of the tracks is suitable for fast and reliable transportation, the railway routes take into consideration – depending on their function – the location of the densely populated areas. It is also essential for rail competitiveness that the infrastructure along the railway provides comfortable and attractive travel conditions.

4.12.135 Density of the motorway network (2020)

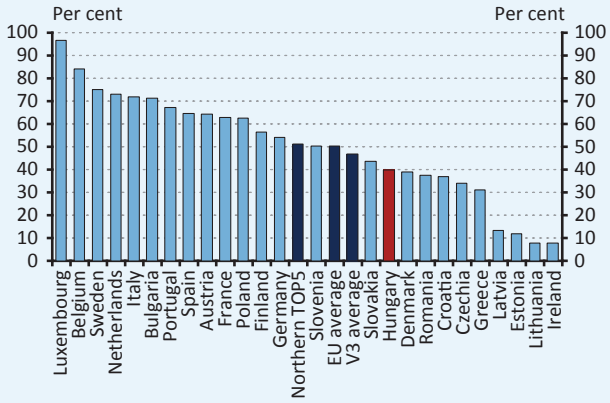


Note: There are no data available for Greece and Malta. The figure for Hungary, which is lower compared to the 2019 data, is a result of data revision.

Source: Eurostat, World Bank.

The density of the motorway network is the quantitative attribute of public road infrastructure. In Hungary motorways cover the territory of the country almost twice as densely as in other Visegrád countries and at a similar level to the EU average. Since 2010 the length of motorways increased by almost 20 per cent in Hungary. The purpose of the government is to ensure that the motorway network can be reached from any settlement of the country within half an hour, the towns of county rank connect to the motorway network and that the motorways reach the border. The expansion of motorways along the required lines attracts investments that develop the economy and speed up the reaching of destination by individuals and goods.

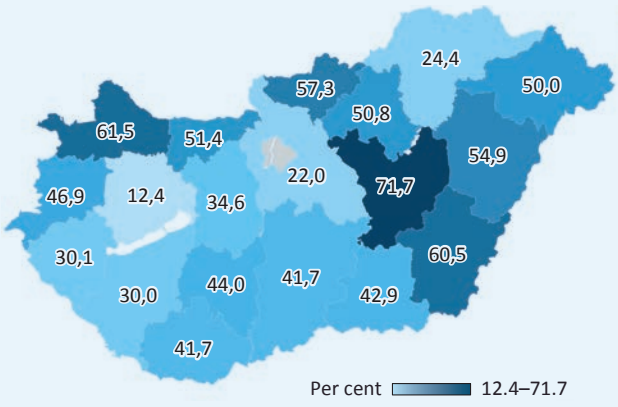
4.12.136 Ratio of electrified railway lines (2020)



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

One of the qualitative criteria of the railway network, in addition to the speed, the ratio of its electrification. 40 per cent of the railway in Hungary is suitable for electric locomotives, which is lower than the average of the EU and the V3 by 10 and 7 percentage points, respectively. Almost three-quarters of the railway lines in Sweden and the Netherlands are electrified. Electrified railway lines facilitate higher track speed, which reduces the time of transportation and getting to work, thereby making rail traffic and transportation more competitive compared to road transport, which – for the time being – causes substantially more pollution. Although several railway development projects have been launched in recent years aiming to reach speeds of up to 160 km/h, the increase in the number of these railway lines, and the construction of the new express lines (Budapest – Vienna, Budapest – Belgrade, Budapest – Cluj, Budapest – Warsaw) may facilitate in the longer run better interconnection of large towns of the Carpathian Basin and may partially substitute the more polluting short distance flights.

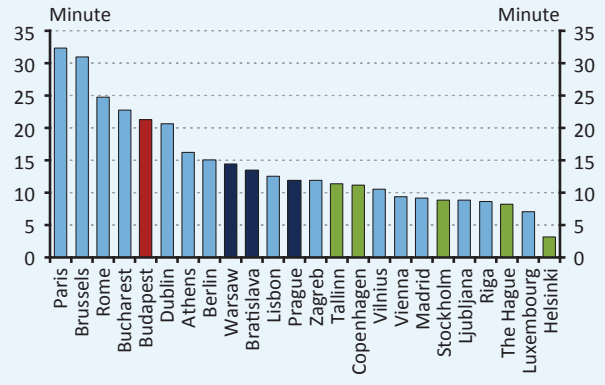
4.12.137 Roads of substandard surface as a share of the total road network (2021)



Source: Magyar Közút.

In Hungary, 44 per cent of the roads are in bad condition (as defined by Magyar Közút). The best quality roads are in Veszprém, Pest and Borsod-Abaúj-Zemplén counties. Jász-Nagykun-Szolnok, Győr-Moson-Sopron and Békés counties have the worst road conditions, but all regions have roads in need of improvement. As a result of the improvement of the infrastructure and easier accessibility, it becomes easier to deliver goods to the destination, due to which access to markets improves and price competition strengthens. Better road surface may contribute to the growth in labour mobility through shorter travel time, which may also improve the productivity of the economy.

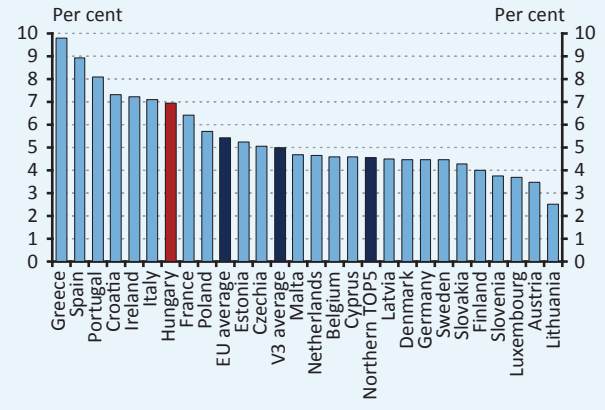
4.12.138 Average time lost daily in traffic congestions (2021)



Source: INRIX.

As a result of traffic congestions productive time or leisure time is lost. According to 2021 data, as a result of the restart of the economy following the coronavirus pandemic, regular drivers in Budapest lost more than 21 minutes a day on average due to traffic congestions. The time spent in traffic congestion may result in losing at least 1 per cent of the added value produced in the capital every year. In 2021, the time loss suffered by regular car drivers was again as much as before the coronavirus pandemic. The average time lost in one year in traffic congestions was the 15th longest in the Hungarian capital among the 1000 ranked cities in 2021, according to INRIX, a consulting company on traffic and mobility issues. This position is 12 places worse than the 2020 ranking and 33 places worse than the 2019 ranking. In each of the Visegrád and the most sustainable capitals in Northern Europe, congestion in 2021 resulted in a lower journey time increment than in Budapest, showing the need for transport improvement in the Budapest agglomeration. TomTom, a company engaged in the analysis of traffic data and the manufacture of innovative traffic organisation technologies, estimates the time lost due to traffic congestions in the case of the Hungarian capital as 31 minutes based on the 2021 data, 3 minutes more than in 2020.

4.12.139 Electricity losses on the entire electrical grid (2018)

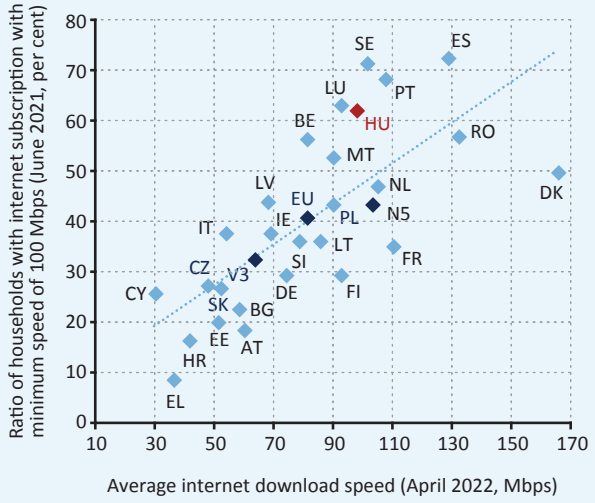


Note: Data for Finland is from 2015, data for Greece and Italy are from 2017. There are no data available for Bulgaria and Romania.

Source: Council of European Energy Regulators (CEER).

The reliability of the electricity network can be characterised by the ratio of electricity drawn from and fed into the network, adjusted for international trade. This value includes both technical (depending on the network condition) and non-technical (resulting from external circumstances) electricity losses. 7 per cent of the electricity fed into the Hungarian electricity network is not used, i.e. it is recognised as net loss. The rate is 5 per cent in the EU and in the Visegrád competitor countries. Possible reasons for the higher than EU and Visegrád average network electricity losses include the insufficient or outdated insulation of the electricity network, especially in areas of block of flats, and the fact that the proportion of underground electricity lines is one of the lowest in the EU, making the Hungarian network highly exposed to the increasingly frequent weather anomalies caused by climate change. The enhancement of the capacity of electric grids and the further reduction of unexpected network failures may contribute to the greater penetration of the new solutions of fourth industrial revolution.

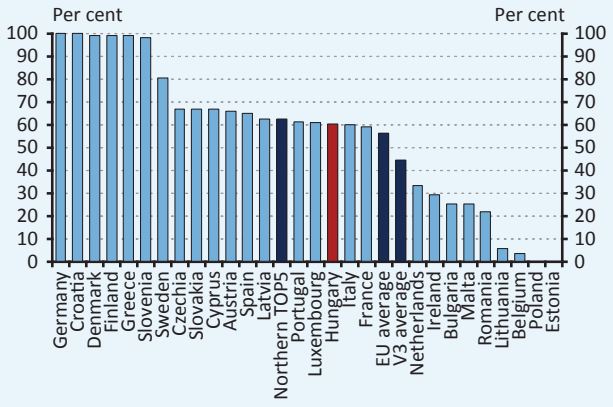
4.12.140 Speed and penetration of the broadband internet (2021–2022)



Source: European Commission, Speedtest.

In terms of the speed and penetration of broadband internet, Hungary is among the leaders in the EU. The average download speed of the Hungarian internet is faster by 35 megabits per second compared to the other countries of the Visegrád region and by 17 megabits per second compared to the average of the EU. It is closely related to this that the ratio of households with subscription for internet with minimum speed of 100 megabit per second reaches 62 per cent in Hungary, which is the 4th highest among EU members. Compared to 2020, the indicator increased by some 10 percentage points, with the pandemic as a possible contributor. In terms of the ratio of households subscribing for internet with a speed of at least 1 gigabit per second (13 per cent), Hungary is an EU champion. The fast domestic internet, which is widely spread among households, technically allows the penetration of digital solutions to households, the use of e-governance and the rise in their usage rate. However, based on 2021 data, the number of mobile internet subscriptions compared to the population is the lowest in Hungary among the EU Member States (77 subscriptions per 100 people compared to the EU average of 108 and the V3 average of 130). The fast internet also supports companies in their production and services activity, thereby increasing their competitiveness in the international market.

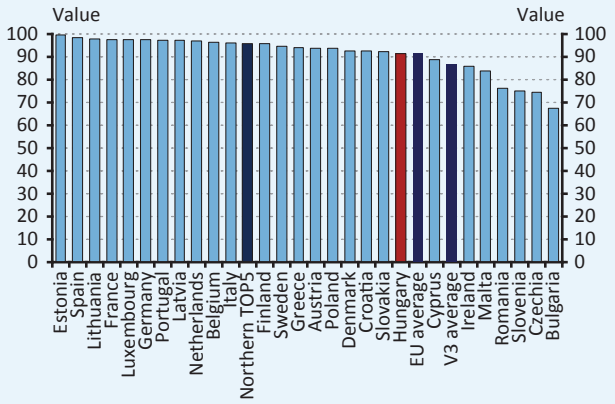
4.12.141 5G mobile internet readiness (2022)



Note: Missing columns mark zero values instead of incomplete data.
Source: European Commission.

The readiness of the 5G mobile internet reflects the ratio of 5G-capable frequencies of a country licensed and taken into use by the service providers until the end of 2020. In an EU comparison, Hungary dropped from the 13th place in 2021 to the 16th by 2022 in this indicator, as Hungary's 5G readiness did not change, while Latvia, Portugal as well as Sweden left Hungary behind in this area. At end-2020, the technology operated at 60 per cent of the entire volume of eligible frequencies, exceeding the EU and the V3 averages, but falling short of the Northern TOP5 average. The 5G coverage, which shows what percentage of households have access to the commercial 5G service, was 17.6 per cent in Hungary in 2022. Although it is a 10 percentage point improvement compared to 2021, as a result of the greater expansion in coverage achieved by the majority of EU countries, it means the 22nd place in the ranking of the 27 Member States. The 5G technology fosters the penetration of the Internet of Things (IoT) among enterprises, which may substantially increase productivity. Therefore, ensuring the earliest possible complete supply of Hungarian industrial parks and households with 5G may entail a competitive advantage.

4.12.142 Global Cyber Security Index (2020)



Note: This is a composite index comprising of 25 indicators, where the best score is 1 and the worst one is 0.

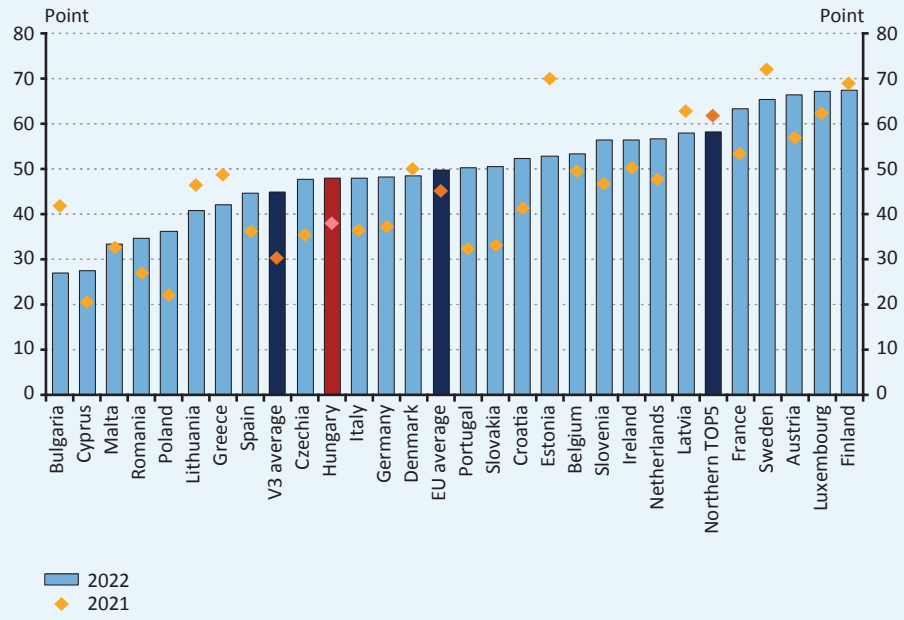
Source: International Telecommunication Union (ITU).

The operation of modern telecommunication infrastructure calls for secure environment. The Global Cyber Security Index of the International Telecommunication Union measures the robustness of this secure environment. Hungary's cyber security exceeds the average of the other Visegrád countries and, to a smaller degree, also the average of the EU, but lower than that of developed Northern and Western European countries. Estonia leads the ranking of EU members. As regards the information security in Hungary strengths include the cooperation with partners, public awareness and capacity building, and the legal regulatory environment. However, a competitiveness reserve can be identified in the technological (IT and software) development of information security. By establishing the National Cyber Security Institution the institutional scheme guaranteeing the information security of the general government and local government bodies has been centralised. However, through the improvement and support of the Hungarian information security software sector – similarly to Slovakia and the Czech Republic – Hungary would be able to rely on its own knowledge in this area.

4.13 COMPETITIVE ENERGY USE

State can reduce energy dependence of the country by developing an environmentally friendly and domestically focused energy mix and reducing the share of net energy imports. Making energy use more environmentally sustainable can contribute to the green transition and the decarbonisation of the Hungarian economy. Capital investments based on renewable sources and nuclear energy simultaneously reduce energy dependency and the environmental load, and improve the external balance of the economy as a result of declining import costs. Low residential energy prices increase households' disposable income, and corporate energy price reductions facilitate the maintenance of business investment activity, but environmental sustainability considerations are also essential in fossil fuel pricing in addition to competitiveness aspects. Unproduced and unconsumed energy is the cheapest energy. In 'Competitive energy use', with 47.6 points Hungary finished 18th among the 27 EU countries; compared to 2021, Hungary's performance increased by 10.1 points. Hungary reached a higher score than the average of the V3 countries (44.4 points), but a lower one compared to the averages of the EU (49.3 points) and the Northern TOP5 (57.6 points) countries.

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



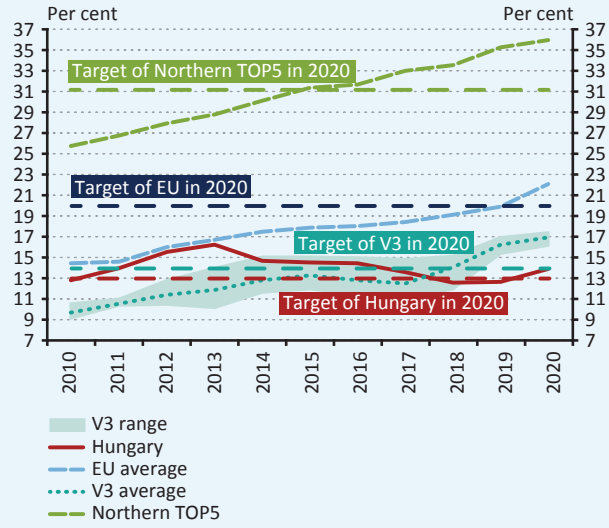
Source: MNB.

Energy dependency of the Hungarian economy continues to be high in an EU comparison, as the structure of the domestic economy is more energy-intensive than the EU average. Hungary's energy dependency, which is around 60 per cent, has not declined in the recent years. Although its average value nearly corresponds to the average of the EU countries, it exceeds the average of the most sustainable Nordic countries by some 30 percentage points and the Visegrád average by 15 percentage points. Although between 2010 and 2020 energy demand per unit of output declined by more than 20 per cent in Hungary, the energy intensity of the V3 and Hungary is 1.8 times the average of the EU and 1.5 times the average of the most sustainable Northern countries. Further strengthening of energy efficiency and making the energy structure environmentally friendlier may reduce the current account deficit as well.

The decline in the ratio of renewable energy within domestic energy use observed between 2014 and 2018 stopped in 2019, before increasing to 14 per cent in 2020 as a result of the deployment of photovoltaic panels. By June 2022 more than half of the installed solar panel capacity of 6000 MW to be reached by 2030 was already built. At the same time, the penetration of environmentally friendly types of energy other than solar energy represent major reserves in competitiveness. The goal set by the government in the National Energy Strategy for 2030 is to reach a 21 per cent share of renewable energy, which is the fourth lowest in the European Union and is well below the EU's commitment of 32 per cent. In addition to expanding capacities, finding a solution for the storage of renewable energy and developing the network infrastructure are essential to meet the targets.

Energy expenditures of Hungarian households were lower than the EU, Visegrád and Northern TOP5 averages, and – contrary to international trends – did not increase in 2021. In Hungary, as a result of reduction of regulated prices in several steps, between 2011 and 2014 the price of electricity for households declined first below the average of the Visegrád region, and then below the EU average. Between December 2021 and August 2022, in Hungary the price of electricity for households calculated at purchasing power parity and the price of natural gas for households calculated at purchasing power parity increased by 9 per cent and 92 per cent, respectively, at the 120 per cent level of the average consumption, according to the data of the Hungarian Energy and Public Utility Regulatory Authority. Similarly to the prices for households, electricity and gas prices for industrial use declined between 2013 and 2017, but they did not fall below the average of the EU and Northern TOP5, and started to rise in line with commodity exchange trends as of 2018. Although low industrial gas prices can be a competitive advantage for companies in the short run, the gradual replacement of natural gas would be desirable from a sustainability perspective in the long run, for example through the penetration of clean hydrogen or other green alternatives.

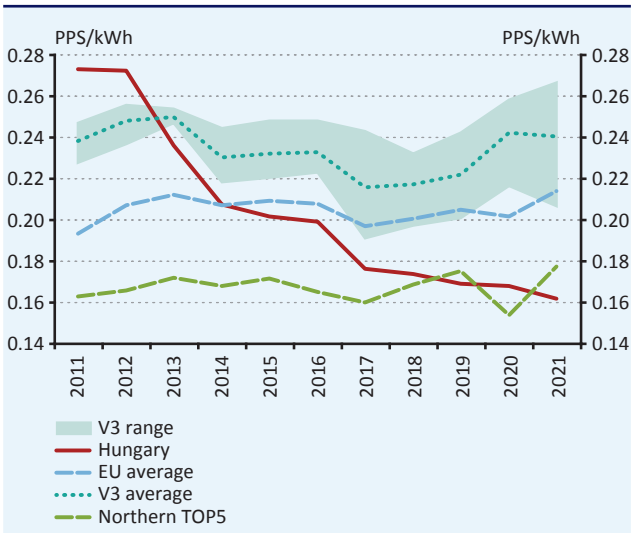
4.13.143 Use of renewable energy sources



Source: Eurostat.

The use of renewable energy sources as a percentage of total energy consumption in Hungary is lower than the EU and Visegrád average. By 2020, Hungary slightly exceeded the 13 per cent national target undertaken until 2020, reaching nearly 14 per cent. Between 2014 and 2018, the share of renewable energy within total energy consumption declined, partly as a result of the decrease in the use of firewood, which is recognised as renewable biomass. The expansion of installed solar capacity stopped this declining trend in 2019 and contributed to the increase in the share of renewable energy in 2020. By June 2022 the installed solar capacity exceeded 3200 MW, which is more than half of the target of 6000 MW undertaken by 2030. The Hungarian state would increase the share of renewable sources to 21 per cent by 2030. However, the national target of 21 per cent is the fourth lowest in the EU and significantly lower than the EU's minimum target of 32 per cent by 2030. In addition to the expansion in renewable energy production, its structure is also an important aspect, i.e. in parallel with solar energy, the expansion of renewable energy sources is also a system security and sustainability reserve. The penetration of renewable energy sources requires not only the expansion of domestic production capacities, but also innovative and environmentally friendly solutions for storage and the technical upgrading of the electricity network.

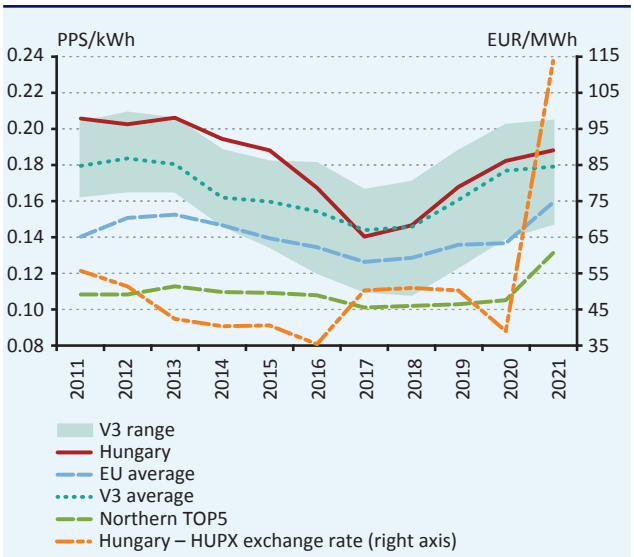
4.13.144 Electricity price (for households)



Source: Eurostat.

In the period between 2012 and 2014, as a result of the reduction in regulated prices in several steps, the price of electricity (for households, including taxes and other levies, calculated at purchasing power parity) in Hungary fell below the average of the Visegrád region, and since 2015 it was even lower than the EU average. The decline compared to 2010 has been almost 40 per cent. The price of the Hungarian household electric energy (including taxes and other levies) has cost to 10-11 euro cents since 2015. According to the international price comparison of the Hungarian Energy and Public Utility Regulatory Authority, compared to December 2021, the price of electricity for households measured at purchasing power parity at the 120 per cent level of the average consumption increased by 9 per cent by August 2022.

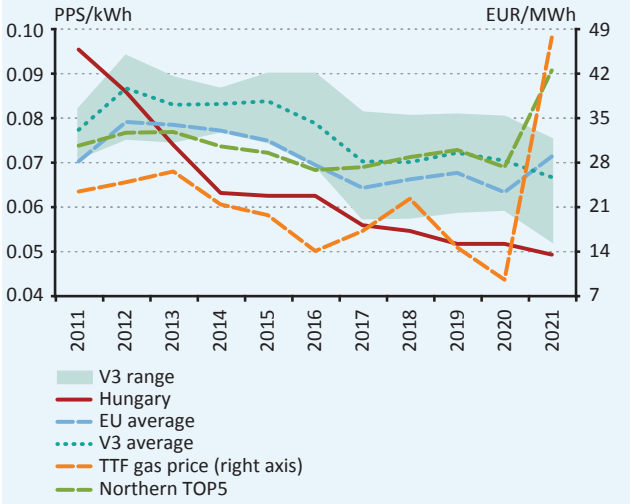
4.13.145 Electricity price (for industrial consumers)



Source: Eurostat, HUPX.

While for households the electricity is provided in the form of universal service, in the case of companies the free market supply results in more diversified electricity prices. Hungarian industrial electricity prices (including taxes and other charges, at purchasing power parity) fell to the average price level of the other Visegrád countries between 2013 and 2017 and came close to the EU average, but since 2018 they have deviated from it slightly exceeding the average of the countries of the Visegrád region. In 2021, the price of Hungarian electric energy for industrial use (including taxes and other levies) amounted to EUR 0.12 / kWh. In addition, HUPX, i.e. the Hungarian Power Exchange, which determines the daily price of industrial electricity trading on a demand and supply basis, operates since 2010. The average price of electricity on the Hungarian Power Exchange nearly tripled from 2020 to 2021, inter alia as a result of the restarting of the economy following the lockdowns introduced during the coronavirus pandemic. However, in 2021 it was not yet reflected in corporate end user prices, as the higher prices appear in their consumer contracts only with a delay. By keeping companies' fixed costs at a low level, low industrial electricity prices mean competitive advantage in production, but in parallel with that the increasing of energy efficiency and the raising of the environmentally friendly share of the electricity used is an objective.

4.13.146 Gas price (for households)

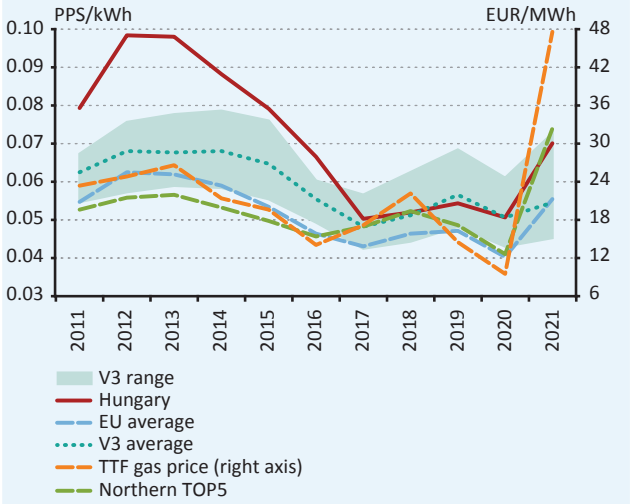


Note: The TTF gas price is the 1-month futures gas price on the Dutch gas exchange.

Source: Eurostat, Bloomberg.

Due to the reduction of regulated prices, the price of gas for households (including taxes and other burdens, at purchasing power parity) in Hungary declined by 34 per cent in multiple steps between 2011 and 2014. Due to this the gas price for households fell below the Visegrád and the EU average from 2013, respectively. In 2021, the price of 1 kWh of gas for households (including taxes and other levies) cost EUR 0.03. Based on the comparison of international prices by the Hungarian Energy and Public Utility Regulatory Authority, the price of natural gas for household consumers was the lowest one in Budapest measured at purchasing power parity in December 2021 among the capitals of the EU. Between December 2021 and August 2022, at 120 per cent of the average consumption, the price of natural gas for households measured at purchasing power parity increased by 92 per cent in Budapest. However, in order to take energy security and sustainability aspects into account, it is essential that gas consumption is complemented or gradually replaced by more environmentally friendly alternatives (such as green hydrogen) in the medium term, also contributing to the reduction of Hungary's energy dependency.

4.13.147 Gas price (for industrial consumers)

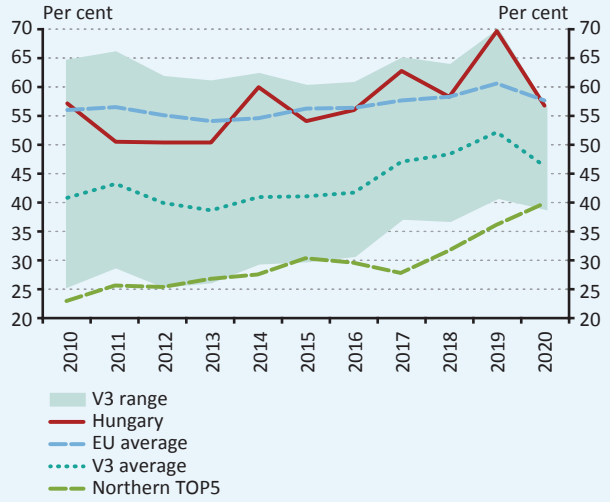


Note: The TTF gas price is the 1-month futures gas price on the Dutch gas exchange.

Source: Eurostat, Bloomberg.

Similarly to household gas price, as a result of global market trends, the gas price for industrial – i.e. corporate – consumers (including taxes and other levies, at purchasing power parity) declined between 2013 and 2017 in Hungary, and reached the average price level of the Visegrád region, but it still exceeds the average of the EU, albeit to a lesser degree than in previous years. In 2021, the gas price paid by companies increased by some 40 per cent on average in the EU and Hungary as well, departing from the 8 per cent price rise observed in the other Visegrád countries. In Hungary, the price of 1 kWh of gas for industrial consumers was EUR 0.04 (including taxes and other levies) in 2021. The increasing of the number of natural gas import routes from the directions of Romania, Serbia and Croatia as well as the building of the Hungarian–Slovenian–Italian cross-border gas network connection suitable for two-way transportation may provide competitive advantage for Hungary. Nevertheless, reduction of Hungary's natural gas dependency is indispensable, and this process may be supported by the capacity development of alternative sources of energy (such as green hydrogen or geothermal energy).

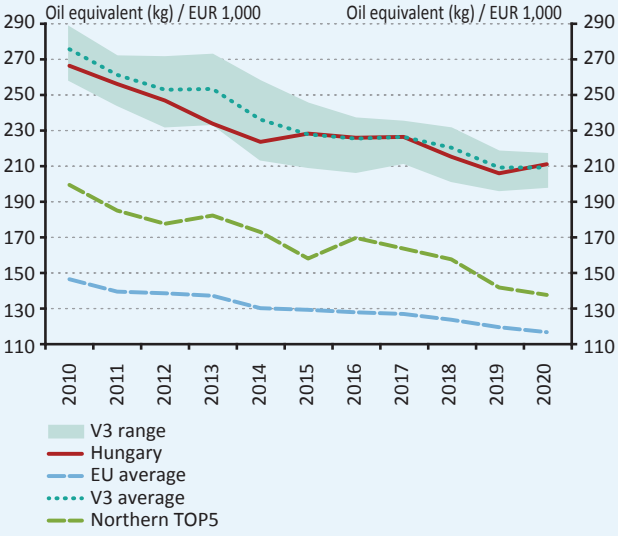
4.13.148 Net energy imports



Source: Eurostat.

Net energy imports as a percentage of total energy use is the measure of energy dependency of the country. Hungarian energy imports averaged 60 per cent between 2014 and 2020. Although it nearly corresponded to the average energy dependency of EU countries, it exceeded the averages of the Visegrád competitors and the most developed Nordic countries by 15 percentage points and 28 percentage points, respectively. Hungary's energy dependency did not decline in the past decade. In 2020, 95 per cent of Hungary's natural gas imports, 61 per cent of its crude oil imports and 20 per cent of its coal imports originated from Russia. With a decline in net energy imports, a country's energy dependency also declines, resulting in an increase in the given country's economic independence and competitiveness. A further reduction of the energy dependency would improve the energy security of Hungary. Investments based on renewable sources of energy and nuclear energy simultaneously reduce energy dependency and the environmental burden, and improve the external balance as well.

4.13.149 Energy intensity of the economy



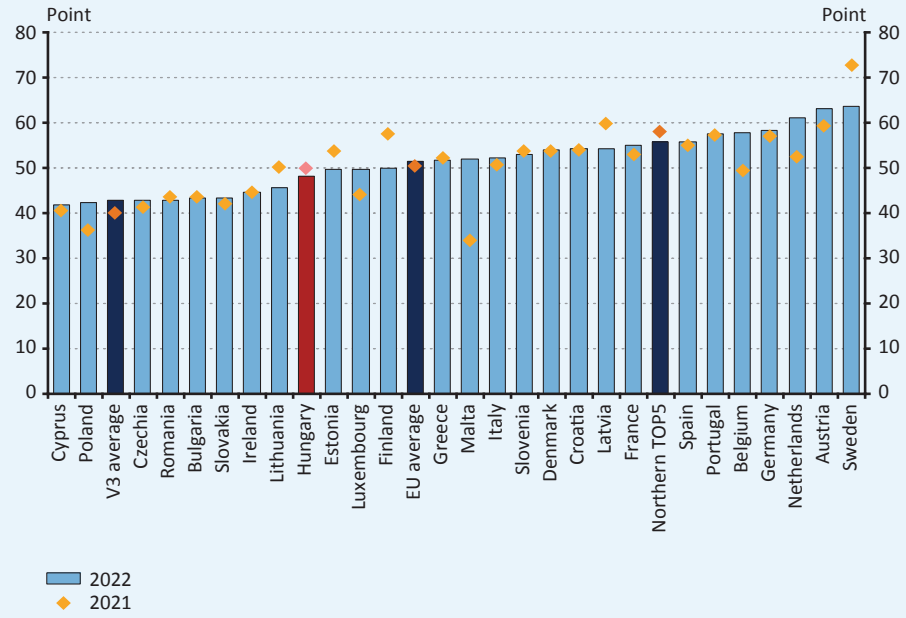
Source: Eurostat.

The energy intensity of the economy shows the amount of energy consumption per one unit of economic output. Hungary's energy intensity moves closely together with the average of the region. Between 2010 and 2020, the energy demand per unit of output in Hungary decreased by more than 20 per cent. However, the energy intensity of Hungary and the Visegrád region is still about 1.8 times higher than the average of the EU. Calculated at purchasing power parity, the energy efficiency gap between Hungary and the European Union is significantly smaller (17 per cent), however the more energy wasting operation of the Hungarian economy compared to the EU average is also apparent when looking at this indicator. Lower energy intensity is cheaper for the operation of the economy, and in addition to increasing efficiency, it provides more environment-friendly conditions for successful convergence over the long term. The cheapest and least costly energy for companies and the national economy is the energy that is neither produced nor consumed, therefore increasing investment in energy efficiency is a competitiveness reserve for the domestic economy.

4.14 GREEN ECONOMY

No sustainable convergence exists without transition to a green and circular economy. As regards social and economic development, only what is sustainable in the long term can be competitive, and vice versa. Therefore, it is of utmost importance that we do not exploit the natural resources available to us – such as water, air and land – but manage them in an efficient, economical manner. Several action plans and proposals for measures have been adopted in the world's economies, such as the Green (New) Deal in the US and Europe, and the Climate Change Action Plan and the National Climate Change Strategy in Hungary, aiming to make production and consumption sustainable. However, keeping the global average temperature increase well below 2 °C compared to the pre-industrialisation levels will require a major effort both in Hungary and in the world. Hungary ranked 19th in the EU in the Green economy area with 47.8 points in 2022, ahead of the other Visegrád countries (42.5 points), but below both the EU average (51 points) and the Northern TOP5 (55.2 points). Compared to 2021, Hungary's score has dropped by 1.5 points, while most EU countries have improved.

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 economic output are both below the EU and the V3 average; however, the degree of air pollutions is the 7th highest in the EU. In the past three decades, the net emission of greenhouse gases declined by 40 per cent in Hungary, i.e. to a greater degree than the EU and Visegrád averages, and in parallel with that the per capita carbon dioxide emission has also decreased on the whole since the political transformation. However, in order to reduce – together with the other EU countries – the emission of greenhouse gases by at least 55 per cent by 2030 compared to 1990 and to become climate-neutral by 2050, Hungary should strive to optimise the domestic production processes with even lower carbon emission. As a result, the population's exposure to air pollution, which is above the EU average at present, would also decline.

Hungary, like most countries on the planet, has a negative ecological balance. Hungary's ecological balance improved in the 2000s, but has deteriorated again in the recent years, and in 2018 Hungary over-consumed its environmental assets by 12 million global hectares. On the positive side, the ecological deficit of Hungary has decreased compared to the decades before the political transition. On a global scale, at present we would need about 1.8 times the Earth's environmental resources to maintain the world's current consumption. In 2022, the Earth exceeded its own annual biocapacity on 28 July (Earth Overshoot Day), which ten years ago took place only on 4 August.

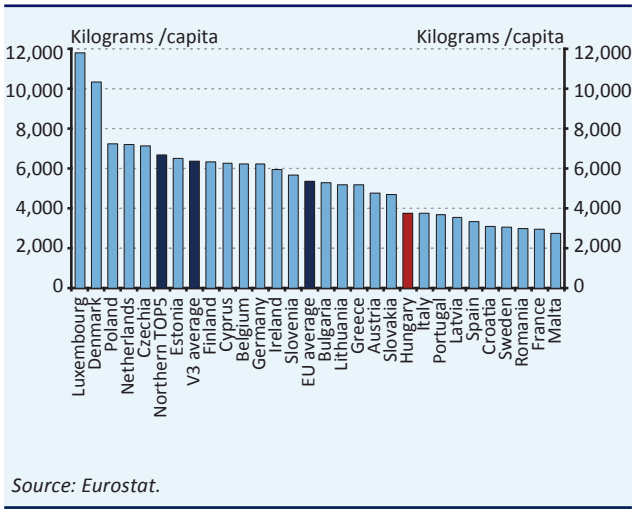
A circular economy is not just about recycling the waste produced; it also requires reducing the volume of waste and pollutants generated. In the past ten years, Hungary achieved major progress in the area of waste recycling, however, there is still a need to increase the recycling rate. In addition, in Hungary, almost half of all waste generated still ends up in landfills or dumped on the earth's surface, which is the most environmentally damaging way of waste management.

Responsible land and water management is also essential for combating climate change. Hungary has the 6th lowest proportion of forests and other wooded land in the EU, partly because of its natural geography. Ratio of irrigated areas within areas suitable for irrigation is similar to the EU average (53 per cent). However, taking into account that in Hungary the weight of cultivation directly exposed to weather conditions is above 60 per cent, wider spreading of irrigation is indispensable in order to increase the productivity and resilience to climate change of agriculture. Only 80 per cent of the Hungarian population has access to sewerage, and thus further efforts are needed in this area, especially in the settlements with fewer than 2000 inhabitants that have no sewage treatment plants.

One of the economic policy measures to reduce environmental pollution is the extension of green taxes. The implementation of green projects relies heavily on government funding, as well as on one of the most widely used green financial instruments, i.e. green bonds. In Hungary, the degree of environmental tax revenues and expenditures as a percentage of GDP declined in the past years, and at present both indicators are lower than those of Hungary's competitors in the EU and the Visegrád countries, so there is room for progress. In Hungary, the government issued the first green bond in 2020, followed by several corporate issuances. In 2022 H1, green government bonds outstanding reached 2.6 per cent of all government securities issued, and thus Hungary is one of the leaders in Europe. The MNB's commitment to the green transition is demonstrated by the fact that, as of 2 August 2021, it is the first European central bank to have a green mandate. Thus, the MNB will continue its efforts to set the domestic financial system, and through that the whole economy, on a climate-friendly path.

SUSTAINABILITY

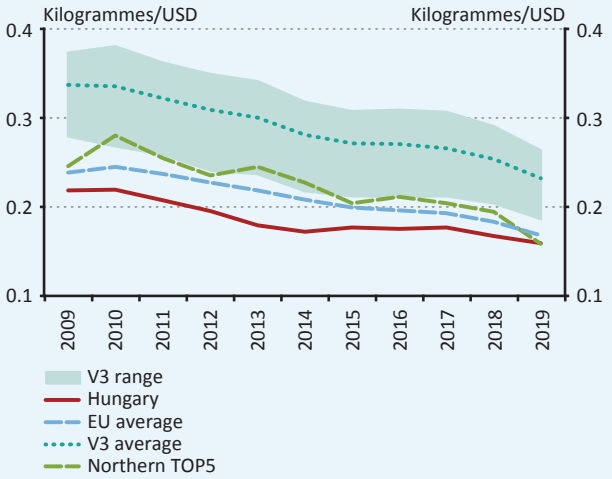
4.14.150 Carbon dioxide emissions per capita (2020)



Source: Eurostat.

In the past three decades, the net emission of greenhouse gases in Hungary declined by 40 per cent, i.e. to a greater degree than the EU or Visegrád averages. In parallel with that, the per capita carbon emission has also declined on the whole since the political transformation. Following the rise in the 2010s, the indicator was down again in the past two years, with the coronavirus pandemic as a possible contributor. At present, the per capita CO_2 emission is around 3800 kilogrammes in Hungary, which is 70 per cent of the average of the EU and 60 per cent of the averages of the Visegrád and Northern TOP5 countries. By 2050, the gradual decarbonisation of the economy would facilitate not only the protection of the environment, but also the penetration of new technologies and industries representing higher value added, thereby contributing to sustainable convergence.

4.14.151 Carbon dioxide emissions per unit of GDP

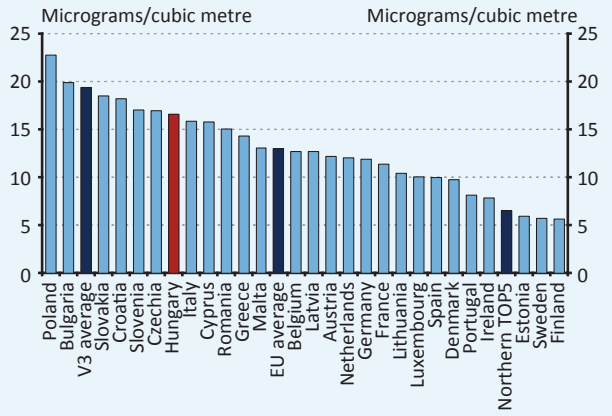


Note: GDP is calculated at purchasing power parity at constant prices.

Source: OECD.

An important indicator of ecological efficiency is the carbon dioxide emission per one unit of economic output. As in the majority of EU countries, this indicator showed a declining trend in Hungary in the past three decades. In 2019, the figure for Hungary was around the average of the EU and the Northern TOP5 countries, and was lower than for all the three Visegrád competitors of Hungary. Of the V3, the carbon intensities of Poland and Czechia are among the highest in the EU. The countries with the lowest CO_2 intensity (Malta, Sweden and Latvia) emit half as much carbon dioxide per economic output than Hungary. By transitioning to an innovation-driven growth model, the economy would be able to achieve sustainable high growth under low emissions.

4.14.152 Population exposure to air pollution (2019)

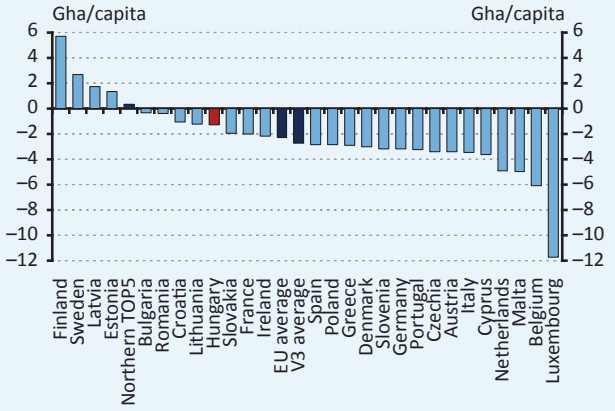


Note: The chart shows the concentration of particles smaller than 2.5 microns in the air.

Source: OECD.

The population's exposure to air pollution stemming from particulate emissions in Hungary exceeds the average of the EU. At present, Hungary has the seventh highest average concentration ratio of air pollutants smaller than 2.5 microns per cubic metre (16.6 micrograms / cubic metre). The inhaled pollutants smaller than 2.5 microns are not emptied from the lungs, and thus long-term exposure to them poses a serious health risk. Due to the deteriorating health of the labour force, higher air pollution has a negative impact on the economic productivity as well. In Hungary the particulate emission exceeds the benchmark value specified by the World Health Organisation by more than one and half times. The main source of air pollution is the transport emissions and the use of solid fuels and waste for the heating of residential buildings, and thus pollution could be reduced by curbing them.

4.14.153 Eco-balance (2018)

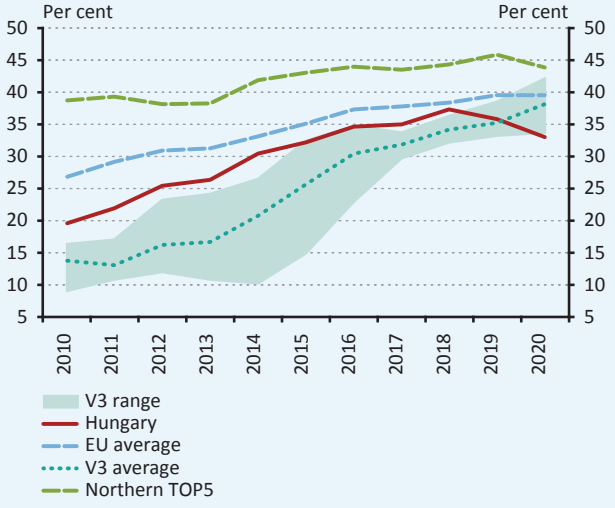


Note: The eco-balance is obtained by subtracting the ecological footprint of a country from its biocapacity. A country has an ecological deficit if its ecological footprint exceeds the available biocapacity.

Source: Global Footprint Network.

The ecological balance shows how much of a country's natural resources (biocapacity) is used (ecological footprint). Countries whose consumption exceeds their biocapacity have an ecological deficit. Over the past 50 years, Hungary, like most countries on the planet, has continuously exceeded the carrying capacity of its available productive surface areas., i.e. the country realised an ecological deficit. In 2018, only four countries in the EU realised an ecological surplus. Hungary's ecological balance deteriorated in the past years, and it was -1.3 global hectares per person in 2018, although it is more favourable than the averages of the EU or the Visegrád countries (-2.3 and -2.7, respectively). The balance of the Northern TOP5 countries is positive (0.4), with the indicator for Finland, which has the highest surplus, as a major contributor.

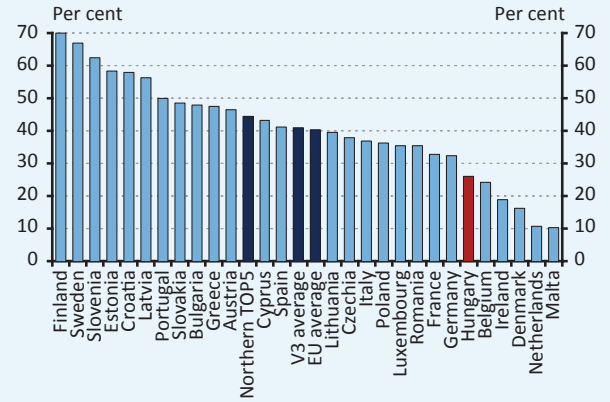
4.14.154 Recycling rate of municipal waste



Source: Eurostat.

Waste management is a priority in the efficient utilisation of resources and in the reduction of resource intensity. Hungary has made significant progress in recycling or reprocessing waste over the last two decades. The recycling rate increased from 2 per cent in the early 2000s to 37 per cent by 2018, but a decline was observed in the past two years. In 2020, the recycling rate was 33 per cent, which is lower than the 38–44 per cent average of the Visegrád competitors, the EU and the Northern TOP5 countries. By further increasing the current rate in Hungary, the wasting of resources can be prevented, harmful environmental impacts can be reduced and need for primary natural resources may be mitigated.

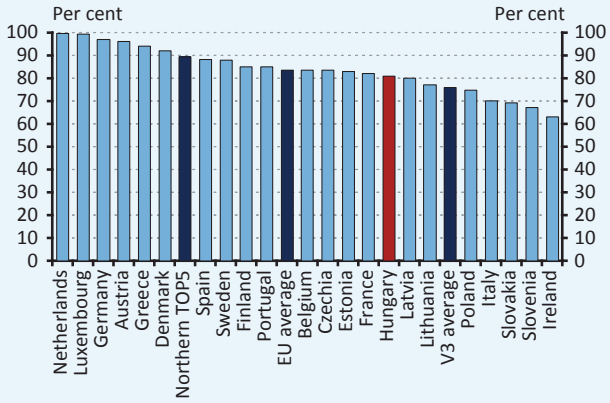
4.14.155 Forests and other wood land as a percentage of the countries' total territory (2018)



Source: Eurostat.

Forests play a significant role in mitigating climate change by capturing and storing large amounts of carbon dioxide, positively affecting air and water quality, and supporting biodiversity. By fixing the soil, they limit soil erosion and protect built infrastructure, while limiting the volume of sediment that flows into rivers and lakes. The size of Hungary's forests is 26 per cent of the country's total area, the 6th smallest in the EU. The average proportion of forested land in the V3 roughly corresponds to the EU average of 40 per cent, compared to 45 per cent in the Northern TOP5 countries. Finland, Sweden and Slovenia have the largest forested area as a proportion of their territory.

4.14.156 Ratio of population connected to a wastewater treatment plant (2020)

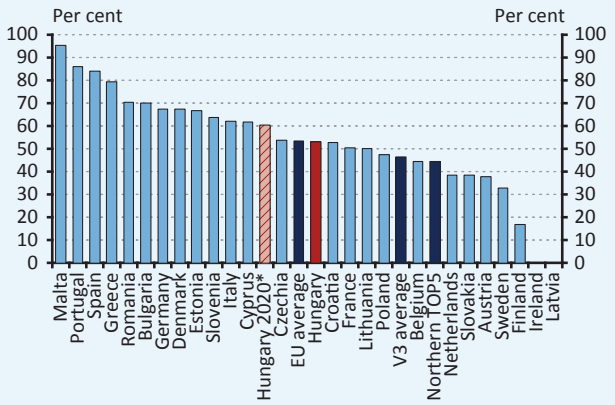


Note: There are no data available for Bulgaria, Cyprus, Croatia, Malta and Romania. Data for Greece, Ireland, Germany, Italy, Portugal, Spain and Sweden are available for a previous year.

Source: OECD.

In Hungary, 81 per cent of the households were connected to the sewerage system in 2020, which represents a progress compared to 72 per cent registered in 2010. The Hungarian indicator is slightly lower than the EU average (84 per cent), but higher than the average for the other Visegrád countries (76 per cent). Of the countries assessed by the OECD, the Netherlands and Luxembourg have the highest, nearly 100 per cent connection ratio, while Ireland has the lowest one (63 per cent). In Hungary the development of sewage disposal is inadequate primarily in the settlements with inhabitants fewer than 2,000.

4.14.157 Ratio of irrigated areas within agricultural areas suitable for irrigation (2016)



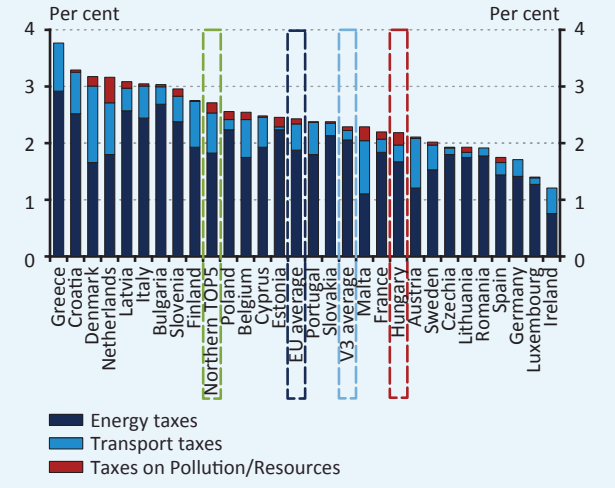
*Note: There are no data available for Luxembourg. *Ratio of irrigated areas within irrigation areas permitted by water laws (HCSO).*

Source: Eurostat, MNB calculation based on HCSO.

According to Eurostat data, 53 per cent of the areas suitable for irrigation (equipped with irrigation equipment) was actually irrigated in Hungary in 2016, which corresponds to the EU average, and exceeds the averages of the V3 and Northern TOP5 countries. According to HCSO data, the size of irrigated areas as well as their ratio within irrigation areas permitted by water laws continued to grow in the past years. The latter indicator was 60 per cent in 2020. On average, irrigated areas account for more than 6 per cent of the total agricultural area in the EU, while in Hungary only less than 3 per cent of the total agricultural area is irrigated annually. Considering that the share of crop production, directly exposed to weather conditions, is above 60 per cent in Hungary, this is below the optimal value. Protein crops, fruit and vegetables and seeds, which offer higher revenues, can only be grown on irrigated land. Increasing the ratio of irrigated areas and the efficient use of the water resources would increase the agricultural sector's productivity and reactivity to the impacts of climate change.

GREEN FINANCES

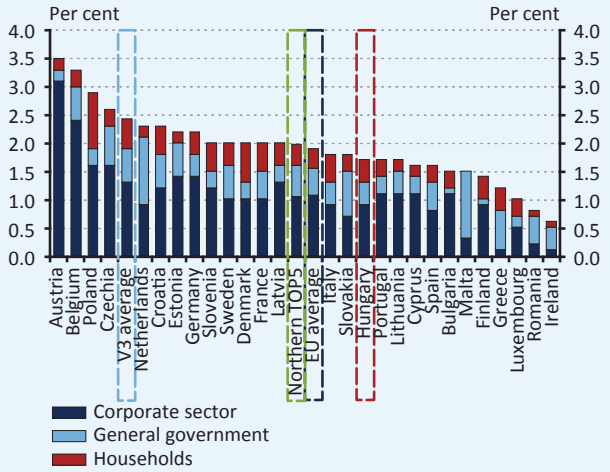
4.14.158 Environmental tax revenues as a percentage of GDP (2020)



Source: Eurostat.

The ratio of environmental taxes to GDP has been declining in Hungary since the mid-2000s. In 2020, the indicator was 2.2 per cent, which is lower than the averages of the Visegrád competitors (2.3 per cent), the EU (2.4 per cent) and the Northern TOP5 countries (2.7 per cent). As in the EU countries, of the environmental taxes the revenues from taxes on energy (e.g. on fuels) are the highest in Hungary as well (1.7 per cent of GDP). Transport taxes (e.g. road toll, registration tax) correspond to 0.3 per cent of GDP. The amount of pollution and resources taxes (0.2 per cent of GDP) exceeds the EU average. The purpose of these tax types is to make the economy's largest polluters pay for the use of public property, such as clean air and water.

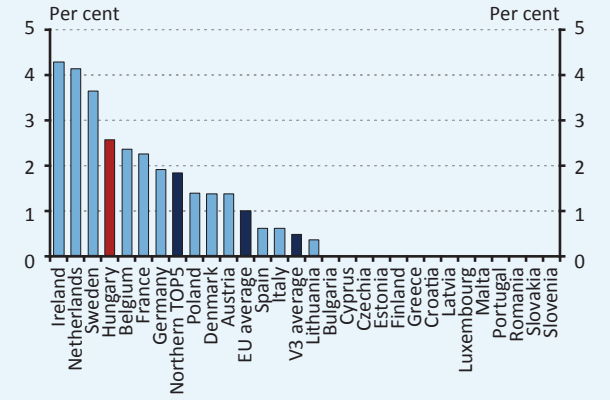
4.14.159 Environmental expenditures as a percentage of GDP (2019)



Source: Eurostat.

Environmental expenditures as a percentage of GDP declined in the past years, corresponding to 1.7 per cent of GDP in Hungary in 2019. The indicator for Hungary is lower than the EU and Northern TOP5 averages (1.9–2 per cent), and is well below the average of the other Visegrád countries (2.4 per cent). More than half of the environmental expenditures, 0.9 per cent of GDP, was related to companies, while 0.4 per cent was related to the government and households each. Corporate expenditures are the most significant on average in the European Union as well. Environmental expenditures are the highest in Austria within the EU, but Poland and Czechia also have high indicators, while that for Ireland is the lowest.

4.14.160 Green government bond portfolio as a proportion of total government bond portfolio (30 June 2022)



Note: Ratio of sovereign green bonds outstanding.
Source: Bloomberg.

Starting from the second half of the 2010s, several European countries issued green government bonds, and in 2020 Hungary also became an issuer with its green bonds issued in euro and Japanese yen in the international market. In 2021, in addition to the issue of green government securities denominated in Chinese renminbi, regular forint green government bond auctions were also held, and green government bond issues continued in 2022 H1 both in the foreign exchange and forint markets. As a result, green government bonds outstanding reached 2.6 per cent of all government securities issued in Hungary, and thus Hungary is one of the leaders in Europe. The continued greening of financial markets and the commitment of the government and the MNB to sustainability, project further growth in these instruments in the coming years.

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.

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2022

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