COMPETITIVENESS REPORT

2021

'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 Sustainable Finance and Supervisory Coordination Directorate, the Directorate Financial Infrastructures, the Directorate Structured Finance Strategy, the Directorate for Social Relations and the Budapest Stock Exchange.

During the preparation of the Competitiveness Report we relied on the data available until 15 August 2021. For some of the examined indicators, until this date, data were available only for 2019 or for earlier periods; accordingly, the impact of the coronavirus pandemic emerging in 2020 are included in the data only partially. The set of indicators included in this report may be revised in the future, in view of the expected discontinuance of the World Bank's Doing Business ranking.

Contents

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. According to experience in economic history, a long-term additional economic growth of at least 2-3 percentage points per annum is essential for successful catching-up with developed countries. Owing to the post-2010 comprehensive and profound economic reforms, Hungary has set on a balanced growth path from 2013. Between 2013 and 2019, Hungary achieved an average GDP growth of 3.8 per cent, which exceeded the EU average 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 2020, at the time of the outbreak of the coronavirus pandemic, the domestic economy had solid fundamentals, and thus Hungary continued its convergence to the European Union even in the extraordinary crisis caused by the pandemic. However, persistently successful convergence requires further reforms and a complete turn in competitiveness. As part of the central bank's competitiveness analysis works commencing in 2015, in 2019 the MNB published the *Competitiveness Programme in 330 points* in order to support the turn in competitiveness necessary for successful convergence. To monitor the progress of this turn and performing a quantitative assessment thereof, in 2019 the MNB created its own competitiveness measurement system, which comprises of two components. One pillar of the measurement system is constituted by the *Competitiveness Mirror*, which measures the realisation of the MNB's 330 proposals. As the second pillar of the measurement system, the *Competitiveness Report* aims to perform an objective analysis and assessment of Hungary's competitive position in comparison with the European Union, along the formerly stipulated principles.

Relying on 159 competitiveness indicators, the MNB's *Competitiveness Report* also examines dimensions, determining long-term economic trends, which tend to receive less focus in the central bank's traditional macroeconomic and financial analyses. In 2021, based on the Competitiveness Index Hungary was ranked 18th in the competitiveness ranking among the European Union's 27 Member States, which still exceeds the average of the Visegrád countries. The analysis of competitiveness is of key importance for the central bank as it fundamentally determines the economy's long-term growth potential. Competitiveness and long-term sustainability are closely related terms, since bearing in mind economic and social development only those things can be competitive that are sustainable in the long run, and vice versa. Economic growth exceeding that of the developed countries is not sufficient on its own, since by improving competitiveness sustainable development also must be given priority, which also takes into consideration environmental factors in addition to economic, social and environmental aspects. The structural areas and factors examined in the publication, influence – both over the medium and long term – economic agents' consumption, 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. To provide a comprehensive and objective judgement, the *Competitiveness Report* operates with a wide range of competitiveness indices. Compared to the previous publication of the *Competitiveness Report* in 2020, the chapter formerly entitled Modern infrastructure and efficient energy use is presented in this publication in three chapters: Modern infrastructure, Competitive energy use and Green economy. Our analysis is essentially based on data from 2020; however, for several indicators we have data only from earlier periods, and thus they do not reflect the impact of the coronavirus pandemic.

In the past decade the macroeconomic conditions, necessary for the turn in competitiveness, have developed in Hungary. The fiscal turn in 2010 and the monetary policy turn in 2013 created the conditions for balanced convergence. In the past years, the stability of the financial intermediary system strengthened, lending activity increased, the capital market diversified and the share of the domestic households' holding within public debt increased. All these were substantially supported by the MNB's programmes (Funding for Growth Scheme, Bond Funding for Growth Scheme, Self-financing Programme). The reduction of the corporations' tax and administrative burdens and the favourable monetary conditions contributed to the significant rise in the SME sector's productivity. The major cut in labour taxes and other government measures simultaneously stimulated the demand and the supply sides of the labour market. Thanks to this, in 2019 Hungary essentially achieved full employment, which was accompanied in recent years by dynamic wage outflow and major growth in net financial wealth. As regards the demographic trends, it is a positive development that the fertility

rate rose, which was also contributed by the broadening and augmentation of the elements of the family support system. E-governance is being developed on a continuous basis, and the new technologies – online cash register, Electronic Public Road Trade Control System (EKÁER), online invoicing, e-personal income tax – contributed to the reduction of tax evasion.

Owing to the favourable trends of the past two decades, in 2020 – at the time of the outbreak of the coronavirus crisis – Hungary had stable economic fundamentals. As a result of the economy's strong starting position, and the government's and the central bank's targeted economy protection and restart measures (e.g. wage subsidies, moratorium on loan instalments, Funding for Growth Scheme Go!) the decline of the Hungarian economy in 2020 was more moderate than the average of the European Union. The financial system remained stable, while private sector's loan portfolio continued to grow significantly even by international standards. Hungarian enterprises proved to be resilient to the adverse economic effects of the coronavirus pandemic, as evidenced by the absence of the wave of bankruptcies that swept through several European countries. The coronavirus pandemic moderately halted the dynamically improving labour market trends of previous years; however, the impacts of the pandemic were much more moderate than during the 2008–2009 global financial crisis. Furthermore, the coronavirus pandemic highlighted the need for additional efforts and improvements in a number of areas, particularly in healthcare, digitalisation and innovation.

Significant reserves for improvement may still be identified in several areas, releasing which would support the realisation of the turn in competitiveness, and thereby successful convergence. A necessary condition of maintaining Hungary's convergence is to provide efficient and stable bank financing together with maintaining the high level of household savings, which also makes the financing of public debt more predictable. The Hungarian banking sector's operating expenses to assets ratio is still one of the highest in the European Union, and thus the interest rate spread on retail loans is high in an international comparison. The enhancement of digitalisation would improve the cost efficiency and pricing of the financial intermediary system. In addition, more efficient allocation of capital may be also supported by the further development of the corporate bond and equity market. Despite the favourable trend, the Hungarian SME sector has significant development potential, which may be capitalised on by using advanced digital technologies, going greener and increasing exports' domestic value added. Successful convergence is conditional upon the continuous availability of human resources of adequate quantity and quality, which becomes an increasing challenge due to the internationalisation of the labour market and the unfavourable demographic trends. For this reason, in the short run the exploitation of the hidden reserves of the labour market bears utmost importance, for example by fostering atypical forms of employment. In the long run, activity and labour productivity may be increased by improving the health of the population, by achieving a demographic turn which ensures growth in the number of the working age population, and by an education system that complies with the challenges of modern age. The public sector may contribute to the long-term growth in productivity by the full digitalisation of public administration, the further reduction of administrative costs and the shadow economy, and by providing modern infrastructure, efficient energy utilisation and green economy.

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 economic policy with the instruments available to it. Furthermore, from 2 August 2021, the central bank's activity has been extended to support the fostering of environmental sustainability, as a result of which the MNB supports the climate-friendly transition of the financial system, and through that of the entire economy, as the first European central bank with a green mandate. In 2013 Hungary has set on a balanced convergence path and in 2020 it closed the most successful period of the last century. As a result of the global coronavirus crisis, the growth path of the Hungarian economy – which previously has considerably outstripped the EU average – temporarily slowed down; however, the decline in Hungary's GDP was more moderate than the average of the European Union. Accordingly, the relative development of Hungary compared to the EU rose further in 2020. Owing to the stable fundamentals before the crisis, the successful preventive measures and the rapid vaccination programme, the Hungarian economy reached the pre-crisis level already in the second quarter of 2021, and convergence may strengthen further. However, the sustainable convergence is conditional upon repeatedly achieving a long-term growth surplus of at least 2-3 percentage points relative to the developed countries.

Based on the MNB's analysis, the turn in competitiveness 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 tangible 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.

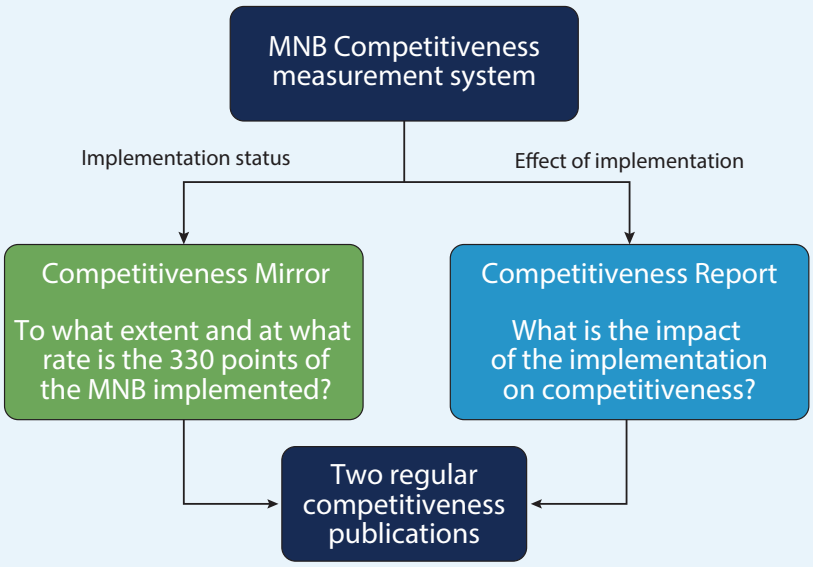
The MNB's competitiveness backtesting system assesses the progress of the turn in competitiveness by two publications, issued annually (Chart 2.1)**:**

- 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 twice, in autumn 2019 and 2020.

- 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, presenting already more than 150 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 essentially based on data from 2020; however, for several indicators we have data only from earlier periods, and thus they do not reflect the impact of the coronavirus pandemic.

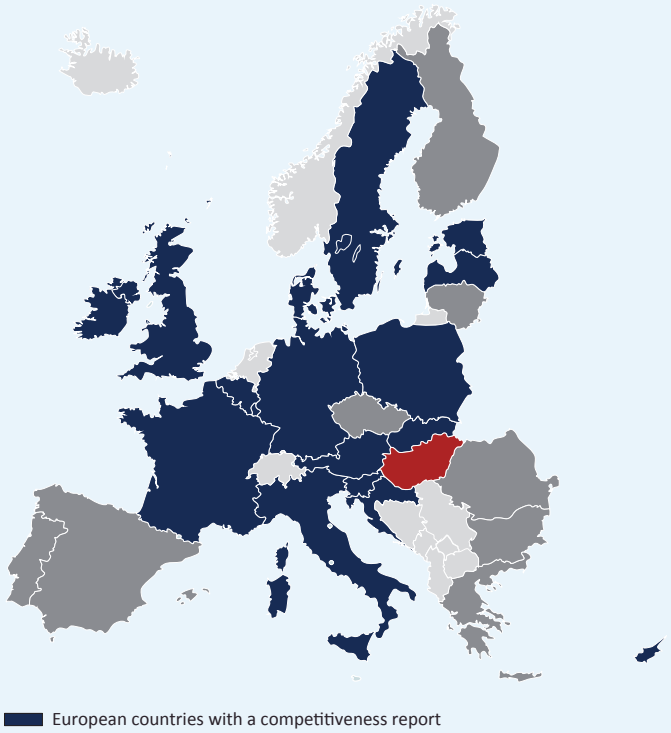
Chart 2.1
Elements of the MNB competitiveness measurement system



Source: MNB.

The MNB's competitiveness publications are wide-ranging and complex in an international comparison, since they go beyond the macroeconomic aspect and also contain detailed analyses. At present, national competitiveness reports are prepared in various forms by 18 countries in the European Union and by the United Kingdom (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
European countries preparing competitiveness reports

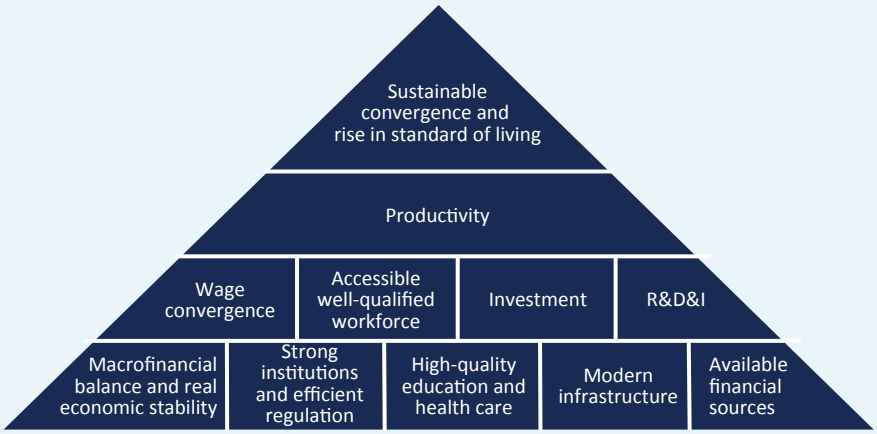


Source: MNB collection.

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, 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.

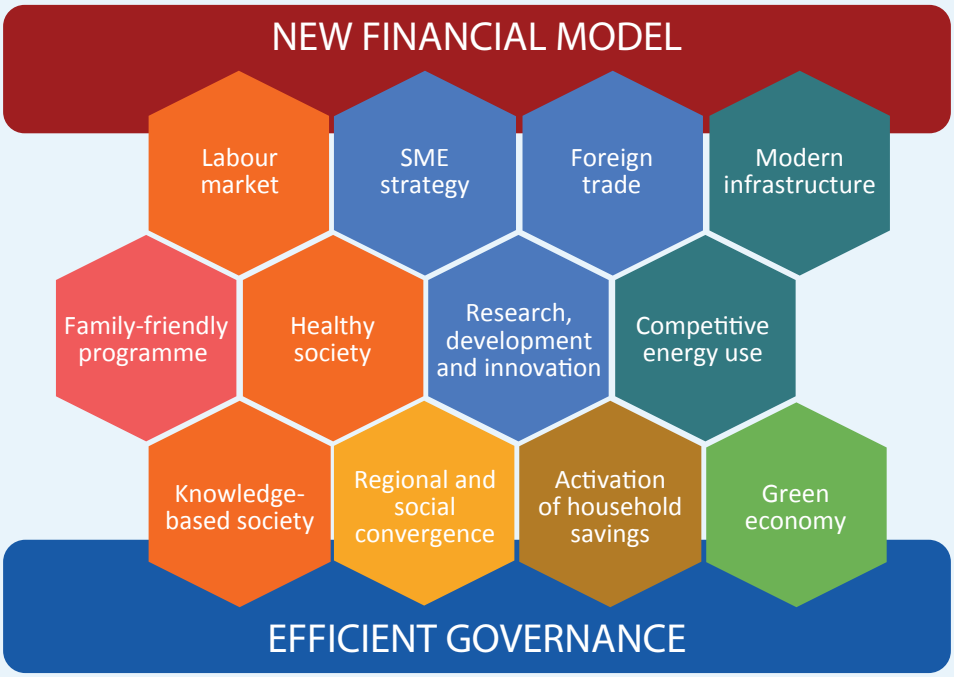
Chart 2.3
Stylised structure, foundations and objectives of competitiveness



Source: MNB.

The *Competitiveness Report* now examines Hungary's competitiveness position in an international comparison in 14 areas (Chart 2.4)**. Compared to the 2020 publication, the chapter formerly entitled Modern infrastructure and efficient energy use is presented in this publication in three chapters: Modern infrastructure, Competitive energy use and Green economy.** Green economy was included in previous analyses as well through examining several indicators; however, in this report we present this field in a separate chapter and with an enhanced set of indicators, emphasising the increasing importance of environmental sustainability. The structure of the reports is still in line with fields presented by the *Competitiveness Programme*, supplemented by 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 status described in the *Competitiveness Programme*. 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. In this publication we present the average of the European Union for 27 countries, excluding the United Kingdom; however, when there are available data, we also present the United Kingdom in the EU comparative charts. The average for both the EU and the V3 countries is 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

In the past decade the macroeconomic conditions necessary for a turn in competitiveness have developed in Hungary, and thus in 2020, at the time of the outbreak of the coronavirus pandemic, the Hungarian economy had stable fundamentals. From 2010, the budgetary and from 2013, the monetary policy turn created the conditions for balanced growth. Owing to this, between 2013 and 2019, Hungarian economic growth exceeded the average of the European Union continuously, by 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, the Hungarian economy continued its catching-up to the European Union in 2020, even in the extraordinary crisis caused by the coronavirus pandemic. However, persistently successful convergence is also conditional upon a total turn in competitiveness. Below we summarise the main results realised in the areas covered by the report.

In recent years the stability of the Hungarian financial system has strengthened, its lending activity and profitability increased, along with the diversification of the capital market and a rise in the share of the domestic households' holding within the public debt. In recent years, the non-performing loan ratio significantly declined and by autumn 2019 it fell below 5 per cent, the level also deemed desirable by the MNB, while the capital adequacy of the banking sector rose further. From 2017, outstanding lending grew substantially in a sound structure, where corporate lending was largely supported by the central bank schemes (low interest rate environment, Funding for Growth Schemes), while the introduction of family support schemes (e.g. Home Purchase Subsidy for Families, Prenatal Baby Support Loan) and the penetration of consumer-friendly products generated a positive turn in lending to households. In 2020, at the time of the outbreak of the coronavirus pandemic, due to the efficient operation in previous years and to the regulatory measures, the Hungarian banking sector's outstanding lending grew in a sound structure and it had high capital reserves. As a result of the central bank and government credit schemes, and the moratorium on loan instalments, the private sector's loan portfolio grew at an outstanding rate, by the end of 2020 already exceeding 35 per cent of GDP. Due to the pandemic, the banking sector's operating income declined, while its costs of risk rose; nevertheless, the profitability of the sector is still at the forefront among the European countries. In addition to the favourable trends observed in the financial sector, in recent years Hungary's macro financial vulnerability has also declined significantly as a result of the conscious strengthening of domestic financing after 2011. Since 2010 households' government securities holding became

more than ten times higher, with major contribution by the introduction of MÁP+ (Hungarian Government Securities Plus) in June 2019. The success of MÁP+ is evidenced by the persistent strong demand for it even during the coronavirus pandemic, and by the end of 2020 the outstanding stock exceeded HUF 5,200 billion. The MNB's Bond Funding for Growth Scheme successfully contributed to the diversification of corporate fund raising, increasing the size of the Hungarian corporate bond market from 1 per cent to 3.2 per cent of GDP in recent years. The Budapest Stock Exchange came under Hungarian ownership once again in 2015, which provides greater room for the development of the domestic capital market and for increasing the number of successful admissions for listing. Despite the achieved results, the moderate role of the alternative financing channels and the low financial involvement of certain social groups may be still regarded as shortcomings of domestic financial intermediation; in addition, there is major room for improvement also in the field of digitalisation and the FinTech ecosystem.

Corporate duality has significantly eased in recent years, which makes Hungarian economic growth more sustainable. Between 2010 and 2018 Hungarian SMEs achieved significant convergence with their relative productivity approaching that of large companies by 12 percentage points, as a result of which Hungary achieved one of the greatest convergence even by international standards. The favourable lending conditions, the reduction of corporate taxes, the central bank's Funding for Growth Schemes, the absorption of EU funds, the second-round effect of the inflow of foreign direct investments and the moratorium on loan instalments materially contributed to the favourable trends unfolding in the sector. Capital deepening, i.e. the steadily high level of the investment ratio, contributes to the SMEs' relative convergence process. In 2019, the Hungarian corporate investment ratio was the third highest one in the EU, after that of Ireland and the Czech Republic. Exports have remained concentrated in Hungary, i.e. only a few SMEs export, while the ratio of exporter SMEs exceeds the average of the Visegrád region. In Hungary more than 6 per cent of SMEs export, while in the rest of the Visegrád countries the ratio of SMEs entering the external markets is typically lower by 1.5 percentage points. It is a favourable trend that Hungarian enterprises proved to be resilient also to the negative economic impacts of the coronavirus pandemic, which is clearly reflected by the fact that the number of bankruptcies has not increased in Hungary.

Owing to the successful economic policy, Hungary has essentially achieved full employment in recent years, from which the labour market has moved away only slightly during the coronavirus crisis. Between 2010 and 2019 Hungary's employment rate achieved the third most significant rise among those aged 15–64 years in the European Union, in parallel with which unemployment also declined considerably along with a material growth in wages. As a result of the foregoing, Hungary came close to full employment, and the labour market provided significant support for economic growth. However, in 2020, the crisis caused by the coronavirus pandemic broke the steadily improving favourable trends. Due to the weakening demand, corporations adjusted primarily by shortening employees' working hours and – to a lesser degree – by dismissals. Despite the labour market adjustment, in 2020 the Hungarian employment rate was in the mid-range of the ranking, while the unemployment rate was the fifth lowest in the European Union, while the tightness of the labour market temporarily eased on the whole. The social groups less active in the labour market still represent a major reserve in employment. Average wages continued to rise in 2020, albeit falling short of the growth of former years, but exceeding the EU average. 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. 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. The fertility rate rose significantly from the historic low of 1.2 registered in 2011 to 1.5, coming close to the EU average. The generous family policy measures after 2010 may have also contributed to the increase in the ratio. 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. In the past decades life expectancy has significantly increased in Hungary; however, in 2020 it fell due to the coronavirus pandemic, and thus there is still room for rise compared to both the EU and the regional average. In Hungary, the family allowance expenditure is one of the highest in an international comparison. However, the labour market position of mothers after childbirth is more difficult than the EU average, since the penetration of atypical employment and the enrolment rate in early childhood education are still low. As regards the demographic trends – similarly to the developed countries – in addition to the decline in the population, ageing also represents an increasing

challenge. In Hungary, the ratio of the population over 65 years was 20 per cent in 2020, which was slightly lower than the EU average, but exceeded the average of the Visegrád countries.

There is significant room for improving the general health status of the Hungarian population, which – in addition to the gradual ageing of the society – lays increasing burden on the health care system, already struggling with numerous challenges. The number of healthy life years increased at both sexes in the past period, as a result of which the indicator for women reached the EU average, but there is still room for increase for men. On average, Hungarian women and men live in health 62.8 and 60.7 years, respectively. Hungary is at the end of the ranking of the EU countries in several health indicators, which is attributable to the largely unhealthy way of life. 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 (6.7 per cent) was below the average of the region (6.9 per cent), and of the EU (8.2 per cent) in 2018. Within expenditures, households' direct expenditures 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. The number of practising doctors and health professionals as a percentage of the population is lower than the EU average, but broadly in line with 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.

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. In 2017, Hungary spent 3.9 per cent of GDP on education, which is in line with the average of the other Visegrád countries (3.8 per cent), but it is lower than the EU average (4.3 per cent). Financial remuneration for the teaching profession in Hungary lags behind – similarly to the level observed in the region – that for other occupations requiring tertiary education degree. In Hungary, early school leaving without obtaining any qualification is higher (12 per cent) than the average of the other Visegrád countries. In the age group of 25–34 years, the ratio of tertiary education graduates was 31 per cent in 2020, which is the third lowest value in the European Union. In Hungary 5 percent of the adult population participated in lifelong learning, which corresponds to the regional level, but only 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 room for growth in foreign language and financial skills.

In recent years a competitive digital infrastructure has been developed in public administration, which contributed to reducing the size of hidden economy and the bureaucratic burdens of corporations. As a result of the introduction of the online cash register, the Electronic Public Road Trade Control System (EKÁER), and the online invoicing, between 2010 and 2019 ratio of unpaid VAT (VAT gap) decreased to the third largest degree among the EU Member States in Hungary, from 21.7 per cent to 6.6 per cent. The favourable trend is likely to continue, as the system of draft VAT returns will be launched from 2021. The estimates related to the hidden economy also evidence a similar trend; however, in 2017, the estimated ratio of 20 per cent in Hungary still exceeded the EU average of 16 per cent. Public administration wage costs and the number of employees still exceeds the V3 and EU average. 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 could be improved. The quality of telecommunications infrastructure in Hungary is competitive. In terms of the speed and penetration of broadband internet, Hungary is among the leaders in the EU. The energy consumption of the Hungarian economy and the ratio of net energy imports are still high. The dynamic economic growth of recent years resulted in larger energy consumption, as a result of which the ratio of net energy imports rose by roughly 20 percentage points (to 70 per cent) in 2019, compared to the average of previous years. The ratio of renewable energy resources declined in Hungary between 2014 and 2018, thus Hungary failed to achieved the EU target undertaken until 2020. In the EU, the per capita carbon dioxide emissions per is one of the lowest in Hungary, and the carbon dioxide emissions per one unit of economic output is also below the EU and the Visegrád average; however, the degree of air pollutions exceeds the EU average. There is also room for improvement in revenues from environmental tax and environmental expenditures; however, as regards the issuance of green government bonds, Hungary's issuance ratio in 2020 was high both by regional and EU standards.

Table 1
Improvement in certain competitiveness indicators

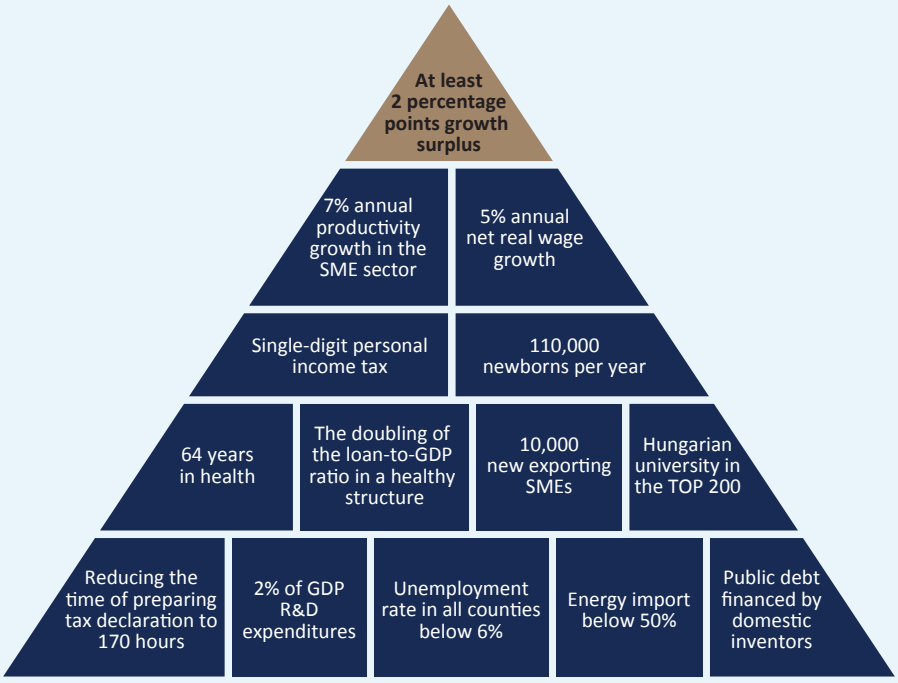
Indicator	2010	2019	2020
Macroeconomy and financing			
Annual GDP growth rate (per cent)	1.1	4.6	-5.0
Investment rate (in per cent of GDP)	20.1	27.1	27.3
Gross public debt (in per cent of GDP)	80.2	65.5	80.4
Households' government securities holding (HUF billions)	727	8,043	9,132
Net external debt (in per cent of GDP)	52.6	7.6	7.7
Difference between GNI and GDP (in per cent of GDP)	-4.5	-2.6	-1.6
Households' net financial wealth (in per cent of GDP)	70.0	106.6	115.7
Gross savings rate (in per cent of GDP)	20.7	27.6	27.5
Financial system			
Return on equity of the banking sector (per cent)	12.6	15.0	7.9
Net non-performing loan portfolio as a percentage of the capital (per cent)	49.7	2.2	1.4
Share of electronic payments of retail purchases (per cent)	10.1	32.2	37.8
Ratio of internet bank users (per cent)*	37.1	54.2	58.1
Corporate sector			
Labour productivity of the SME sector relative to large enterprises (per cent)**	46.6	58.7	
Total tax rate of enterprises (per cent)**	52.4	37.9	
R&D expenditures (in per cent of GDP)	1.1	1.5	
SMEs with product innovations (per cent)***	9.7	13.5	19.5
EU Digital Economy and Society Index (weighted value)****	31.7	42.3	47.5
Credit dynamics of the corporate sector (per cent)	-2.5	14.0	8.7
Human capital			
Fertility rate (number of children per woman)	1.25	1.49	1.55
Employment rate in the age group 15–64 (per cent)	54.9	70.1	69.7
Unemployment rate in the age group 15–64 (per cent)	11.3	3.5	4.3
Average gross monthly earnings of full-time employees (HUF)	202,525	367,833	403,616
Average tax wedge of families with two children and average wage (per cent)	41.7	37.5	36.9
Healthy life years (years)	57.5	61.8	
Ratio of cataract surgeries performed in same-day surgery and outpatient care (per cent)**	28.4	57.9	
Ratio of international students in tertiary education (per cent)**	4.7	11.4	
Participation in lifelong learning (per cent)	3.0	5.8	5.1
Ratio of people at risk of poverty or social exclusion (per cent)	29.9	18.9	17.8
Environment, infrastructure, public administration			
Ratio of unpaid VAT (per cent)	21.7	6.6	
Public administration through the internet (per cent)	17.0	39.0	37.0
Ratio of municipal waste recycling (per cent)	19.6	35.9	
Density of the railway network (km / thousand square kilometres)	98.7	122.0	
5G mobile internet readiness (per cent)	0.0	7.5	61.1
Share of renewable energy sources (per cent)	12.7	12.6	
Gas price for households (PPS/kWh)	0.09	0.05	0.05
Energy intensity of the economy (kg / EUR 1000)	267.1	206.0	

*Note: * Data from 2014 instead of 2010. ** Data from 2018 instead of 2019. *** Data from 2013 instead of 2010. **** Data from 2015 instead of 2010. Source: ECB, European Commission, Eurostat, IMF, HCSO, MNB, OECD, PwC, World Bank.*

2.3 NECESSARY DIRECTIONS OF PROGRESS

Hungary's sustainable convergence calls for a comprehensive turn in competitiveness, which ensures a long-term economic growth exceeding the EU average by at least 2-3 percentage points. Convergence of developing countries to the advanced economies is not an automatic process. Experience shows that most countries were unable to maintain the growth surplus for a such a long time that would have enabled them to catch up with the advanced economies. There is no universal recipe for breaking out of the phenomenon referred to by the specialist literature as the middle-income trap. In the past almost 100 years hardly a dozen countries were able to achieve successful convergence. On the other hand, there are some general findings that were common in the economies that achieved successful convergence, such as Singapore, Taiwan and South Korea in Asia and Ireland and Finland in Europe. Such conditions include, for example, the maintenance of a permanently high and technology-intensive investment ratio, increased support of R&D&I activities, and the growing population. The Magyar Nemzeti Bank has previously presented in several publications the conditions under which a 2-3 percentage point growth surplus can be achieved in Hungary in the long run, taking into account the economic, social, geographical and cultural conditions. To achieve an economic growth exceeding the average of the European Union, it is an essential condition, among other things, to improve productivity, as a result of which real wages may rise at a larger rate. Productivity growth should be based on the SME sector's improving economies of scale, increasing innovation and export market activity, which may be supported by the reduction of the public administration burdens as well as by providing simpler and faster access to sources of finance. Providing human capital of adequate volume and quality is an important condition of convergence, which may be achieved – in addition to a demographic turn – by increasing healthy life years and the improvement of the qualification of the labour force. In order to support the turn in competitiveness, necessary for this, in 2019 the central bank also drew up a package of proposals comprising 330 points.

Chart 2.5
Key objectives of Magyar Nemzeti Bank's publication titled "Competitiveness Programme in 330 points"



Source: MNB.

The coronavirus pandemic proved that economic recovery was faster in countries characterised by strong competitiveness; to this end Hungary needs to achieve significant progress in two fields. The onset of the coronavirus pandemic in 2020 has caused a fundamental change in the global economy. Economic agents need to adjust to new norms and switch over to a new type of knowledge- and technology-intensive grow model, also focusing on environmental sustainability, to win the next decade. Hungary needs to focus on two key areas. Firstly, the focus must be on digital changeover, and particularly on the digital changeover of the state, which saves time and money for economic agents, while

budgetary revenues may also grow dynamically through the reduction of the shadow economy. Secondly, environmental sustainability and green transition must be enforced more strongly in Hungary. The MNB will be able to contribute to this more actively in the future, in possession of the sustainability mandate added to the MNB Act in 2021.

A necessary condition of maintaining Hungary's convergence is to provide efficient and stable bank financing together with maintaining the high level of household savings, which also makes the financing of public debt more predictable. The banking sector's lending activity is an essential condition of sustainable economic growth; however, it represents a challenge that the interest rate spreads retail loans are high in an international comparison, which is not justified by the costs of risk. At the end of 2020, the average interest rate spread on Hungarian housing loans was 2.5 percentage points, while the average of the Visegrád countries and the euro area was 1.8 and 1.5 percentage points, respectively. In the future, the declining operating expenses of banks and the deepening of the digital infrastructure points to a fall in spreads. After the coronavirus pandemic the acceleration of digital changeover in customer service, in the internal functioning of the institution and in business continuity is particularly necessary. At the corporations the appreciation of alternative source of finance, in addition to bank loans, may be expected. As a result of the MNB's Bond Funding for Growth Scheme (BGS), the corporate bond market has significantly expanded, but it still falls short of the average of the Visegrád countries. In Hungary, due to households' high propensity to save and the implementation of the retail government securities strategy, the holding of households within the public debt exceeds that of the non-resident sector.

Productivity of the Hungarian SME sector is increasing, but it has significant unutilised potential, which may be capitalised on by using advanced digital technologies, going greener and increasing exports' domestic value added. In Hungary the SMEs' relative productivity considerable increased: between 2010 and 2018, the productivity gap relative to large corporations declined by 12 percentage points. However, the improvement of Hungary's competitiveness calls for a further dynamic development of the SME sector. One of the most important competitive disadvantages is that SMEs are generally characterised by passive adjustment, with hardly any conscious future planning. The use of advanced digital solutions, such as the enterprise resource planning (ERP) and customer relationship management (CRM) software is less known and less common among Hungarian corporate managers. In the course of developing businesses, sustainability should be one of the priorities, since the recycling ratio of Hungarian SMEs is one third of the EU average, and most companies do nothing to reduce the environmental load or to improve energy efficiency. A less concentrated export performance of the SME sector and the capability of selling products and/or services by a wider range of enterprises would support sustainable growth in the longer run. In a regional comparison Hungarian companies perform relatively well in this area. However, in the countries with the highest export activity (Slovenia, Austria), the proportion of exporting companies is almost three times higher than in Hungary. In terms of Hungary's competitiveness, the structure of exports and increasing exports' domestic value added, supported by the use of knowledge-intensive services and the creation of knowledge-intensive jobs, are essential aspects.

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 disadvantaged groups, to raise wages and productivity, and to mitigate regional disparities. As a consequence of the coronavirus pandemic, 2020 interrupted Hungary's favourable labour market trends. However, the unfavourable impacts were much smaller than during the 2008–2009 global economic crisis. In addition to the strengths in the labour market, there are some areas which may be in need of a breakthrough. This includes the increasing of the activity rate of groups being in more disadvantaged position in the labour market, such as young people, the low skilled, women and people around retirement age. In terms of average wages in Hungary, there is a substantial growth reserve compared to the EU average. Wages may be increased in parallel with the productivity growth of companies and employees, while the higher wage bill alone support economic development through internal demand. In order to achieve a balanced economic growth, existing regional disparities should be reduced. Possibility of work and unemployment vary significantly by county. Regionally targeted improvements can help to eliminate inequalities.

In the long run, economic growth is significantly influenced by the size of the working-age population, which can be increased by raising fertility rates. This calls for a social policy mix that effectively supports the realisation of plans to have children. To halt the decline in population, a fertility rate of around 2.1 should be maintained permanently. However, at present none of the EU countries has managed to reach this threshold. The strengthening of Hungary's family support system after 2010 has contributed to an increase in the fertility rate, but further efforts are necessary to bring it close to 2. Government expenditure on family support as a percentage of GDP is high by international standards, and it is likely

to increase further. However, incentives to help women return to the labour market after childbirth are just as important. This includes increasing the proportion of children participating in early childhood education by increasing the number of nursery places. The Hungarian figure rose from 10 per cent in 2010 to 16 per cent by 2017, while the EU average is the double of the latter. It would be equally important to increase the ratio of women in part-time employment: in 2020, only 7.2 per cent of women in Hungary worked part-time, compared to the EU average of 28 per cent.

Preserving the health of the population is beneficial to society, both from the perspective of the individual and the economical. Therefore, it is essential to foster health awareness and prevention, while making significant efforts to increase institutionalised funding. The health of the population is a major issue for the national economy, as it affects economic performance through the quality and volume of the workforce. Hungary needs to make progress in the health status of its population to catch up with countries of a similar level of development. Among other things, in Hungary the proportion of obese adults and the number of preventable and avoidable deaths is the second and third highest in the EU, respectively, while the standardised death rate of malignant neoplasms is the highest in the EU. This is why there is a need to move towards healthy lifestyle and early detection of diseases, which would reduce the burden on health care and create the fundamentals for sustainable economic growth. One of the key challenges of the Hungarian health care system is that the private health care expenses are spent not through institutionalised channels. In the absence of adequate self-provision, households' direct health care expenditure is a burden for a significant proportion of the population. Advance savings, institutionalised forms such as health funds or health insurances would help to plan the covering of health care expenditure. There are efficiency reserves in the Hungarian health system that could be exploited to improve the sustainability of the system without increasing the level of expenditures, for example by separating active in-patient hospital care from chronic care. The average length of stay in hospitals is 2 days longer than the EU average, which could be reduced by more frequent use of same-day surgeries (e.g. cataract surgeries), which would be more beneficial for individual comfort and budget expenditure.

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. In Hungary, there are two main areas where potential for improvement can be identified: 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. Competences acquired in all three areas increase the practical knowledge, learning and innovation capability, which ultimately supports economic development. In addition, ratio share of young people with a STEM degree (12 per cent) is the fourth lowest in the EU. Progress in this area is also important because the labour force holding a STEM degree has a significant impact on innovation activity and thus on the transition to an innovation-driven economic model.

The government can foster a turn in competitiveness by the full digital transition of public administrations, providing modern infrastructure, increasing energy efficiency and supporting the green economic transition. The coronavirus pandemic contributed to the digital leap in some segments of the Hungarian economy and increased the need and social demand for the spread of e-governance. On the infrastructure side, improving the quality of the rail and road networks along with infocommunication developments such as the roll-out of 5G technology can contribute to increasing Hungarian competitiveness. It is a challenge that the energy consumption of the Hungarian economy and the ratio of net energy imports are still high. Reducing net energy imports is facilitated by increasing environmental-friendly domestic production capacity and improving energy efficiency. Achieving carbon neutrality requires the gradual establishment of a green and circular economy. However, on its own it is not enough to recycle the produced waste, but rather the volume of waste and pollutants generated must be reduced in parallel. One effective economic policy instrument to reduce pollution by economic agents is the extension of green taxes, which Hungary can build on to a greater extent in the future, as the ratio of green tax revenues within the budget revenues is currently lower than the regional and EU average.

2.4 MNB COMPETITIVENESS INDEX 2021

2.4.1 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 nearly 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. 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 (95 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, 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 score. 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 indicators included in them, while the aggregated score of the Competitiveness Index is the arithmetic mean of the 14 areas under review taken into consideration with the same weight. The methodology elaborated by Asztalos et al. (2017)[1]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 first results of the Competitiveness Index published in 2020, some minor methodological changes have been made in 2021. The most significant of these is that the previous 12th competitiveness area (*Modern Infrastructure and Energy Efficiency*) has been divided into three separate chapters (*Modern Infrastructure*, *Competitive Energy Consumption* and *Green Economy*), and thus the index now consists of 14 areas instead of 12. Some of the charts have been replaced compared to the previous year, but nearly 90 per cent of the 2020 indicators are also included in the 2021 version. Relatively larger changes have been made in the *SME Strategy* and the *External Economy and Economic Structure* chapters, due to the absence of an updated version of the World Bank's Doing Business publication. Another change compared to the 2020 version is that the UK is no longer included in the index due to its exit from the European Union. In addition, minor methodological refinements have been made in the treatment of outliers and indicators containing a relatively large volume of missing data.

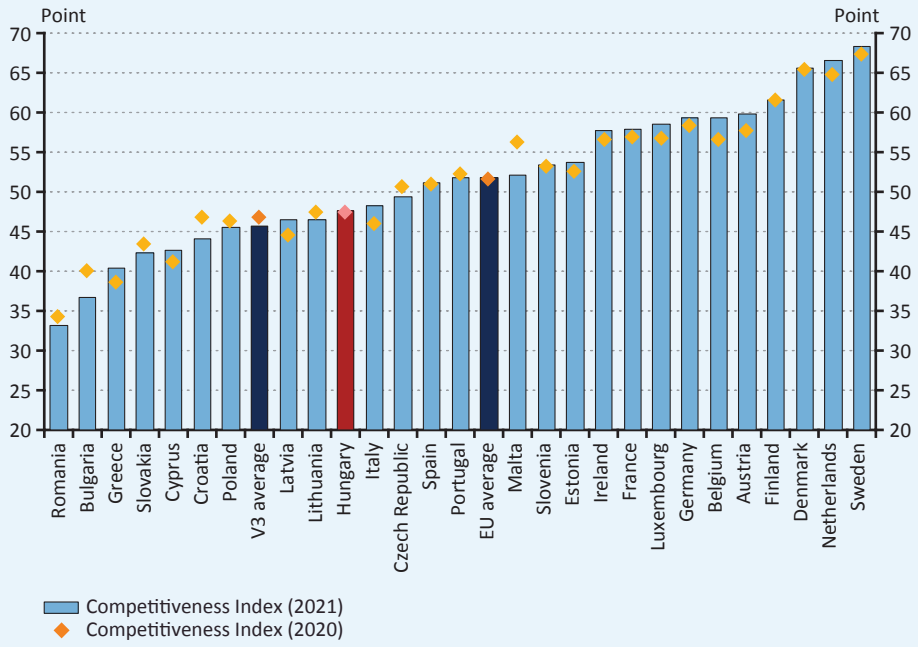
2.4.2 Results of the MNB's 2021 Competitiveness Index

Hungary was ranked 18th in the MNB's competitiveness ranking among the 27 countries of the European Union in 2021. Hungary's competitiveness ranking was stable compared to the previous year (47.6 points), slightly lower than the EU average (51.8 points), but still ahead the average of our Visegrád countries (45.7 points) (Chart 2.6). In the 2020 Competitiveness Index, Hungary ranked 19th out of 28 countries, but in the 2021 report the UK, which was in a more favourable position than Hungary last year, is no longer included in the index due to the termination of its EU membership. The ranking was once again led by the Netherlands and the Scandinavian countries, while Romania, Bulgaria and Greece are at the end of the list. 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, Estonia (53.6 points) and Slovenia (53.4 points) reached the highest score, while the result of the other countries in the region falls

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

short of the EU average. Sweden, the country that performed the best, scored 68.4 points of the possible 100, i.e. there is still room in all countries for the strengthening of competitiveness.

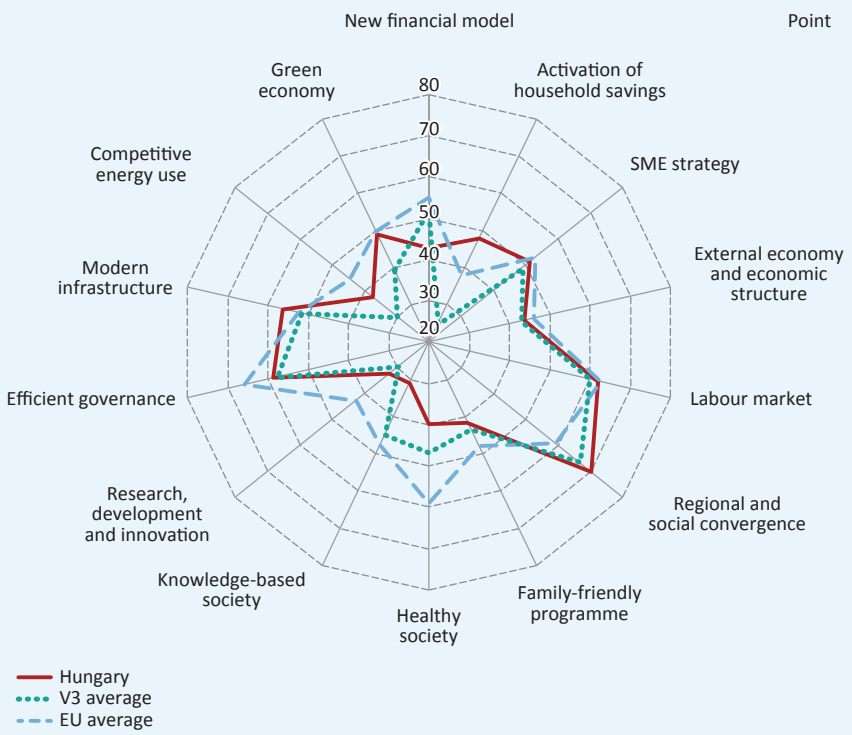
Chart 2.6
Aggregated Results of the MNB Competitiveness Index



Source: MNB.

Hungary achieved a higher score than the EU countries and the other Visegrád countries in the areas of *Regional and social convergence*, *Activation of household savings* and *Modern infrastructure* (Chart 2.7)**.** The Hungarian results exceeded the average of the other Visegrád countries in further seven chapters and were below the average in four chapters. Compared to the region, Hungary performs best in the chapters of *Activation of Household Savings*, *Green Economy* and *Competitive Energy Use*, while there is room for improvement in the *Knowledge-based Society*, *New Financial Model* and *Healthy Society* chapters. Hungary achieved the best ranking in the *Activation of household savings* (6th rank), in the *Regional and social convergence* (10th rank) and in the *Modern infrastructure* (10th rank) chapters, while its worse ranking was in the Healthy society chapter (26th rank). 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 66 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 38 points, i.e. here the differences between the best performing and the rest of the countries are much larger.

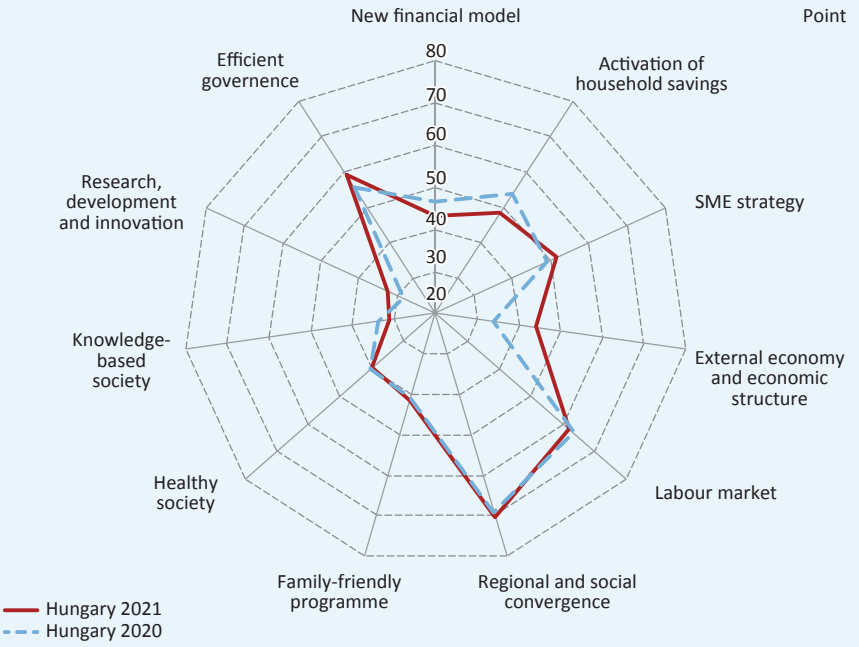
Chart 2.7
Results of the MNB's Competitiveness Index by areas (2021)



Source: MNB.

Overall, Hungary's score in the Competitiveness Index increased by 0.2 percentage points in 2021 compared to the previous year, with the majority of chapters showing an increase in the Hungarian score (Chart 2.8). Due to the restructuring of the chapters, there are 11 chapters in the 2021 Competitiveness Index the results of which are comparable to the previous year. In 6 of the chapters, Hungary's score improved, most notably in the *External economy and economic structure* (+9.9 points), *Research, development and innovation* (+4.0 points) and *Efficient governance* (+3.3 points) chapters.

Chart 2.8
Results of the MNB's Competitiveness Index for Hungary by time and areas

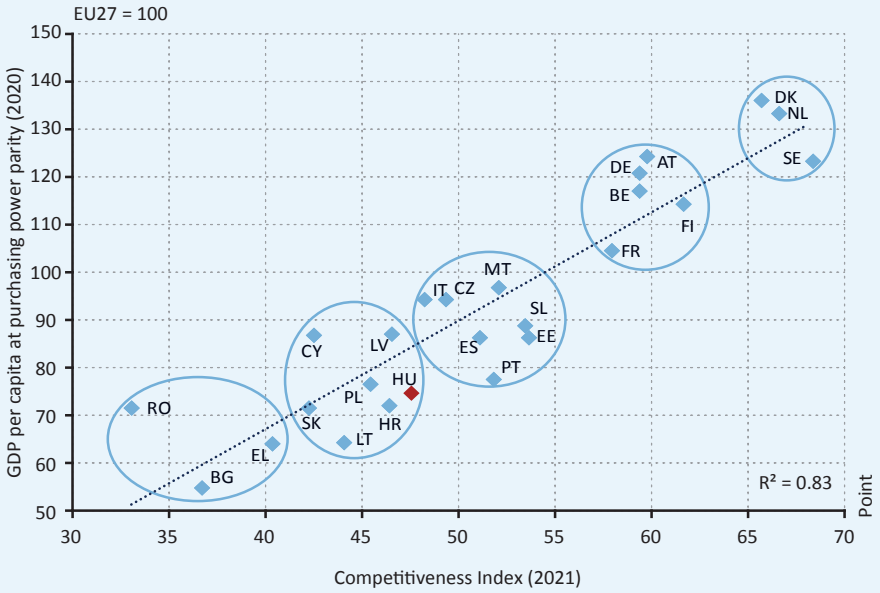


Source: MNB.

There is a strong correlation between the ranking in the MNB's Competitiveness Index and the countries' economic development (Chart 2.9). 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 third group is mainly composed of Mediterranean countries (Malta, Portugal, Spain and Italy) and countries in the CEE region with competitiveness levels close to or above the EU average (Estonia, Slovenia and the Czech Republic). The fourth group comprises additional countries of the CEE region (Hungary, Lithuania, Latvia, Poland, Croatia, Cyprus and Slovakia), with Hungary achieving the best competitiveness position. The three countries belonging to the last group (Greece, Bulgaria and Romania) are already in need of major competitiveness measures even to catch up with the better performing countries in the region.

Hungary is slightly below the trend line of the EU countries' results, that is its economic development is moderately lower than its competitiveness position. A shift along the trend line - that is the simultaneous improvement of the economic development and competitiveness position - constitutes the realisation of sustainable convergence, the objective set by the MNB in its Competitiveness Programme. To achieve this, it is essential to implement a turn in competitiveness.

Chart 2.9
The relationship between the MNB's Competitiveness Index and economic development



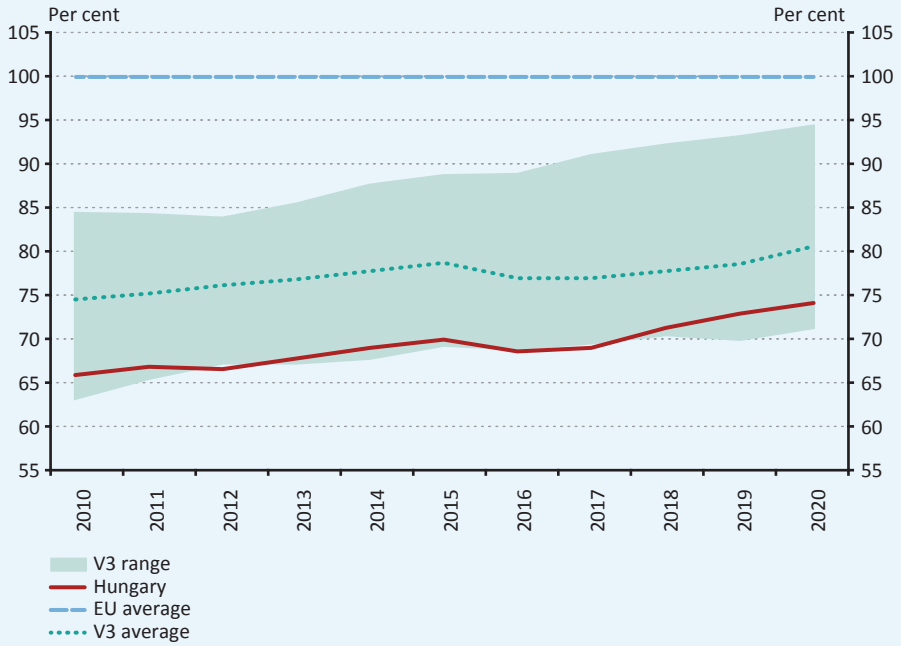
Note: EU27 = 100 In the case of Ireland and Luxembourg, the GDP per capita values are outliers, and thus they are not indicated in the chart.
Source: Eurostat, MNB.

3 Situation of the macro economy and results of the competitiveness rankings

3.1 HUNGARIAN MACROECONOMIC ENVIRONMENT

In terms of macroeconomic indicators, the competitiveness of the Hungarian economy improved significantly in the past years, but several countries have set an example of the possibility of an even faster development. The results of the fiscal and economic stabilisation after 2010 were also reflected in the dynamic economic growth from 2013 and the macro-financial balance. Owing to the turn in growth, Hungary's balanced convergence commenced and repeatedly outdoing Slovakia (Chart 3.1). As a result of the economic policy measures of the previous decade, the Hungarian economy was hit by the coronavirus pandemic with a strong immune system. The government and the central bank increased the resilience of the economy through targeted measures (e.g. wage subsidies, moratorium on loan instalments, expansion of subsidised lending programmes), as a result of which the decline of the Hungarian economy in 2020 was more moderate than the EU average. Owing to this, Hungary continued its convergence even in the extraordinary crisis caused by the pandemic. Based on the Eurostat data, GDP per capita at current prices in 2020 was EUR 22,103, amounting to 74.2 per cent of the EU average. This is 1.2 percentage points higher than a year earlier.

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

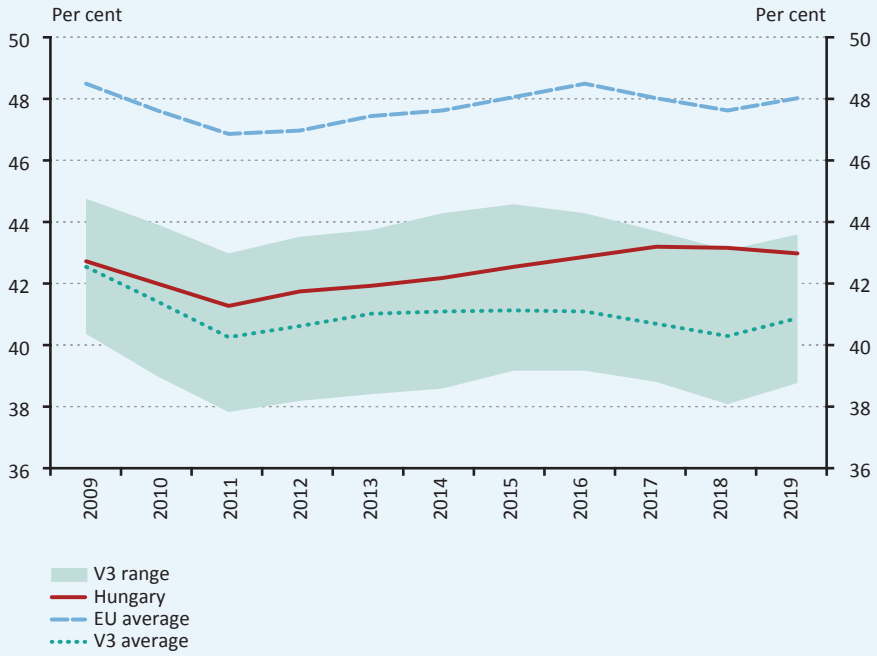


Note: Calculated on current prices, purchasing power standards (PPS).
Source: Eurostat, MNB.

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. From 2017 onwards, the upward trend was followed by stagnation, but Hungary maintained its prominent position in the region. However, the level of the indicator still shows a significant convergence reserve compared to the EU average (Chart 3.2). Higher value added is generated at the beginning and end of the value chain, while production usually has low value added content. The foreign direct investments that used to flow into the region

usually outsourced the production process, while the higher value added activities remained in the parent country. As a result of this, the production structure of the countries of the region was based in the past decades on production of high value added to a lesser degree. In Hungary, the financial and insurance services and ICT sectors have recently been the most successful in increasing their value added to output ratio, while the automotive sector, for example, registered a decline (especially in 2019).

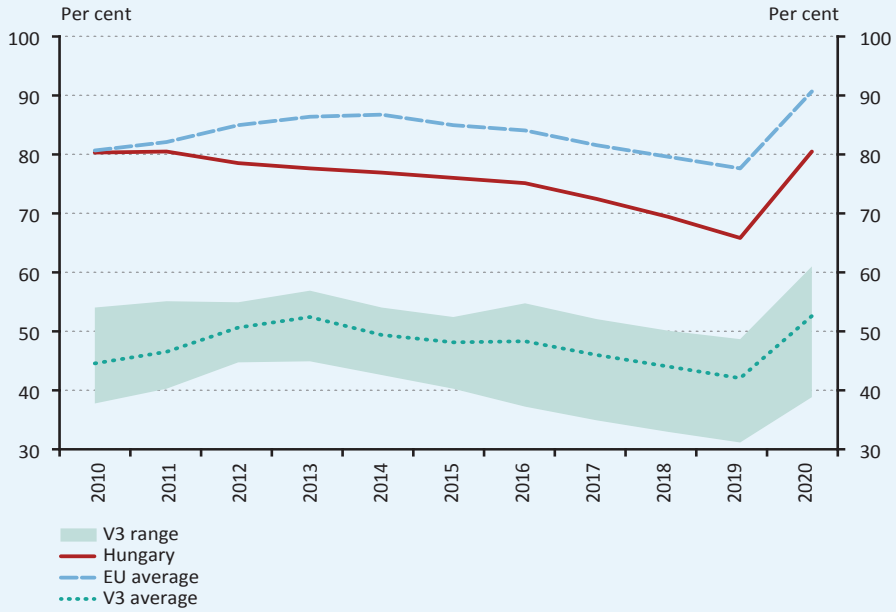
Chart 3.2
Value added as a proportion of output



Source: Eurostat.

In 2020, all EU countries experienced an increase in gross government debt to GDP ratio as a result of the coronavirus pandemic. Accordingly, the steady decline in Hungary since 2011 also faltered temporarily, as the debt ratio in Hungary rose by around 15 percentage points, similar to the EU average. The Hungarian debt ratio rose to 80.4 per cent by the end of 2020, which is lower than the EU average but exceeds the figures of the region (Chart 3.3). In addition to the level of public debt, the structure of it is also an essential financial vulnerability factor. As a result of the conscious debt strategy after 2011 aimed at increasing the domestic investor base, the level of public debt and the ratio of foreign holding within the public debt declined significantly and steadily. The latter has continued to decline (33.2 per cent at the end of 2020), despite the crisis caused by the coronavirus pandemic. The foreign currency ratio of the public debt in 2020 increased slightly, to 19.9 per cent, as a result of the foreign currency bond issuance, but it remains significantly better than the level of around 50 per cent at the end of 2011. The improvement in the structure of public debt is shown by the fact that, even in during the coronavirus crisis, the average maturity of Hungarian public debt increased by one of the largest degrees in the EU, the level of which, however, still justifies the efforts to achieve longer maturities. The moderate foreign holding and foreign exchange ratio as well as the increase in the average maturity play a significant role in reducing macro-financial vulnerability and maintaining a favourable perception of Hungary's debt rating.

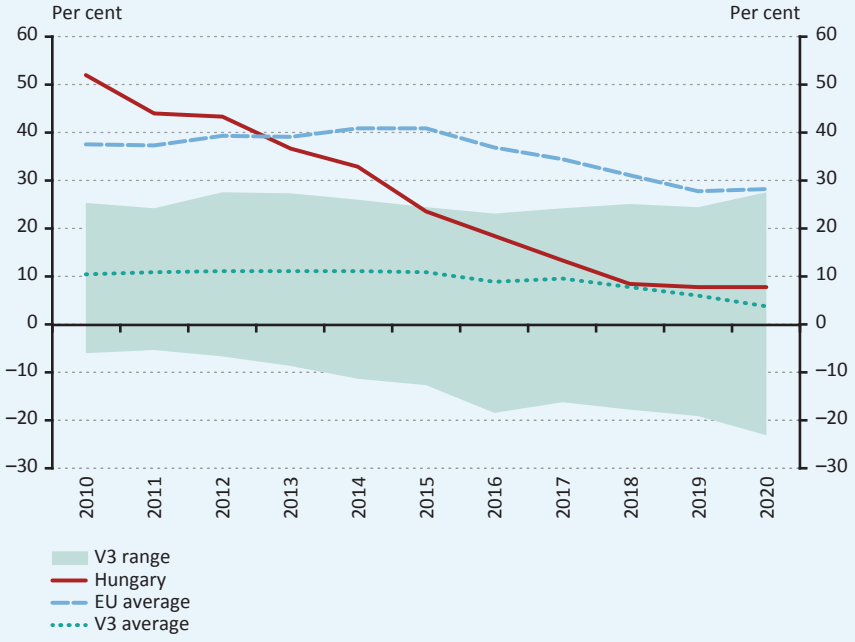
Chart 3.3
Gross public debt-to-GDP ratio



Note: The EU average is the arithmetic mean weighted by the size of the economies.
Source: Eurostat.

As regards the external debt ratios, Hungary achieved major improvement in the past decade and caught up with the region. At the outbreak of the financial crisis in 2008, Hungary's net external debt, and thus its external financial vulnerability, were extremely high. However, since 2010, owing to the adjustment process of the domestic sectors, the current account turned into a surplus, and Hungary's high net lending facilitated a continuous and substantial reduction of external debt. In 2020, at the outbreak of the coronavirus pandemic, the Hungarian economy's net external debt ratio was at a low level, similar to that of the countries in the region (Chart 3.4). All this made significant contribution to the favourable developments in Hungary's external vulnerability and risk assessment over the past year, which also supported improvement in competitiveness.

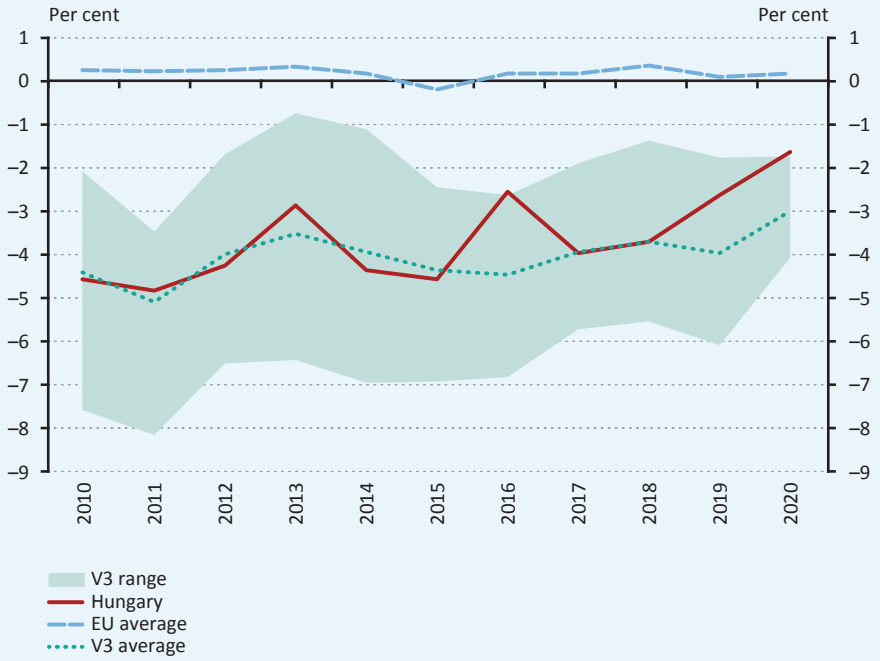
Chart 3.4
Net external debt in per cent of GDP



Note: The EU average does not include data for Luxembourg, Ireland and Malta.
Source: Eurostat, MNB.

Catching-up economies are characterized by foreign direct investments, and due to the profit and interest paid in connection with those, gross national income (GNI) falls short of GDP. In the pre-financial crisis period, this difference was exceptionally high in a regional comparison, which was attributable to the high FDI stock and substantial external indebtedness. After the 2008 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 (Chart 3.5). The fall in external debt, registered in recent years, reduced the gap between GDP and GNI through the lower interest expenditure paid abroad, while in 2020, declining profits of foreign companies further narrowed the gap between the two indicators. As a result, the gap between GDP and GNI has moved closer to the EU average, although it still well above it, partly due to the differences in economic development.

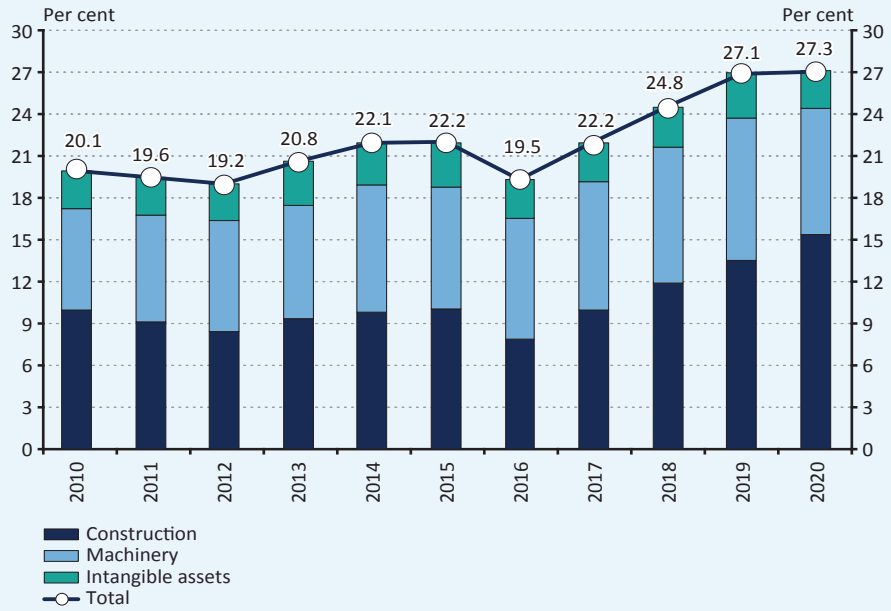
Chart 3.5
Difference between GNI and GDP as a percentage of GDP



Source: Eurostat.

Hungary's investment ratio reached a historic high level in 2020 and was the third highest among EU Member States, while relative price changes also contributed to this (Chart 3.6). 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, successful catching-up countries were characterised by high investment rates of 25 per cent or more in the period of convergence. The rise in investments has been supported by a favourable interest rate environment, a tight labour market, buoyant lending, the Funding for Growth Schemes, favourable wage developments and government measures (Home Purchase Subsidy Scheme for Families, preferential VAT on new housing). All three sectors (corporations, government, households) made positive contributions to the material rise in the investment rate lasting since 2016. In the period of the coronavirus, the fostering of investments was of key importance, mainly through measures to support lending activity (extension of subsidised credit schemes, moratorium on loan instalments). Unlike the regional and European averages, Hungary's investment ratio was able to rise, due to, among other things, the high public investment rate, which reached 6.4 per cent of GDP in 2020. On the other hand, the ratio of construction investment in the structure of domestic investments is high by international standards, while the ratio of the most value-creating "smart" investments (intangible assets and ICT) remains low. Investments in these items would be particularly important for Hungary's transition to a capital- and then technology-intensive growth phase. However, Hungary still has a significant growth reserve in this area compared to the EU average. In 2020, investments in intangible assets amounted to 2.8 per cent of domestic GDP, which puts Hungary only to the 18th place in the EU ranking.

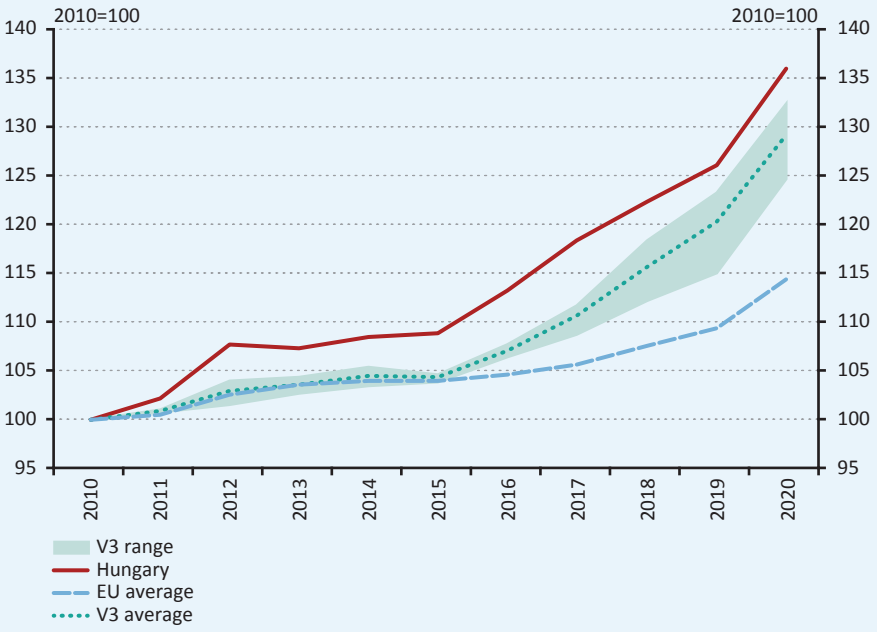
Chart 3.6
Investment rate as a proportion of GDP



Source: Eurostat.

In recent years major wage convergence was realised, and the crisis resulting from the coronavirus slowed down the dynamics of Hungarian wages only to a small degree. After 2016, in the tightening labour market environment resulting from the dynamic economic growth and strengthening labour demand in parallel with that, major wage convergence was realised in Hungary. Nominal unit labour costs increased by more than 35 per cent between 2010 and 2020, while the regional average was close to 30 per cent and the EU average was around 15 per cent (Chart 3.7). In the labour cost index, the dynamic rise in domestic wages is somewhat offset by the gradual reduction of the social contribution tax. The coronavirus pandemic had a moderate impact on domestic wage dynamics, and wage growth remained high in most sectors. The domestic labour market proved to be much more resilient than during the 2008–2009 crisis, with major contribution also by the dynamic credit expansion, which continued despite the economic recession in 2020, as well as by the central bank and government measures (moratorium on corporate loan instalments, sectoral wage subsidies).

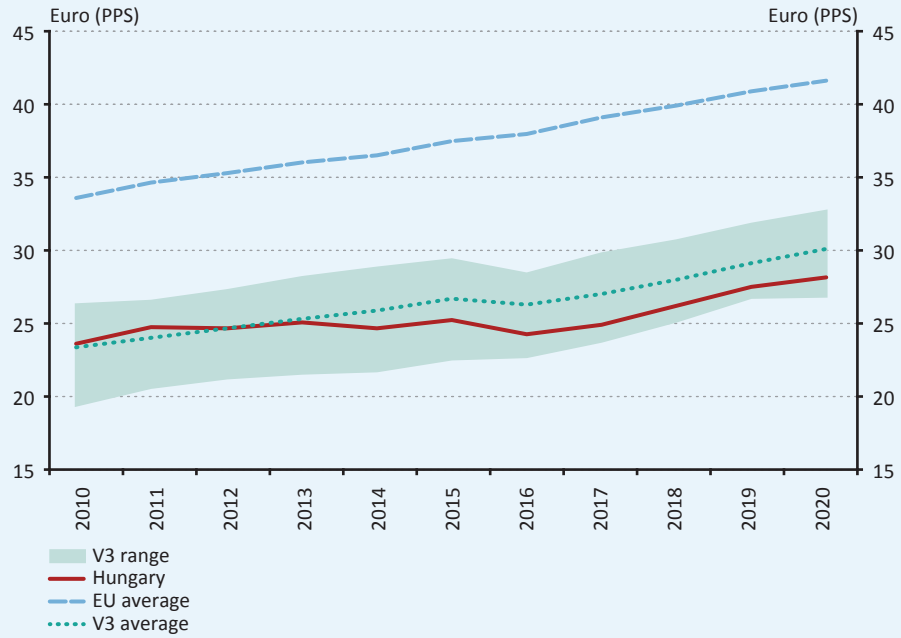
Chart 3.7
Nominal unit labour costs



Source: Eurostat.

Since 2016, labour productivity has improved in line with employment growth, but there is still major growth reserve in productivity growth. 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 and the dynamic employment growth after 2010 caused productivity to stagnate persistently in Hungary (Chart 3.8). By contrast, a continuous productivity growth can be observed both in the countries of the region and on the average of the European Union since 2009. In Hungary, labour market reforms introduced from 2010 resulted in a large increase in the number of economically active and employed people. However, new entrants were usually of lower productivity, and thus the negative composition effect decelerated national productivity growth. As a result of the tightening labour market, from 2016, economic growth has become increasingly capital-intensive, and thus labour productivity also started to rise. Thereafter, the Hungarian labour productivity's convergence rate has been broadly in line with the regional average, but there is still room for further expansion in terms of level.

Chart 3.8
Labour productivity (GDP per hours worked)



Source: Eurostat.

3.2 RESULTS OF INTERNATIONAL COMPETITIVENESS RANKINGS

The coronavirus crisis also affected the institutions that compile competitiveness rankings. This was reflected in the availability of data on the one hand, and the pandemic has radically changed the conceptual framework of competitiveness on the other hand. The concept of competitiveness now also includes how resilient the countries of the world were to the coronavirus crisis unfolding in 2020, how effectively they responded and whether they will be able to restart and develop in the recovery period of the coming years.

Results of the new global ranking prepared by the World Economic Forum in 2020

In response to the pandemic, the World Economic Forum has replaced its usual Global Competitiveness Index ranking with a special edition in 2020, including fewer indicators and countries, focusing on recovery and remodelling the economy. The Transformation readiness index presented in this publication aims to capture the current readiness of countries to transform in the next 3-5 years following the coronavirus crisis. The Index ranks only 37 countries instead of 141 and it replaced two-thirds of its indicators, as a result of which now only 30 per cent of them are objective (Table 3.1).

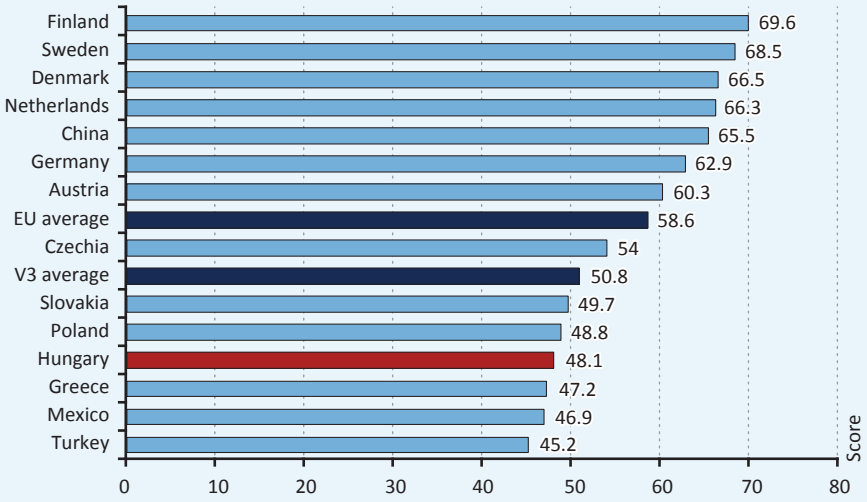
Table 3.1
Changes in the WEF competitiveness ranking in the past two years

Selected methodological questions on the ranking	2019	2020
How many countries are included in the ranking?	141	37
How many indicators were used for the ranking?	103	64
What percentage of the indicators are objective?	43%	30%

Source: WEF

In the WEF Transformation readiness index, Hungary ranked 34th out of 37 countries, with a score of 48.1 out of 100 (Chart 3.9). The average score of the V3 countries was 50.8 and all three countries are ahead of Hungary in the ranking: Czechia 24th, Slovakia 30th, Poland 33rd. Of the 37 countries, Finland scored the highest overall score of 69.9 points and took the first place, while Turkey showed the poorest performance with 45.2 points.

Chart 3.9
The scores of the best and worst-performing countries in the WEF Transformation Capacity Index, respectively the scores of Hungary, and the average scores of the EU and the Visegrád countries



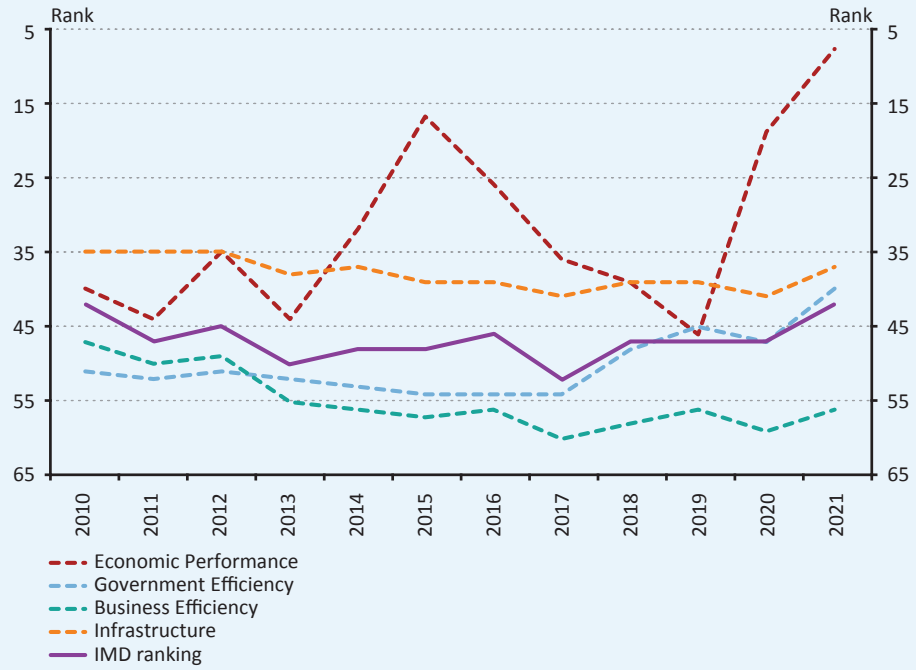
Note: The scale ranges from 0-100, with the higher score being better. The EU average includes 18 countries.
Source: WEF.

Results of the 2021 ranking prepared by the IMD

In the latest, 2021 IMD ranking, Hungary took the 42nd place out of 64 countries, which is up by 5 places compared to its position a year ago (Chart 3.11). Of the key competitiveness rankings, IMD assesses the fewest countries (64), but mostly the developed economies. Mainly due to this fact Hungary ranks in the second half of this international ranking. To prepare its competitiveness ranking, IMD uses 334 indicators grouped in four pillars, two-thirds of which are objective, and one third is based on a subjective, questionnaire-based survey. The IMD used data from 2020 and 2021 for most of the indicators in the analysis, and thus the assessment also includes the consequences of the coronavirus pandemic.

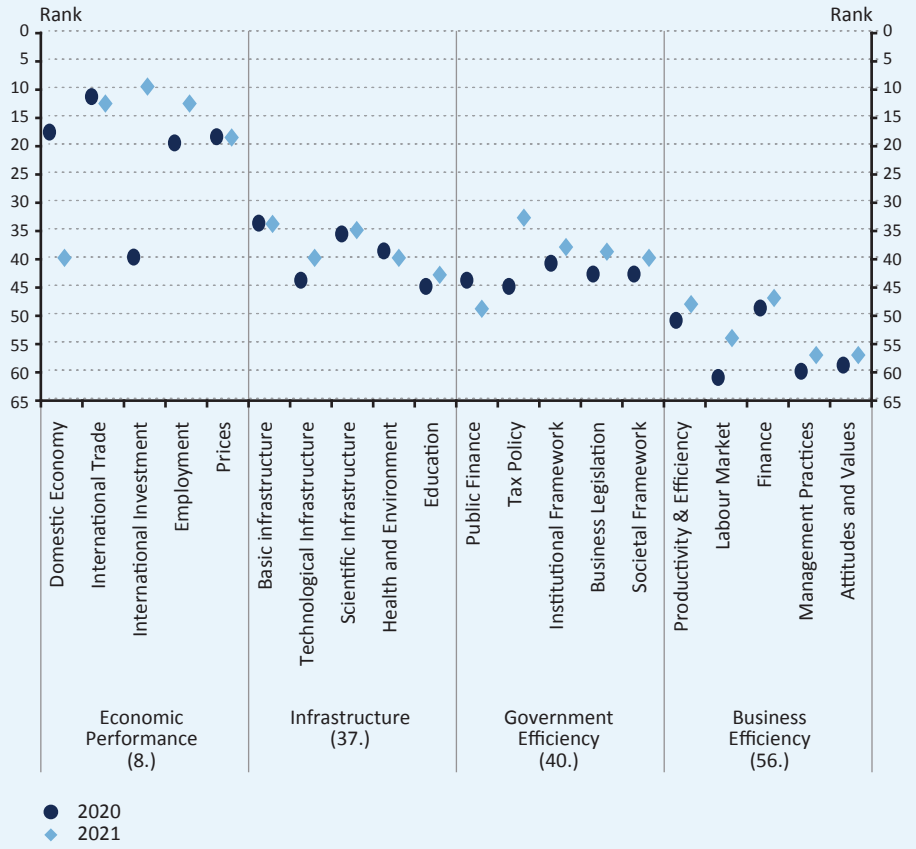
Within the four main areas assessed by IMD, Hungary achieved major progress in economic performance, and it also showed some improvement in the other three (government efficiency, business efficiency and infrastructure) dimensions (Chart 3.12). Following the declining trend of economic performance pillar in recent years, in 2020 Hungary's performance improved 27 places and it was ranked 19th in the international field, while in 2021 – improving further 11 places – it was ranked 8th.

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



Source: IMD.

Chart 3.12
Hungary's rankings in the IMD sub-pillars in 2020 and 2021



Source: IMD.

Within economic performance (8th), Hungary has moved up from the 40th to the 10th place in the international investment sub-pillar, due to the increase in foreign direct investments. Hungary is ranked 13th in employment, reflecting rising employment rates and low unemployment in recent years. However, Hungary's rank in the domestic economy sub-pillar has slipped from 18 to 40, which might raise concerns. In this latter area, shrinking of domestic demand and rising inflation expectations weakened Hungary's position.

In the area of infrastructure (37th), Hungary has moved up 4 places compared to 2020. At the level of sub-pillars, there were relatively small shifts in the Hungarian ranking. Hungary improved its performance in the areas of technological infrastructure (40th), scientific infrastructure (35th) and education (43rd). Within the environment and health care sub-pillars, the quality of life, health care infrastructure and the priority of sustainable development in companies indicators leave the largest room for improvement.

Hungary moved up seven places in the government efficiency (40th) pillar due to the improvement in the business legislation (39th), societal framework (40th) and institutional framework (33rd) areas. In the area of tax policy (33th), improving by 12 places, low corporate tax rate on profit and corporate tax to GDP rate are positive factors. According to the IMD, the greatest room for improving competitiveness is in the government expenditure to GDP ratio, public debt and budget deficit indicators.

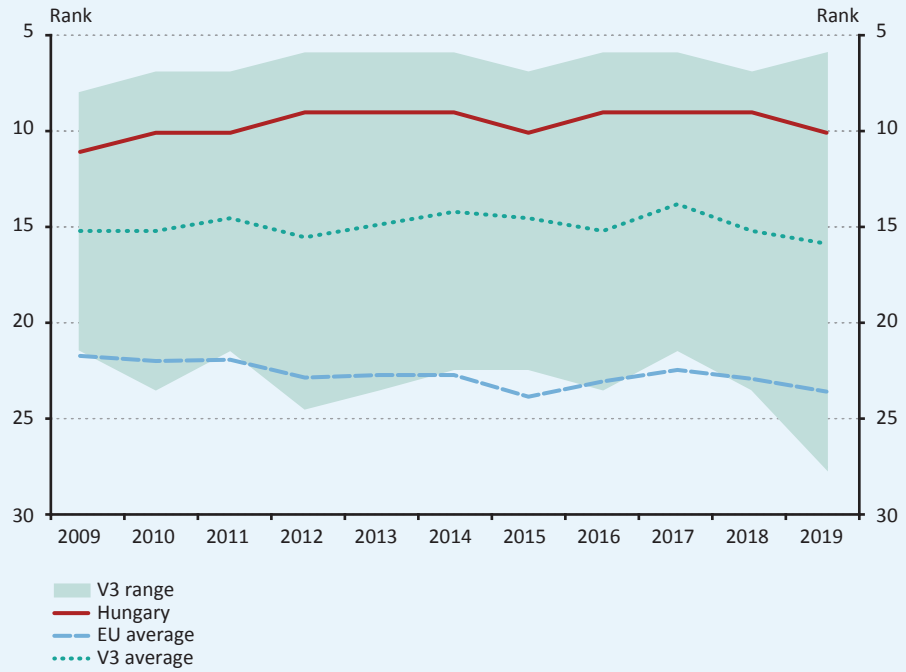
In the efficiency of the private sector (56th), Hungary moved up three places, primarily due to the improvement by 7 places in the labour market (54th) sub-pillar. In the area of productivity and efficiency, Hungary's strengths include aggregate productivity, agricultural productivity and the ratio of efficient large corporations. Hungary performed particularly well in the labour market in terms of activity indicators, while in the financial markets in the field of mergers and acquisitions. The biggest challenge is represented by the attitude to globalisation, the shortage of skilled labour and competent senior managers.

Results of the 2019 Economic Complexity Index

The Economic Complexity Index intends to capture the knowledge capital present in the countries, for which the trade structure and characteristics serve as tools. Economic complexity is calculated based on the total number of products and product groups exported by the countries examined and the number of countries that are able to produce these product groups. Accordingly, the index reflects the economic strength of a country stemming from its export diversity and product quality (hard-to-substitute, complex products). According to the producers of the index, countries of high economic complexity and presently low income may have the opportunity to break free from the middle-income trap. On the other hand, the high degree of economic development of countries with highly complex economies and high income can be maintained as a result of their complex knowledge base.

Hungary was ranked 10th out of 133 countries in 2019, down one place from the previous year. Hungary's ranking was in the top 10 since 2010 (Chart 3.13). With this result, Hungary historically exceeds the Visegrád and EU averages. The average ranking of the V3 countries and the European Union falls behind Hungary by 6 and 13 places, respectively in the 2019 ranking. In addition, Hungary is also ahead of the United States of America, the United Kingdom, Finland, France, Belgium and the Netherlands, among others. Japan has been in the lead in the indicator for many years, followed by Switzerland and Germany.

Chart 3.13
Rankings of Hungary, the EU and the Visegrád countries in the Economic Complexity Index



Source: Atlas of Economic Complexity Dataverse (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. In 2020, as a result of the central bank and government credit schemes, and the moratorium on loan instalments, the private sector's loan portfolio grew at an outstanding rate – even in a European comparison – and thus by the end of 2020 its level as a percentage of GDP already exceeded 35 per cent. However, this figure still holds a major reserve for further prudent growth in lending.

While in the corporate segment the Hungarian banking system is in the mid-range of the EU in terms of pricing, in the household segment the APR-based spread of housing loans reflects moderate competition. Although by mid-2018 the introduction of Certified Consumer-friendly Housing Loans (CCHL) already helped to approach the loan pricing of the countries in the region from above, this positive trend turned in 2019 and Hungary managed to reach the top of the band of Visegrád countries only in early 2020. Since the costs of risk do not justify the significant spreads in an international comparison, the price competition presumably could be fostered by the reduction of operating expenses and the extending of the digital infrastructure, while the easing of the comparability and substitution of products could strengthen it further thereafter.

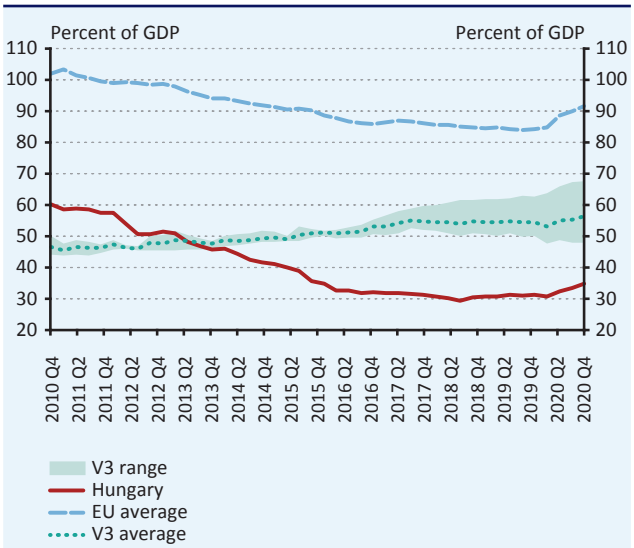
Efforts should be made to ensure the predictability of the instalments in all segments and credit products. As a result of FGS Fix, launched in 2019, the ratio of forint-denominated SME loans with interest rate fixed for more than 3 years once again exceeded 50 per cent, and then, as a result of FGS Go! available from April 2020, the ratio of fixed rate loans already approached 90 per cent by the end of the first quarter of 2021 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. In the short term, the MNB's recommendation issued in April 2019 encourages interest rate fixation for borrowers with contracts carrying a significant interest rate risk, while in the longer term, the statutory reduction of the related fees, particularly the prepayment and notary fees, may facilitate the refinancing of loans. 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.

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. The pandemic situation has led to a fall in operating income and a sharp rise in the costs of risk in most countries. Although both effects were relatively strong in Hungary, the profitability of the domestic credit institution sector remains among the leaders in Europe. 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.

A digital presence is an increasingly important competitive advantage also in the provision of financial services, while the importance of flexibility stemming from digital operations was highlighted by Covid-19 as well. In the past decade, 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 this, the digital transformation of institutions is becoming increasingly important from a competitiveness perspective, to ensure that their services are always available to their customers and to minimise the need for a personal presence when using their products. This became more obvious during Covid-19 and highlighted the need for digital transformation to support business continuity in both customer service and internal institutional operations, as digitalisation provides the flexibility for adapting to changing circumstances. Moreover, during the pandemic, institutions at the forefront of digital transformation have gained competitive advantage.

In addition 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. For example, the development of a regional 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. 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.

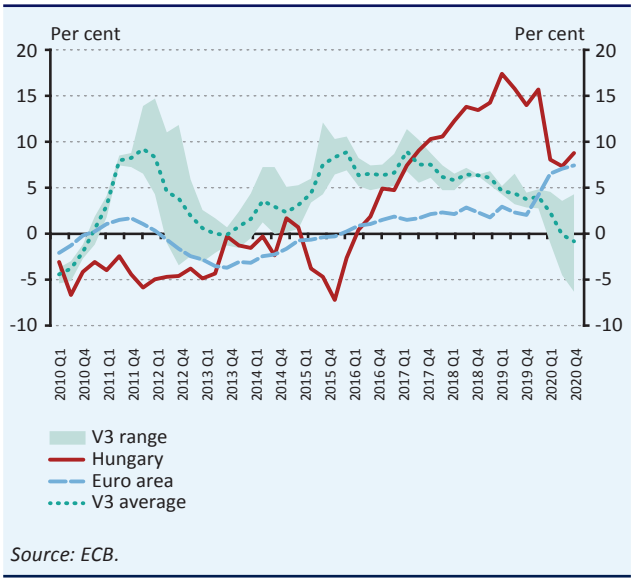
4.1 Developments in the volume of lending to the private sector as a percentage of GDP



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. In 2020, as a result of the central bank and government credit schemes, and the moratorium on loan instalments, the private sector's loan portfolio grew at an outstanding rate, and thus by the end of 2020 its level as a percentage of GDP already exceeded 35 per cent. However, this figure still holds a major reserve for further prudent growth in lending. At the same time, the rise in the ratio was also attributable to the fall in GDP due to the pandemic situation, the impact of which on the indicator varied by countries, thereby making it difficult to compare the 2020 figures.

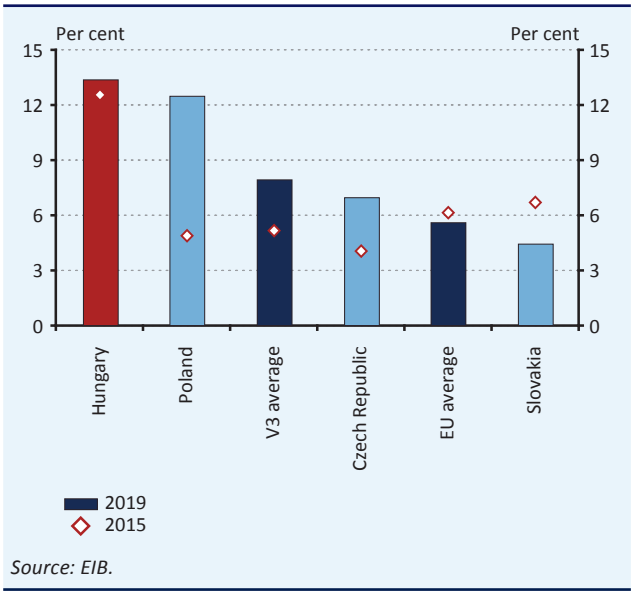
4.2 Development of corporate lending dynamic



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 and for providing liquidity, which is of utmost importance during the pandemic. Hungary was hit by the coronavirus pandemic at the end of the first quarter of 2020 with annual credit dynamics above 15 per cent, which later declined close to 9 per cent by the end of 2020 due to the negative impacts of the virus on the economy. The moratorium on loan instalments, the FGS Go! 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.

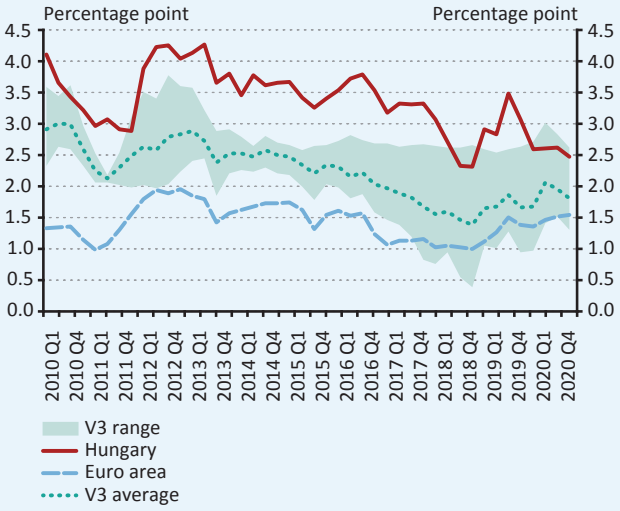
4.3 Ratio of enterprises facing financing constraints



Source: EIB.

According to the EIB Investment Survey, in the 2019 financial year, nearly 6 per cent of enterprises operating in the European Union and more than 13 per cent of enterprises in Hungary faced a financing constraint. Due to a deterioration of nearly 5 percentage points compared to 2018, Hungarian companies faced a financing constraint of the same degree as in 2015. The negative change in one year mainly affected large corporations, where the share of enterprises facing financing constraints more than doubled, while the access to finance by domestic companies in the SME segment has remained stable. Accordingly, there is still room for improving this ratio, primarily through the diversification of financing channels and enhancing the efficiency of the institutional guarantee scheme.

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

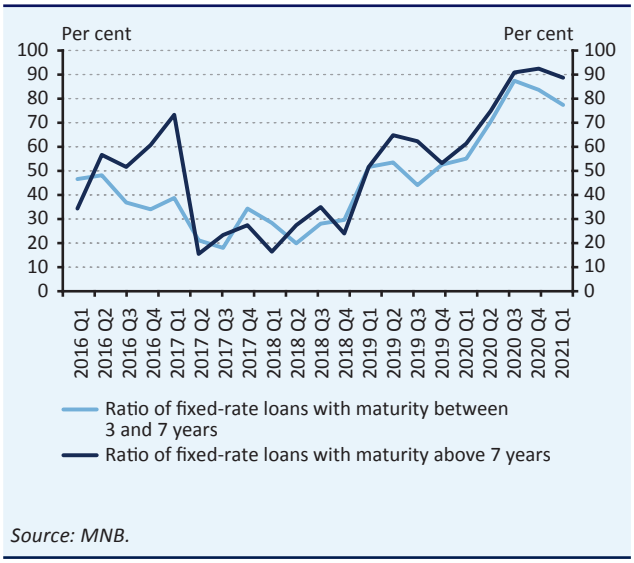


Note: In the case of housing loans with variable rate or interest rate fixation of up to one year the 3-month interbank interest rate, in the case of loans with interest rate fixation for 1-5 years the 3-year, in the case of loans with interest rate fixation for 5-10 years the 7-year, while in the case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

Source: ECB.

The spread of the Hungarian housing loans continues to exceed both the average of the euro area and of the other Visegrád countries. This pricing disadvantage and additional cost for borrowers persisted over the past decade, worsening the disposable income position of borrowers, reducing the growth of household loan penetration, and through that the competitiveness of the economy. Although, after the introduction the Certified Consumer-friendly Housing Loan (CCHL), Hungary managed to reach temporarily the top of the band characterising the Visegrád countries, this trend turned in 2019, since the banks failed to enforce in the lending rates the fall in the benchmark rates. However, in 2020, even with the rise in benchmark rates, interest rate on loans declined, and thus spreads decreased overall. As a result, Hungary once again reached the upper end of the band of the Visegrád countries. At the end of 2020, the average interest rate spread on domestic housing loans stood at 2.5 percentage points, lower by 60 basis points year-on-year.

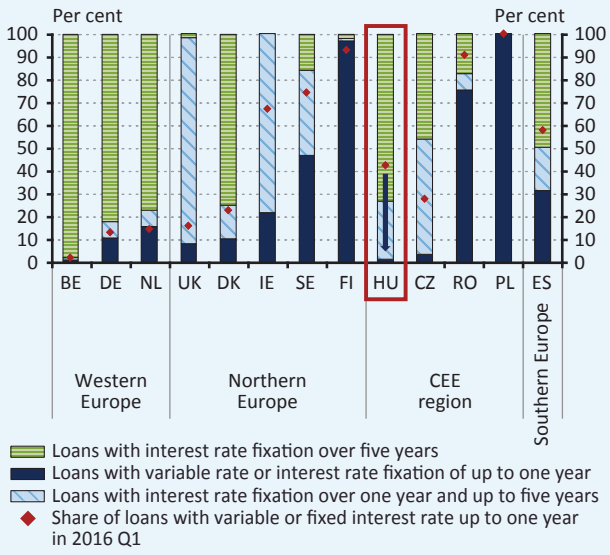
4.5 Ratio of fixed-rate SME loans within new loans



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. The FGS Fix, launched in 2019 to increase the ratio of fixed-rate loans within new disbursements, the ratio of fixed-rate loans returned to the desirable level of over 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 the ratio of fixed-rate loans approaching 90 per cent through new disbursements by the end of the first quarter of 2021.

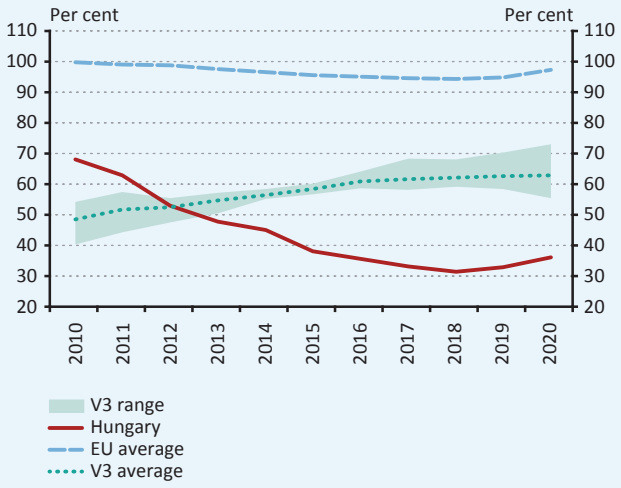
4.6 New housing loans by interest period (2020 Q4)



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 penetration of loans with longer interest periods in new disbursements also helps to reduce the interest rate risk of the outstanding mortgage loan portfolio. By the end of 2020, the ratio of variable-rate household mortgage loans within the portfolio fell to 40 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. In the short run, the MNB's recommendation issued in April 2019 fosters the interest rate fixation of borrowers with contracts carrying major interest rate risk. In the longer run, loan refinancing may be stimulated by statutory reduction of the related fees, particularly the early repayment and notarial fees.

4.7 Households' debt-to- income ratio

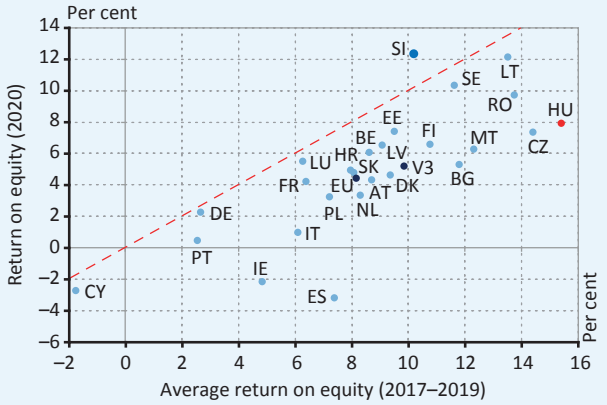


Note: Defined as loans (ESA 2010 code: AF4) liabilities divided by gross disposable income (B6G).

Source: ECB – QSA.

The Hungarian households' debt-to-income ratio is one of the lowest in the European Union; moreover, there is a major convergence reserve compared to 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 start of the coronavirus pandemic 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: 80 per cent of the currently outstanding household loans (70 per cent of mortgage loans) is already linked to contracts concluded under these rules.

4.8 Return on equity

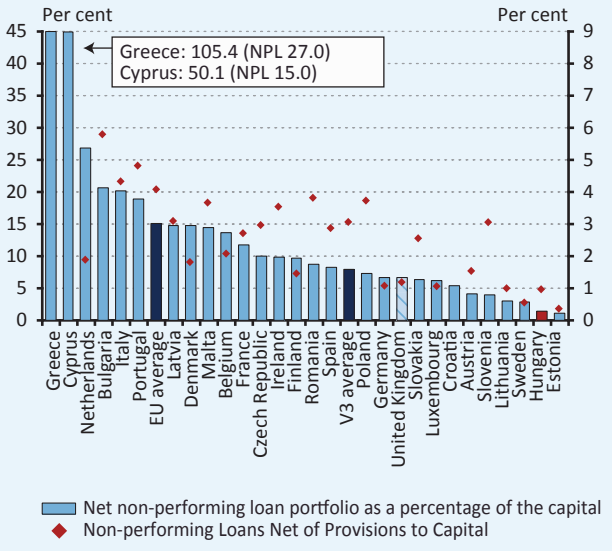


Note: The average return on equity denotes the average of the annual data between 2017 and 2019.

Source: ECB – 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 2017 to 2019, partly due to the reversal of previously recognised impairments, with its outstanding profitability. The pandemic situation has led to a fall in operating income and a sharp rise in the costs of risk in most countries. In the case of Hungary, both effects were relatively pronounced; however, the 5th place achieved in 2020, it may still be deemed positive.

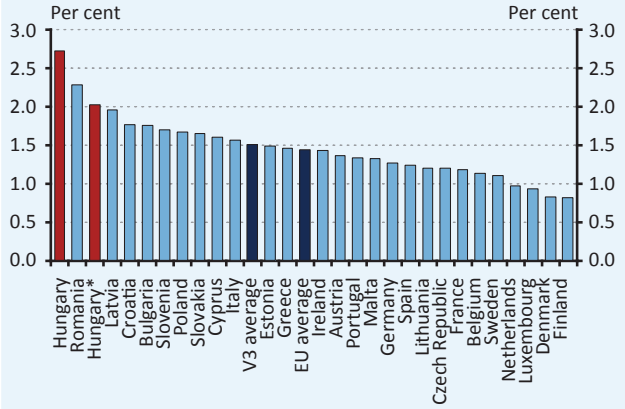
4.9 Net non-performing loan portfolio as a percentage of the capital (2020)



Source: IMF – FSI.

The banking sector's non-performing loan portfolio continued to decline in both the corporate and household segments in 2020. The moratorium on loan instalments, introduced in March 2020 and later prolonged, greatly helped keep the ratio of non-performing loans at a low level, partly by preventing new defaults, and partly through its positive impact on the growth in the total loan portfolio. Due to the former effect, historically low default rates do not give a full picture of the quality and risk level of the loan portfolio. Increasing credit risks are also reflected in the rising weight of Stage 2 loans and the increase in impairment coverage. On the other hand, the consolidated capital adequacy ratio of the banking sector rose to 18.3 per cent in 2020, which represents adequate buffers even taking into account the expected increase in risk costs.

4.10 Operating costs-to-total assets ratio (2020)

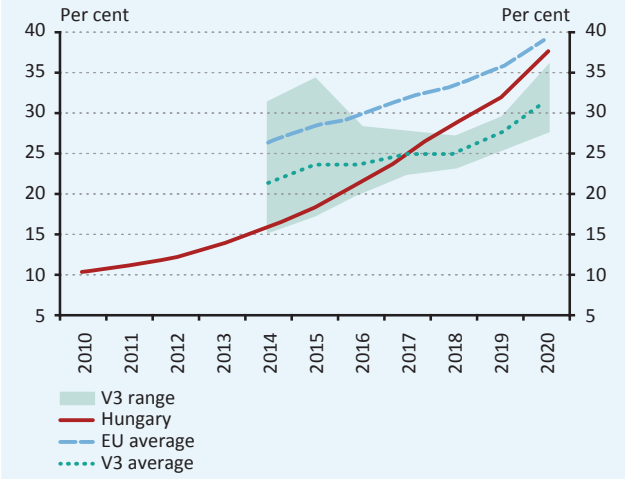


Note: Hungary denotes data filtered from transaction levy, bank tax and foreign subsidiaries.*

Source: ECB – 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 competitiveness reserve 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. From the second half of 2019, the consolidated sector's operating costs to asset ratio registered a trend decline, with significant contribution by the integration of cooperatives. 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, which gained momentum as a result of the pandemic situation.

4.11 Ratio of electronic payments for purchases

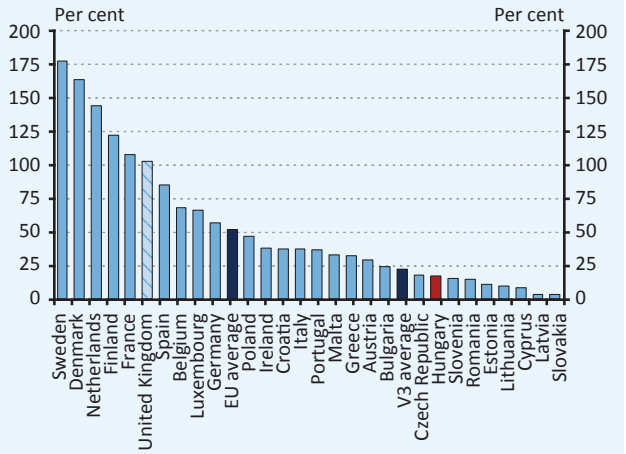


Note: Calculation methodology: Annual value of purchases conducted with payment cards / Annual household consumption. International data are available only since 2014.

Source: MNB, HCSO, ECB, Eurostat.

The change in the ratio of electronic payments is related positively to economic growth also through the reduction of the shadow economy and in parallel with that the decline in the degree of tax evasion. Moreover, widespread access to and use of modern payment services also contributes to improving competitiveness. With this in mind, the MNB gives priority to providing the possibility for electronic payments in all payment situations and encouraging customers to use the different electronic payment methods more often. In Hungary, the ratio of electronic payments has been steadily increasing in recent years, mainly due to the development of the infrastructure, and particularly to the rapid spread of contactless card technology, and in 2020 it proved to be even more dynamic than before. This was largely due to the change in payment habits following the outbreak of the coronavirus, and particularly giving preference to contactless electronic solutions, and the start of preparations for the requirement in the Commercial Code that all taxpayers obliged to use online cash registers must be provide the possibility of electronic payment from 1 January 2021. As a result of the foregoing, in 2020, the ratio of electronic payments for purchases in Hungary – after a rise of 6 percentage points – came close to 38 per cent, which exceeds the level in the V3 countries and within reach of the European Union average.

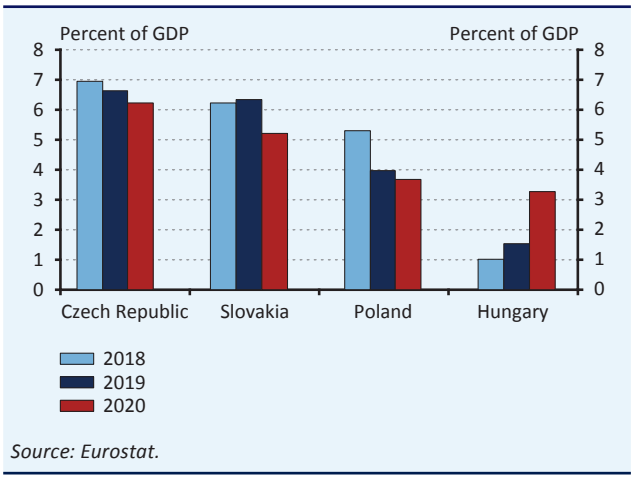
4.12 Equity market capitalisation to GDP (2020)



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

Diversification of the financial system, including a developed equity market, is the basis for a competitive economy and sustainable growth. Some estimates suggest that achieving a 30 per cent equity market capitalisation could increase potential output in the economy by 0.2–0.3 percentage point. In Hungary, however, there is a concentration of financing channels, with companies relying heavily on bank financing and to a lesser extent on raising funds, for example, at the stock exchange. This is also reflected in the equity market capitalisation, which in Hungary amounted to 16.7 per cent of GDP, compared to the V3 average of 22.1 per cent and the EU average of 51.7 per cent. Among the regional competitors, Slovakia ranked lower than Hungary, while Poland and the Czech Republic were ahead of Hungary. Among the EU27 countries, the Scandinavian countries had the highest equity market capitalisation as a percentage of GDP. In Sweden the equity market capitalisation was 177 per cent of the gross domestic product.

4.13 Corporate bond market capitalisation to GDP in the region

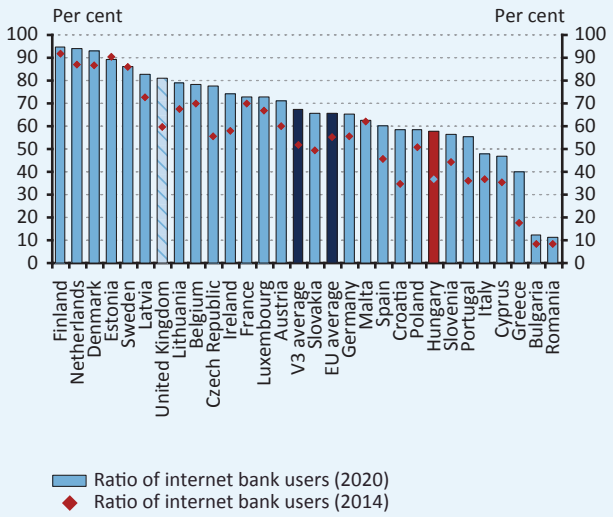


Source: Eurostat.

In July 2019, the MNB launched the Bond Funding for Growth Scheme (BGS), which has successfully contributed to the growth of the bond market and liquidity of non-financial corporations registered in Hungary, and to the diversification corporate sector funding. The first BGS bond was issued and purchased by the central bank in September 2019. By the end of 2020, 46 companies issued 53 series of bonds under the bond scheme, thereby raising HUF 889 billion. Owing to the success of the BGS, the domestic corporate bond market has grown significantly: from 1 per cent of GDP at the start of the programme to 3.2 per cent by the end of 2020, while in nominal terms it registered an almost fourfold growth reaching roughly HUF 1,530 billion. In the period since the launch of the BGS, the Hungarian corporate bond market has shown significant growth both in absolute and relative value and has successfully started to converge to the average of the Visegrád countries; however, there is still room for substantial growth in the domestic market.

BANK DIGITALISATION

4.14 Ratio of internet bank users

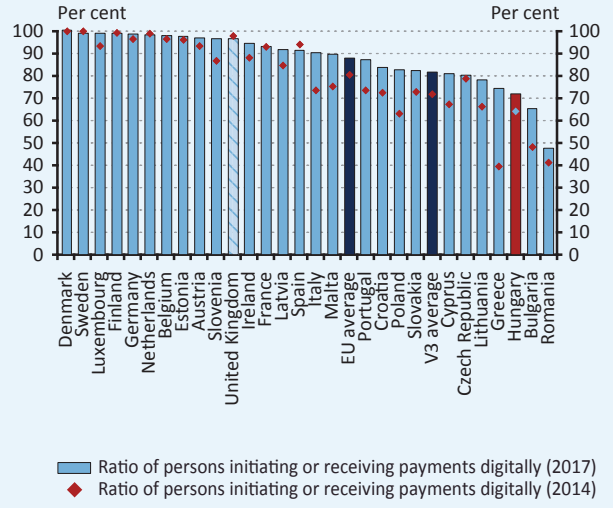


Note: As a percentage of internet users older than 15 years.

Source: DESI (2021).

Over the past decade, online banking services and their utilisation rate have steadily and gradually developed across Europe, with further spectacular growth in many countries over the past year. In Hungary, although the ratio of internet banking users increased by almost 4 percentage points between 2019 and 2020, no material convergence to the V3 and the EU average has yet been achieved and the usage of online banking platforms in Hungary remains below the regional and EU averages. These figures show that the current pandemic situation has not led to a significant increase in Hungary compared to other EU countries, and thus there is still considerable room for improvement in this area.

4.15 Use of digital payment methods

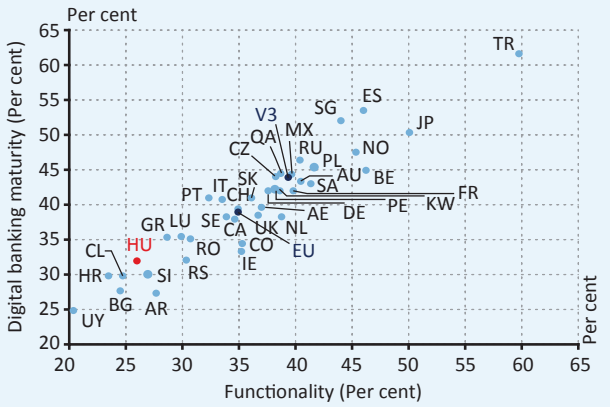


Note: Ratio of the use of debit or credit card, mobile phone or mobile wallet for carrying out various payment transactions in the past 12 months.

Source: WB (2018) – Global Findex Database.

In more than half 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, in Hungary only 71 per cent of the population use digital assets, which puts it not only below the European average, but also below the average of the V3 countries. Although in three 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 in most countries the penetration of digital payment is typically lower among the young adults (age group of 15-24 years). Hungary - although it is still below the average - has better position in this respect than in the overall ranking, as it was ranked 19th on the EU list in the last observed year. The larger scale use of digital payment methods could be supported by the wide-ranging application of package pricing by banks and in Hungary, the introduction of the Instant Payment System in March 2020 also fosters the penetration digital payments in the future.

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

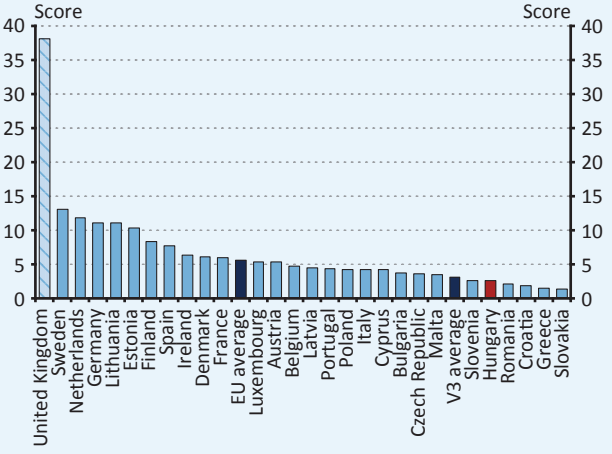


Note: The digital banking maturity, assessed on the basis of the survey performed by Deloitte, is a composite indicator comprising of three main pillars, which consist of the sub-pillars measuring the range of banking functions available in the digital space, the level of user experience measurable in 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.

There is considerable room for improvement in the digital maturity of domestic banks, not only compared to European banking sectors, but also to those of 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 difference is also significant in a European comparison: on average, 35 per cent of functions are available digitally in the European banks surveyed, while this ratio is 41 per cent in Poland and 38 per cent in the Czech Republic. 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 is 38 per cent, while that of the countries in the region is 43 per cent. Although Covid-19 may have generated substantial progress in digital maturity over the past 1 year, the growth reserve compared to European and regional countries presumably still exists.

4.17 Assessment of the EU Member States based on the FinTech environment

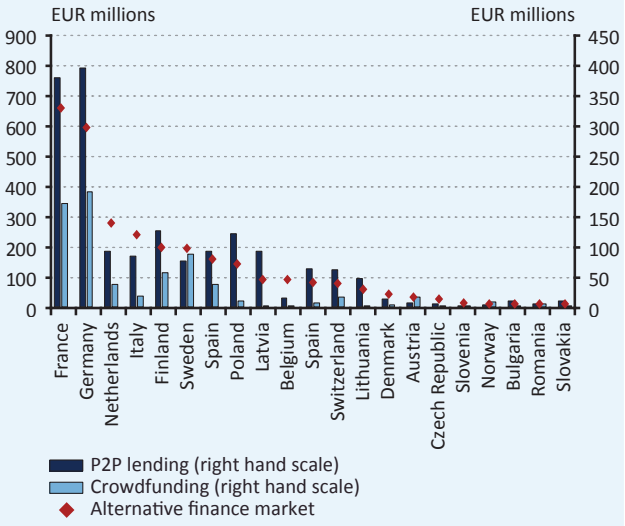


Note: The 2020 survey uses a different assessment method to the 2019 Global Fintech Index. The entire survey was wider, with a global scope, analysing 83 countries in total.

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 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 the Czech Republic outpace Hungary.

4.18 Size of the alternative financing markets in certain European countries (2017)

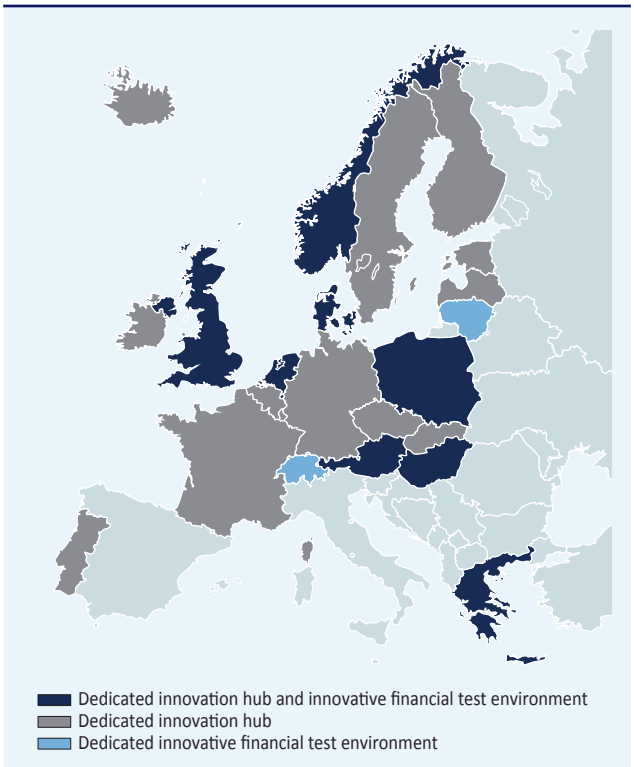


Note: The data refer to 2017. The chart does not show Portugal, where the size of the alternative financing market is below EUR 10 million, nor Greece, Iceland, Luxembourg and Hungary where it is below EUR 1 million.

Source: Cambridge Centre for Alternative Finance (2019): Shifting Paradigms. The 4th European Alternative Finance Benchmarking Report.

In Europe the use of alternative, online forms of finance are increasingly common both in the household and corporate sectors. In 2017, the entire EU market grew by almost 60 per cent year-on- year, and realised a turnover of more than EUR 3 billion. The two segments of the largest weight are the peer-to-peer lending and crowdfunding, accounting for 56 and 39 per cent, respectively, of the total European alternative finance market in 2017. The leaders in this respect in the continent are France and Germany. while in our narrower region, the markets in Poland and Austria show dynamic growth. By contrast, in Hungary - mostly due to the absence of proper dedicated legislative framework - the internet-based alternative forms of financing have not yet appeared in a considerable volume. Although 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. This projected development will be based on the EU effective from November 2021, allowing crowdfunding service providers to operate under harmonised rules at European level, under a high level of investor protection rules.

4.19 Innovation hubs and innovative financial test environments (2021)



Source: ESAs (2021): Innovation facilitators in the EU.

The FinTech phenomenon is gaining increasing priority for public authorities in Europe, which leads to a gradual increase in the number of actively operating innovative supervisory frameworks. Innovation Hubs to help innovators navigate in the regulatory environment are already widespread. However, there is still room for improvement across Europe, as the penetration of Regulatory Sandboxes, which allow the testing of innovative solutions in real market conditions, is still low. 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 Covid-19 pandemic.

4.2 ACTIVATION OF HOUSEHOLD SAVINGS

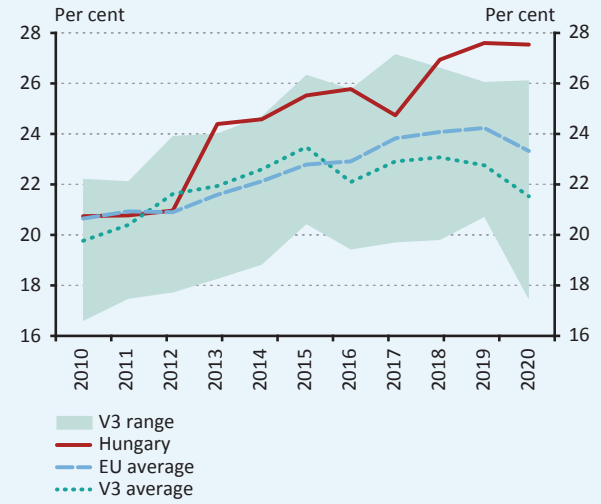
The financial crisis highlighted the fact that financing based on external resources entails several risks, and thus strengthening domestic financing is of utmost importance, and at the same time also a condition for balanced convergence. Growth financed from external resources and credits can make an 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.

To maintain the balance and to continue economic convergence, it is essential to keep household savings at a high level, in which the introduction of the Hungarian Government Securities Plus (MÁP+) has a key role. Prior to the financial crisis, Hungary struggled with financing difficulties following the growth financed from external resources. After the adjustment, economic growth was realised under persistently high current account balance and decreasing external debt ratios. This is due to the fact that the resources necessary for the implementation of corporate investments were available due to the high domestic household savings. Nevertheless, the maintenance of the balance in the long run is yet another challenge, since a decline in household savings usually accompanies periods characterised by the economies' convergence and high wage growth. The signs of this have already appeared in Hungary as well, particularly in the case of government securities savings, which decreased since 2016 both in nominal terms and proportionally. In the light of the foregoing, it was of key importance to renew the household government securities strategy and introduce a new, attractive household government security, which was MÁP+. In a period of rising public debt due to the coronavirus crisis, a high ratio of self-financing is particularly important, and the Hungarian Government Securities Plus (MÁP+) is an appropriate instrument to support this.

MÁP+ 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. MÁP+ 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. Furthermore, MÁP+ may compete with the real estate market investments, as it may be regarded as an investment of higher liquidity and less risk than the purchase of real estate. The coronavirus pandemic has led to increased uncertainty, while demand for MÁP+ remained strong also during the pandemic period due to its relatively high liquidity and possibility of long-term investment.

By strengthening self-financing, the MÁP+ reduces Hungary's external vulnerability and improves its financing conditions. As a result of the MÁP+ purchases, the role of households in financing the general government increases, thus the share of external and FX financing within public debt declines, and the duration of the public debt financed by households becomes longer. By transferring the public debt to domestic ownership, the paid interests also remain with domestic actors, which supports the country's income and current account balances, reducing external debt and improving 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.

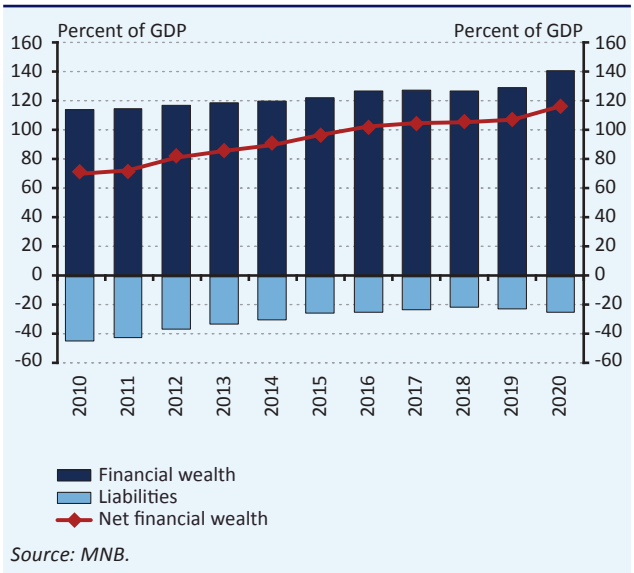
4.20 Gross savings as a percentage of GDP



Source: Eurostat.

The Hungarian economy's available internal sources substantially increased in the past decade. The low pre-crisis domestic savings (defined as the difference of earnings and consumption) 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, increased caution resulting from the pandemic kept gross savings high. In addition, the Hungarian investment ratio as a percentage of GDP increased slightly, while most European countries experienced a decline, which contributed significantly to the fall in the gross saving rate in these countries. However, household savings tended to increase gross savings also in the rest of the EU.

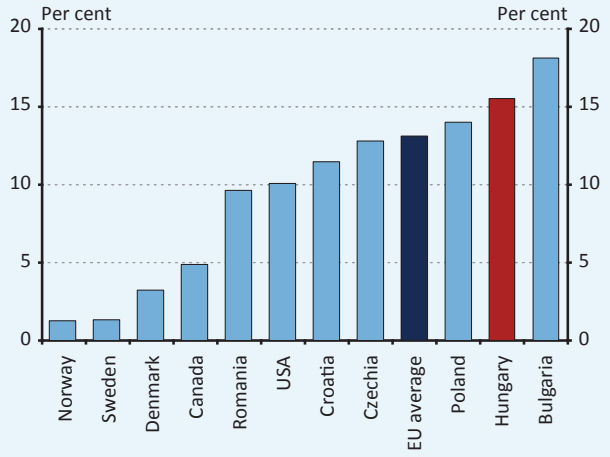
4.21 Financial wealth of Hungarian households as a percentage of GDP



Source: MNB.

Households' net financial wealth, calculated as the difference of their financial assets and liabilities, considerably increased compared to 2010. In 2019, among the securities, the increase in long-term ones was outstanding – following the introduction of the MÁP Plus scheme –, and this trend also continued in 2020. Households' liabilities as a percentage of GDP halved after the peak 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 rising savings rate in 2020 was mainly due to the increasing caution and forced savings resulting from subdued consumption, because of the lockdowns. Moreover, the moratorium on loan instalments acted toward a decrease in the savings rate overall. As a result of the foregoing, the nominal growth in household financial assets exceeded GDP growth, which was also reflected in a surge of the net financial wealth.

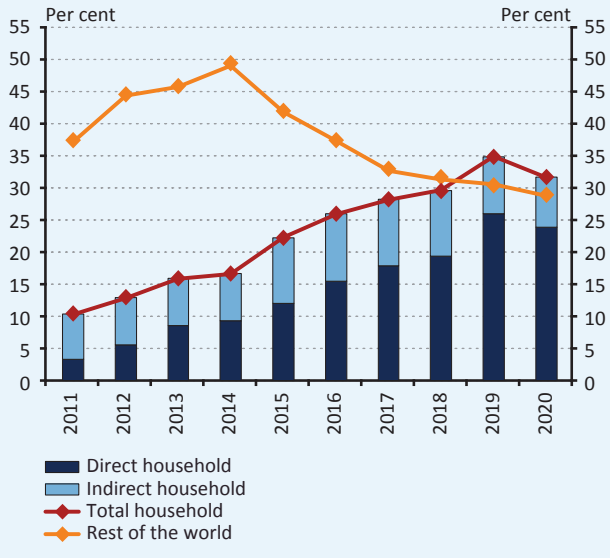
4.22 Cash holding as a percentage of GDP in specific countries (2020)



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, 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 pandemic boosted cash demand almost everywhere, except in the Scandinavian countries. In recent years, several government measures have been aimed at slowing down the accumulation of cash assets. The MÁP+, due to cheap redemption and high interest rate, represents a favourable alternative to savings in cash, supported by the development of services (WebTreasury, mobile applications, HST offices) and the reforms, also proposed in the Competitiveness Programme (capitalisation of interest, cancellation of the financial transaction levy for the Treasury). In addition, technical innovations (e.g. the introduction of the Instant Payment System) reduced the cash holdings through declining transaction demand.

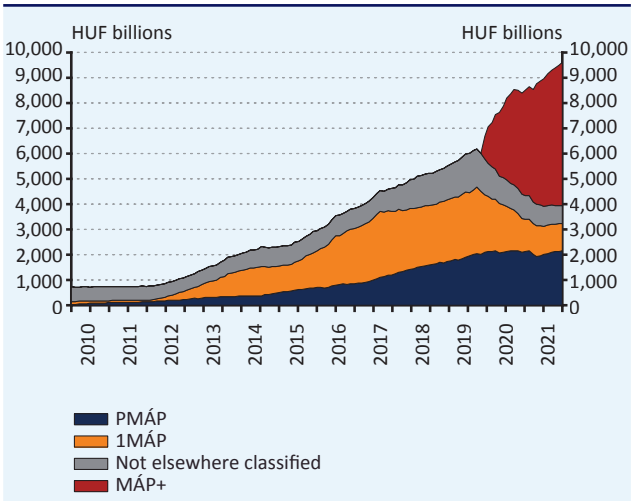
4.23 Financing based on security holdings of households and non-residents as a percentage of public debt



Source: MNB.

As a result of the measures reducing external vulnerability, the significance of external liabilities in the financing of public debt gradually decreased. 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 (through financial intermediaries), this ratio rose to 35 per cent. The surge in public debt in 2020, due to the financing of public expenditure related to the pandemic, has temporarily reduced the ratio of household financing. Nevertheless, the increasing participation of the households in the financing of public debt made major contribution to the fact that by the end of 2020, the weight of government securities holding of non-residents fell below 30 per cent from 50 per cent registered in 2014. It is also worth noting that, through the MÁP+ scheme introduced in 2019, households provided stable funding to the government even during the coronavirus crisis, contrary to the fluctuations observed in the holding of non-residents. In addition to the strategy of the Government Debt Management Agency, which focuses on financing by households, the central bank's self-financing programme also made major contribution to the strengthening of the role of internal sources by fostering the purchase of government securities by banks. The central bank's government securities purchasing programme also acted towards mitigating financing by non-residents.

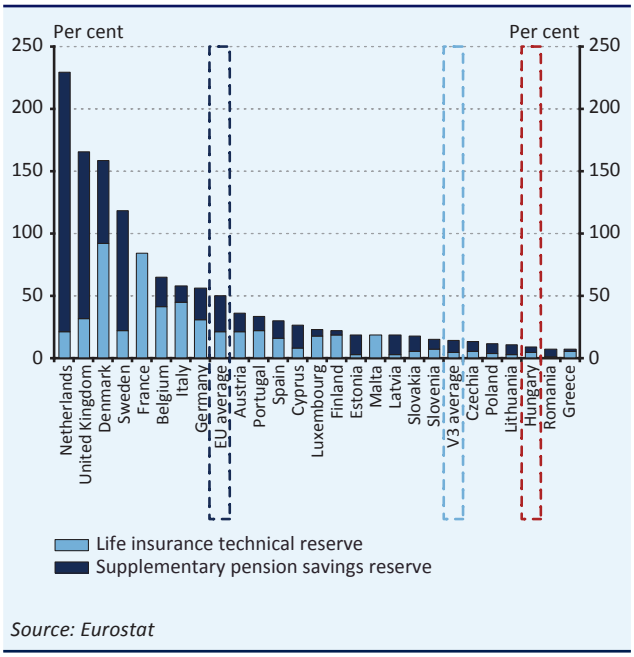
4.24 Households' holdings of government securities



Source: MNB.

Households' government securities holding increased more than tenfold since 2010, and within that last year it rose by almost HUF 1,100 billion in one year, and thus by the end of 2020 it exceeded HUF 9,100 billion. The reform of the household government securities strategy, strengthening the domestic investor base and the introduction of MÁP+ in June 2019 played dominant role in the dynamic growth. The subscription received outstanding attention also in 2020, owing to which the MÁP+ holding exceeded HUF 5,200 billion by the end of the year. In parallel with this, households did not roll over the one-year Hungarian, and the Premium Hungarian government securities (PMÁP) stock also declined slightly compared to the end of 2019. As a result of this, the MÁP+ scheme has become the largest household government securities, which points to a growth in the average remaining maturity of government securities held by households. All this is favourable in terms of the public debt's ownership and maturity structure, and the country's external vulnerability.

4.25 EU households' gross life insurance and supplementary pension savings as a percentage of GDP (2019)



Source: Eurostat

In Hungary, a significant growth reserve can be identified in life insurance and supplementary pension savings. Although self-provision based on long-term products started to increase in previous years, due to the persistent positive economic cycle, the reserves in the asset category still amounted only to 9 per cent of GDP in 2019. This falls short of not only the EU average of 51 per cent, but also of the 10-20 per cent figure registered by the countries of the region. The current voluntary savings schemes (pension insurance, voluntary pension funds, pension savings account) cover only 20-25 per cent of the active population. The low ratio of Hungarian pension savings shows the unexploited potentials in the financial intermediary system. 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. By mobilising small household savings, higher amounts can be channelled into financing the economy, increasing Hungary's competitiveness.

4.3 SME STRATEGY

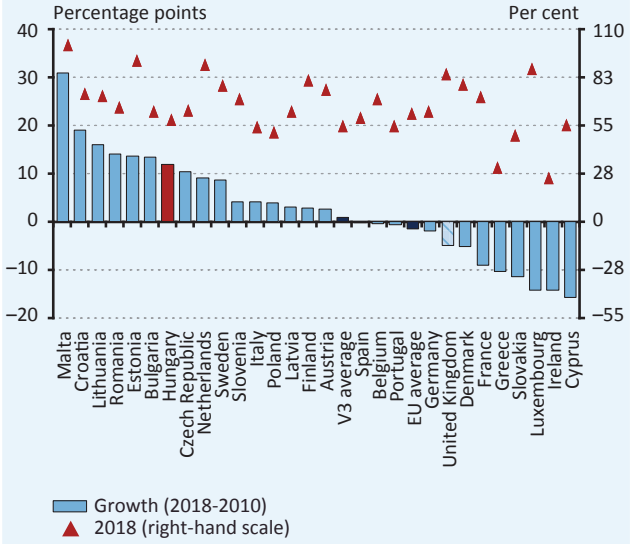
The competitiveness of enterprises and within that the prosperity of the SME sector constitutes the basis for economic development. For businesses to meet modern challenges (e.g. labour shortage, digitalisation), it is indispensable for the SME sector to implement sufficient investment and to have an adequate business environment available for this. The situation of SMEs should be analysed not only in an international comparison, but also in relation to large domestic companies, as the two segments are interlinked through the labour market.

Corporate duality has significantly eased in Hungary in recent years, which makes Hungarian economic growth more sustainable. Reducing duality is desirable 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 2018 Hungarian SMEs achieved significant convergence with their relative productivity approaching that of large companies by 12 percentage points, as a result of which Hungary achieved one of the greatest convergence even by international standards. However, despite the convergence, Hungarian SMEs are still below 60 per cent of the productivity of large Hungarian companies, which is above the Visegrád average (55 per cent), but there is still room for further progress to reach and exceed the EU average (62 per cent). Capital deepening, i.e. the steadily high level of the investment ratio, contributes to the relative convergence process of SMEs. Hungarian enterprises proved to be resilient to the adverse economic effects of the coronavirus pandemic, as evidenced in Hungary by the absence of the wave of bankruptcies that swept through several European countries.

Despite the recent positive developments in the SME segment, there is still a significant structural convergence reserve. Hungarian SMEs in general are characterised by passive adaptation, i.e. drifting with market conditions and state regulations. Based on the findings of the relevant surveys, there are just a few SMEs in Hungary that are consciously planning for their future. Advanced digitalisation solutions such as cloud services or sensor solutions are already in place in many SMEs, but big data, artificial intelligence, robot technologies or blockchain are almost unknown to a wide range of SME managers.

The greatest potential for improvement can be identified in the creation of conditions for sustainable enterprise development. In line with its new green mandate, the central bank will pay particular attention to the use of sustainable solutions by Hungarian enterprises. On the one hand, only one fifth of Hungarian SMEs recycle, while the EU average is three times higher. The average of the companies in the Visegrád countries is also more than the double of the Hungarian average. The majority of Hungarian companies do nothing to reduce their environmental impact or save energy. Environmental impact assessments are practically non-existent for Hungarian SMEs, while one in four SMEs in the EU has such an analysis. However, measures to retain labour force are also mostly absent among Hungarian SMEs, which represents a competitiveness reserve in the tight labour market.

4.26 Development of corporate duality

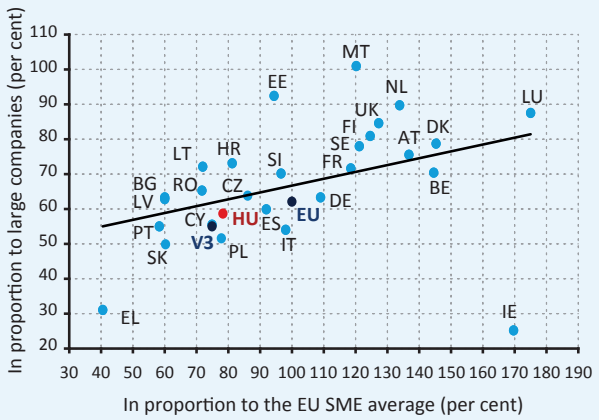


Note: The estimate for 2010, used as base year, was prepared by DIW ECON on behalf of the European Commission. For 2018, DIW econ data were also used for DK, EE, IT, AT and PT due to lack of data.

Source: Eurostat, DIW-ECON, MNB calculation.

The corporate duality, i.e. the lag of smaller companies compared to large corporations, strongly determines the long-term growth potential of the Hungarian economy and also the room of the Hungarian economic policy for manoeuvre. Since SMEs compete in many respects in the same labour market as large firms, the comparative disadvantage of SMEs in terms of labour productivity also carries macro-stability risks. Unless SMEs can improve their efficiency, they will lose properly skilled labour force, since it will be absorbed by large companies. Since 2010, Hungary has experienced a reduction in corporate duality, i.e. the productivity (gross value added per employee) of the SME sector has increased relative to large companies. The Hungarian SME segment has moved 12 percentage points closer to large companies, with that being well above the EU and Visegrád averages. Government measures, including labour market reforms (Job Protection Action Plan), state and central bank programmes targeting SMEs, and favourable tax changes (introduction of the small taxpayers' itemised lump sum tax (KATA) and of the small business tax (KIVA), reduction of contributions) may have contributed to the easing of duality.

4.27 Relative labour productivity of SMEs (2018)

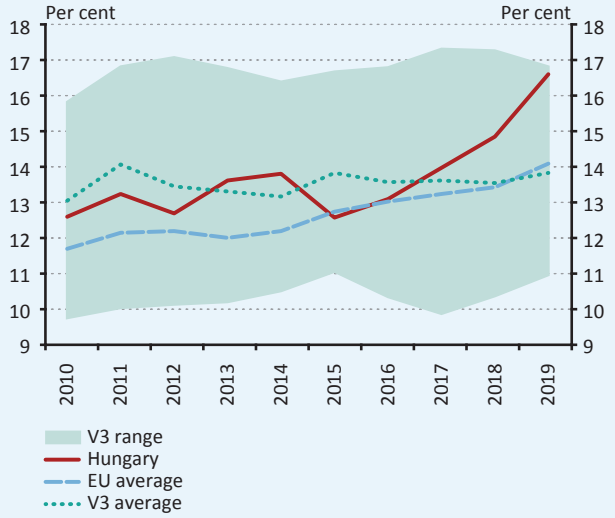


Note: The comparison to the EU27 is calculated at purchasing power parity. For Denmark, Estonia, Italy, Austria and Portugal, we have also used external data sources due to lack of data.

Source: Eurostat, DIW-ECON, MNB calculation.

Despite dynamic growth in recent years, the labour productivity of the SME segment is still less than 60 per cent of Hungarian large companies, placing Hungary in the last 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 80 per cent of the EU27 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. An extreme example of this is Ireland, where SMEs do not reach 30 per cent of the productivity of the Irish large companies, nevertheless an Irish SME is 1.7 time more productive than the average SME in the EU.

4.28 Business investment to GDP ratio

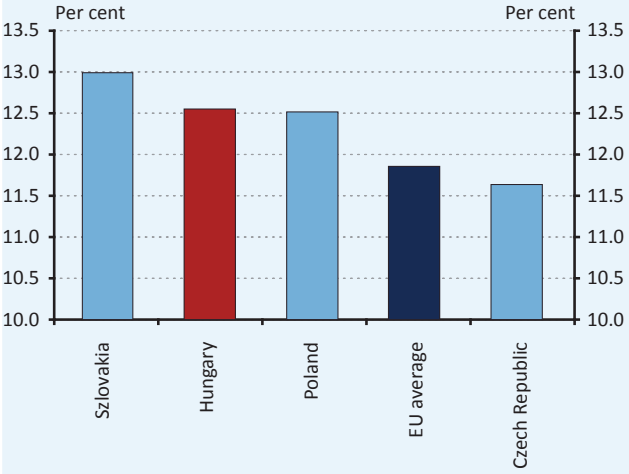


Note: Including financial companies.

Source: Eurostat.

The key focal point of productivity growth is capital deepening, i.e. the relative rise in investments. The increasing of the 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 growth in investment activity was supported by 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. In 2019, the Hungarian business investment ratio was the third highest one in the EU, after Ireland and the Czech Republic. The Visegrád region shows a diverging picture in this indicator, with the Polish business investment rate being among the lowest ones in the EU.

4.29 Ratio of high-growth companies (2018)

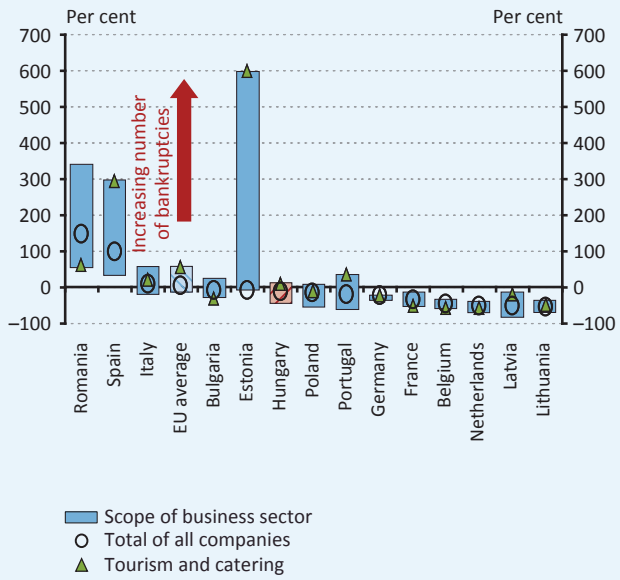


Note: Based on employment. Calculation method: Number of high-growth companies divided by active enterprises with a headcount of more than 10 persons.

Source: Eurostat, MNB.

The ratio of high-growth companies 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 positive 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 per cent by 2018. This high ratio was achieved despite tight labour market conditions 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.

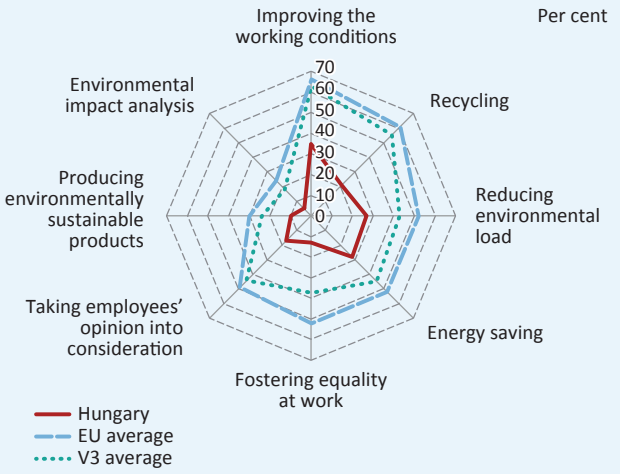
4.30 Number of bankruptcies in the 1st quarter of 2021 compared to the same period in the previous year



Source: Eurostat, MNB editing.

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. Hungarian SMEs have successfully weathered the negative economic impact of the pandemic, as the bankruptcy rate of companies even fell, while the average increase in bankruptcy was above 7 per cent in the EU over the same period. In Hungary, the deviation between sectors was not significant, unlike in some countries such as Romania, Spain and Estonia. The introduction of the moratorium on loan instalments, proposed by the Magyar Nemzeti Bank, also contributed significantly to avoiding a wave of bankruptcies.

4.31 Ratio of SMEs adopted sustainability measures (2020)

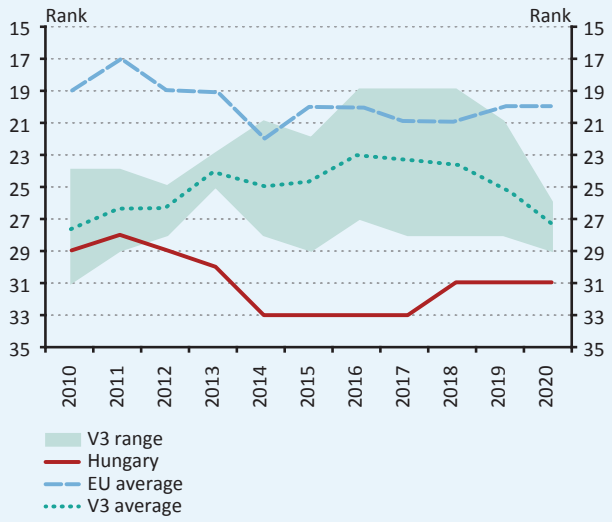


Note: In proportion of SMEs want to grow.

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

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 self-interest of companies, as the retention of their employees or customers also depends on it. Hungarian companies show significant potential for improvement in all sustainability criteria. Only 21 per cent of companies recycle, compared to 61 per cent in the EU. From a labour market perspective, the Hungarian SME sector does not seem to be sustainable either: Hungarian SMEs are among the worst performers 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.

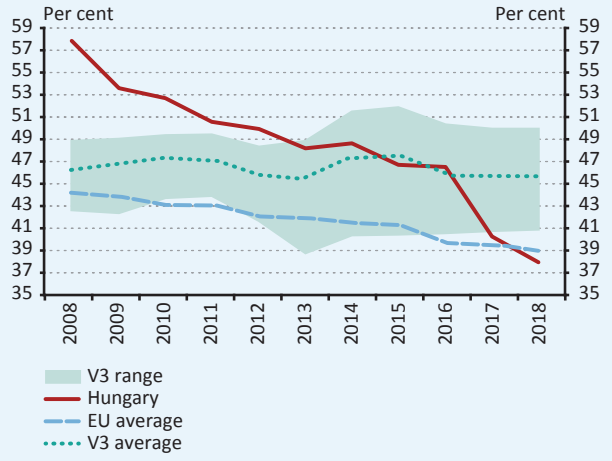
4.32 General assessment of the business environment: ranking among the OECD countries



Note: Breaks in the time series due to methodological changes.
Source: World Bank – Doing Business, MNB.

Companies manufacture and/or render services under a number of factors that determine the operation of the company, but the management cannot influence directly, which cannot be quantified in the production accounts. The most important of these include the state regulation and the infrastructure. The World Bank Doing Business Index attempts to quantify these factors. Based on the latest publication in 2019, the Hungarian regulatory and infrastructural environment moderately improved since 2014. Nevertheless, the Hungarian result is still below the regional average and also falls short of the EU average. The largest room for improvement can be identified in the bankruptcy regulation and the protection of minority investors. At present Hungary is ranked 52nd (31st among the OECD countries) in the Doing Business ranking, while Slovakia, Czechia and Poland are ranked 45th, 41st and 40th, respectively.

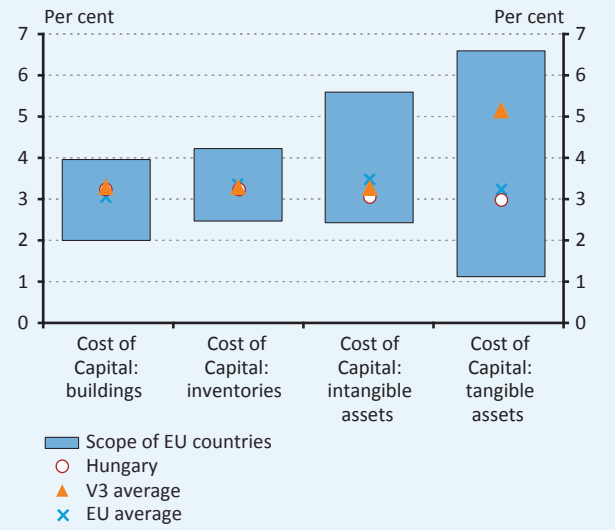
4.33 Total tax rate of companies as a proportion of commercial profit



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, the changes in the regulations applicable to small taxpayers also represented major easing for the enterprises (simplification of the small taxpayers' itemised lump sum tax (KATA) and of the small business tax (KIVA), and cutting the rate of the latter).

4.34 Capital indicators of the business environment (2019)

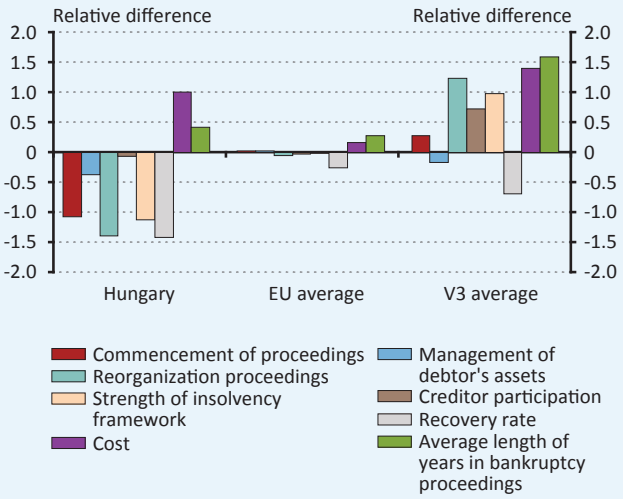


Note: The cost of capital is the pre-tax rate of return on equity required to produce after-tax economic profit based on a stylised investment. This indicator is the weighted average of equity and debt financing.

Source: MNB based on OECD.

There are many aspects of economic policy that supports enterprise, from the quality of governance through infrastructure, to the quality of the tax system. Low capital costs and moderate corporate tax rates, relative to the EU, contribute to Hungary having one of the highest investment rates in the EU. The financing system in Hungary performs well mainly in investment in tangible assets. This is the item with the largest variance among EU countries. It is also favourable that intangible assets, essential for increasing the knowledge intensity of the economy, offer a fast return on investment in Hungary and also in the region.

4.35 Indicators of insolvency regulation (2020)

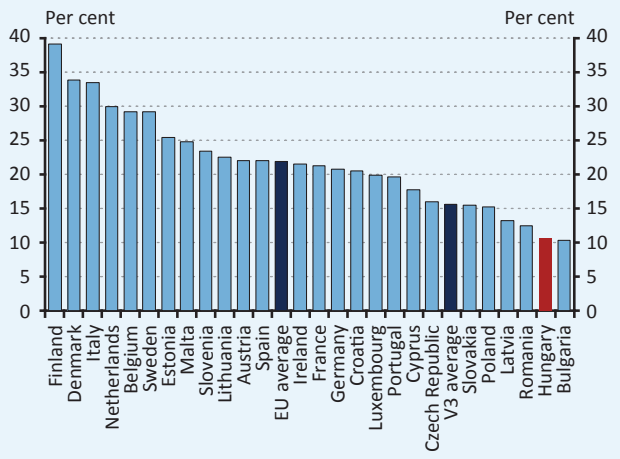


Note: Normalised scale, with the higher results representing better performance. The average of the OECD member states is 0.

Source: World Bank – Doing Business, MNB.

Of all pillars of the Doing Business survey, the area that needs to be improved the most in the Hungarian business environment is the insolvency regulation, while the V3 countries are more successful in this dimension than an average EU Member State. The greatest room for improvement existed in the number of the reorganisation proceedings, the strength of the bankruptcy law and in the salvage rate. As a result, if Hungarian companies get into trouble, they can expect slower proceedings, lower salvage rates and higher costs than their regional competitors. Moreover, creditors also have less chance to recover their outstanding receivables. Ultimately, the Hungarian insolvency regulation may reduce entrepreneurship, since the restart is likely to be longer and more difficult than for the regional competitors. The institutional environment for insolvency significantly improved this summer as the Parliament adopted a new restructuring law, transposing a relevant EU directive, which offers companies an alternative to bankruptcy proceedings. Under the new law, from July 2022, it will be up to the debtor to decide which creditors to negotiate with and who to involve in the procedure.

4.36 Ratio of SMEs using advanced digital business solutions (2019)



Note: Use of ERP, CRM, e-invoicing, cloud technology, Big Data, 3D printing and industrial or service robots. Excluding Greece and the United Kingdom.

Source: MNB calculations based on Eurostat data.

The penetration of digital solutions in the SME segment is a key priority, as Hungarian SMEs still show a significant convergence reserve in labour productivity compared to large companies, despite the convergence of recent years. The lack of applying digital solutions is one of the biggest contributors to the productivity gap between different sizes of enterprises. Hungarian SMEs have significant growth potential, especially in the use of enterprise resource planning (ERP) and customer relationship management (CRM) software. Hungary ranks last in the EU in both categories. To reach the EU average, the share of SMEs using such solutions would almost have to triple. The outlook is worsened by the fact that according to a survey conducted in 2020, only 1 per cent of Hungarian SMEs have a digitalisation plan (strategy), putting Hungary to the last place in the EU (Eurobarometer, 2020). 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. Hungarian companies usually contemplate basic digitalisation steps (e.g. starting a website), but are also open to digital technologies in general.

4.4 FOREIGN TRADE

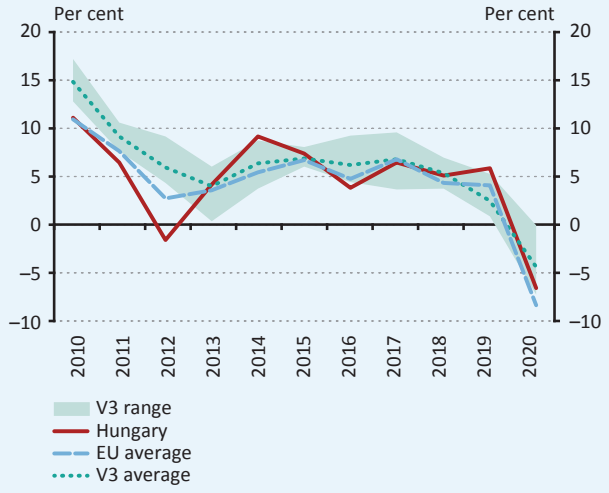
For small open economies the increase in exports is one of the fastest ways of economic convergence. However, the width of the base underlying foreign trade and the expansion thereof is also important. In Hungary, roughly 38,000 SMEs export; their performance substantially determines the country's competitiveness and the competitiveness of the country also determines the prospects of exporters.

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 outstandigly 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 only a few SMEs export, while the ratio of exporting SMEs exceeds the average of the Visegrád region. In Hungary more than 6 per cent of SMEs export, while in the rest of the Visegrád countries the number of SMEs entering the external markets is typically lower by 1.5 percentage points. However, compared to other countries in the region, there is a significant growth reserve: in Slovenia and Austria, 15 per cent of SMEs export, thus these two countries lead the EU ranking. In Hungary the 20 largest companies account for almost 30 per cent of the exports, while in Poland roughly 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. Accordingly, convergence to the EU average in this indicator may take longer.

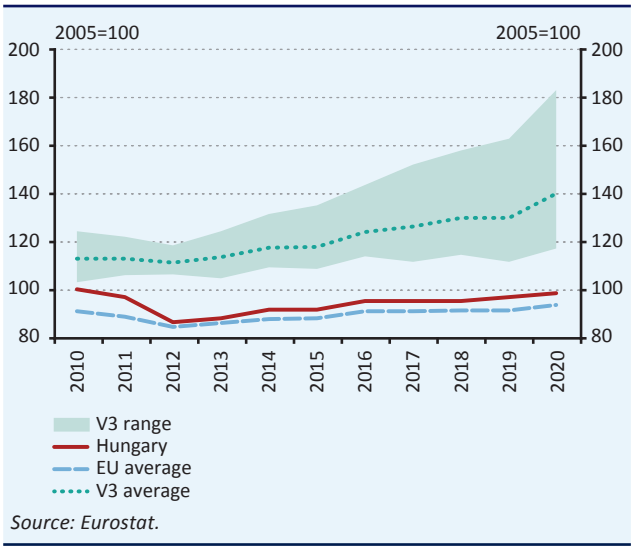
4.37 Annual changes in exports



Source: Eurostat.

Due to its open structure, the performance of the Hungarian economy considerably depends on exports. As a consequence of the strong export dynamics, in the past 10 years the contribution of trade balance to GDP was mostly positive. By contrast, partly due to the high base and partly to the dynamically increasing domestic demand, in 2018 and 2019 the contribution of trade balance to growth was negative. In 2020, as a result of the coronavirus pandemic not only the growth contribution was negative, but the volume of exports also fell in annual terms, similarly to the regional and EU trends.

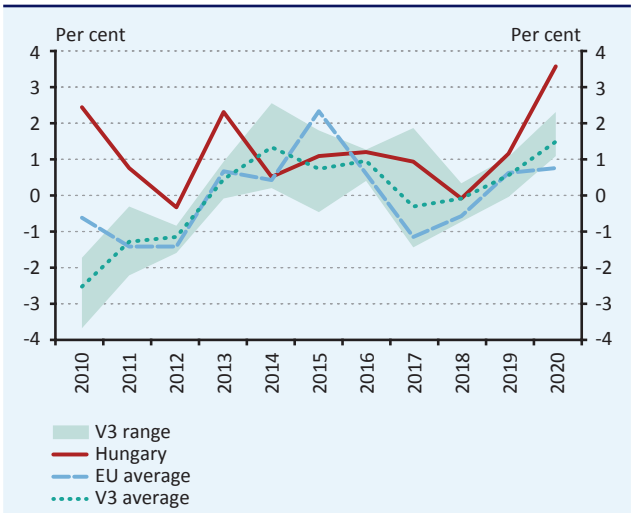
4.38 Share in global exports



Source: Eurostat.

At present, Hungary roughly accounts for 0.5 per cent of the world's exports, while the aggregate weight of the V4 countries in the global economy is 3 per cent. In the past years, each of the Visegrád countries has been able to increase their market share above the EU average. During the financial crisis, Hungary's performance declined to a larger degree than its competitors, but there was a turnaround from 2013. Thereafter, the growth in export market share lasted until 2016. From 2016, domestic demand became the driver of the economy, and export dynamics was slower than the average of the Visegrád region; however, in 2019, the dynamics of Hungarian exports exceeded that of the Visegrád countries. In 2020, Hungarian exports fell only moderately compared to Europe, which meant a further increase in export market share.

4.39 Annual change in terms of trade

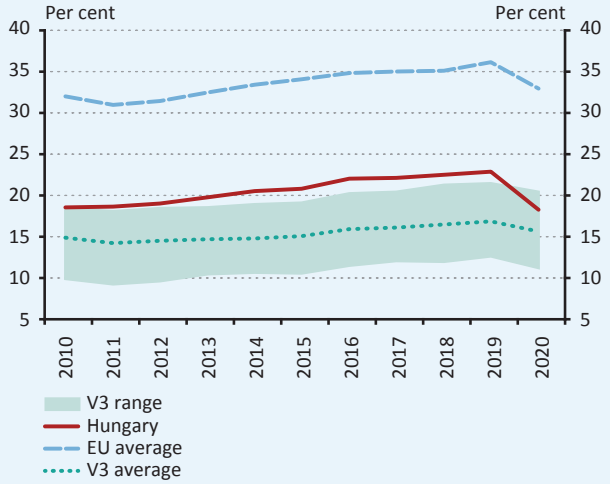


Note: Merchandise trade.

Source: UNCTADstat.

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 recent years, i.e. the growth in export prices exceeded that in imports, with the exception of 2018. In 2019, the improvement in Hungary's terms of trade was outperformed only by 4 countries in the EU, and Hungary was among the leaders in EU in 2020 as well.

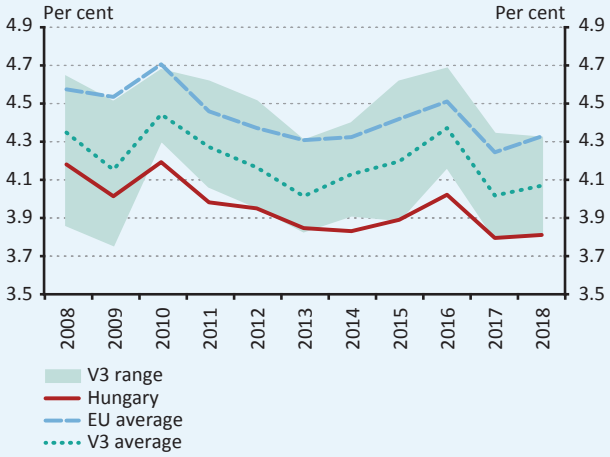
4.40 Share of services within exports



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 both to cyclical and structural factors. In 2020, as a result of the coronavirus pandemic significant service sectors declined, mostly in the area of accommodation and catering services. 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 within exports.

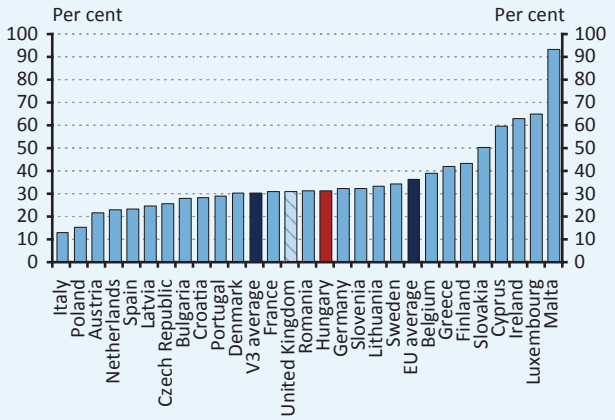
4.41 Average tariffs in foreign trade



Source: UNESCAP, MNB.

The foreign trade conditions can be categorised as tariff based (customs type) and non-tariff based (regulatory nature). In view of the fact that non-tariff obstacles represent a category of assessment 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, the deviation in rates is not significant across the EU. Even Bulgaria, which exports on the most unfavourable terms, can trade with the world under an average customs tariff of just 6.7 per cent.

4.42 Export concentration index - TOP20 companies (2018)

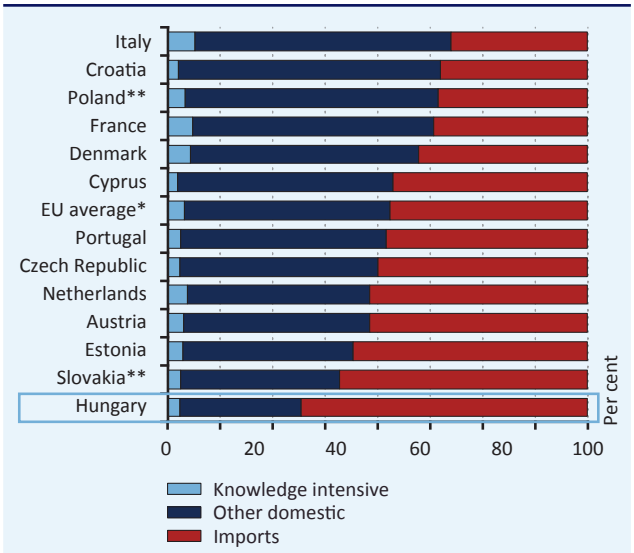


Note: Based on nominal turnover, share of the Top 20 companies in the total. Merchandise trade only.

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 national economy is more competitive. Hungary is in the mid-range of Europe, which is illustrated here by the weight of the Top 20 exporting companies in foreign trade. However, foreign trade rests on a more even base in Czechia and Poland than in Hungary or Slovakia.

4.43 Decomposition of manufacturing production by use (2017)

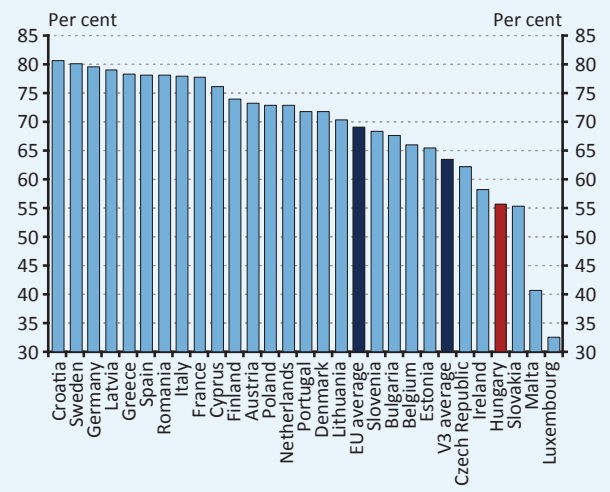


*Note: As a ratio of total current production absorption, net of product taxes and subsidies. *The EU average is the average of the countries shown in the chart. **2015 data, not included in the EU average.*

Source: Eurostat, MNB.

In Hungary, manufacturing is less integrated into the economy as a whole than in the case of its successful competitors. A large part of the foreign-owned companies operating in the sector use little domestic input and do not use the knowledge-intensive services either. 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 V4 region and particularly for Hungary, which countries are essentially poor in natural resources.

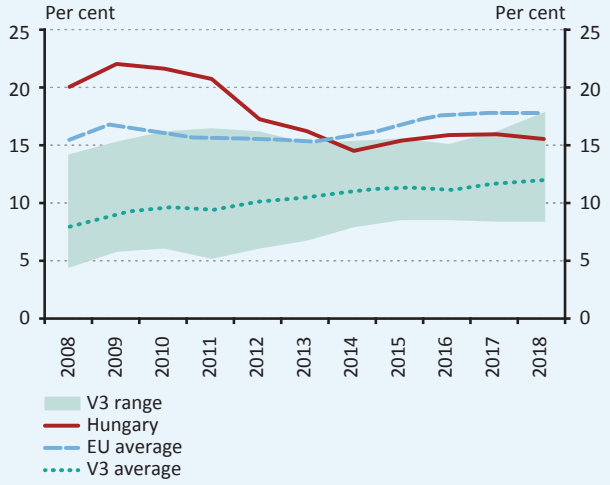
4.44 Domestic value added content of exports (2019)



Source: OECD-Tiva database.

The higher the domestic export content, the more the benefits will reach the widest possible circle in the country when external demand is favourable. Globalisation has made production chains more complex, and thus economists can only estimate domestic content through international input-output tables. Based on such an estimate, Hungary is able to produce relatively little domestic content, and thus although it has one of the highest export-to-GDP ratios, it is typically produced from imports. The Slovak result is similar to the Hungarian one, while both the Czech and Polish rates are significantly higher than that of Hungary.

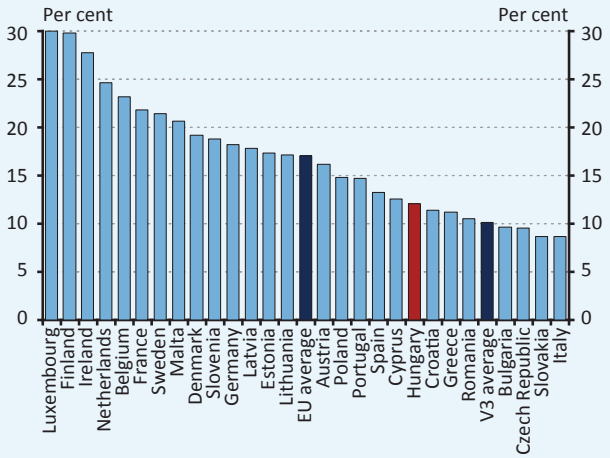
4.45 Ratio of high-tech export in total exports



Source: Eurostat.

There is a trend growth in international demand for products of high technical complexity, and thus the exports of technology-intensive products contribute to the competitiveness of the country. Since 2013, Hungary is no longer regarded as a particularly technology-intensive production base due to the decline in electronics manufacture (an emblematic milestone of this was the closing of the Nokia factory in 2014). As regards the production processes Hungary faces a heterogeneous situation: while complex technologies promise a number of spill-over opportunities for domestic suppliers, technology-intensive companies in our region typically conduct assembly activities, which is less forward-looking from a competitiveness perspective.

4.46 Ratio of knowledge-intensive employees - manufacturing (2020)

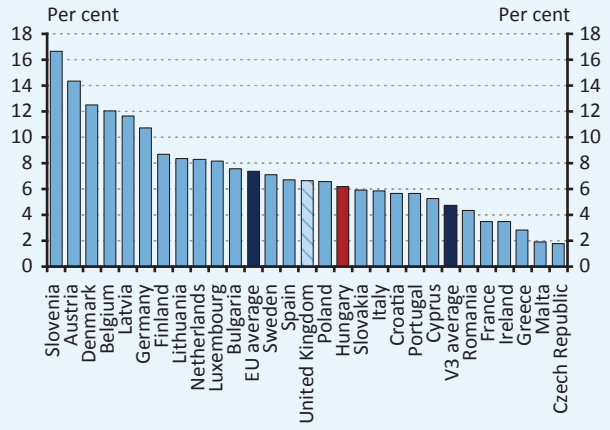


Note: Ratio of managers and those performing independent professional activity (Main categories 1 and 2 in the Hungarian standard classification of occupations (FEOR)), to total employment.

Source: Eurostat, MNB.

Based on the industrial or product structure data, Hungary has high-tech export structure, since the pharmaceutical, electronics and machinery products have a high weight in exports. However, in Hungary and in the V4, the ratio of workforce in knowledge-intensive jobs is below the EU average. An essential condition for moving towards activities of higher value added is having as many highly qualified employees and managers in manufacturing as possible, and to foster domestic R&D activity.

4.47 Ratio of exporting SMEs (2018)



Note: Calculated for industrial sectors, public utilities, construction, trade, transportation and warehousing, information and communication, professional services and administrative service sectors. The chart includes enterprises with headcount over 10 persons.

Source: Eurostat, MNB.

As regards the entire population of small and medium-sized enterprises in Hungary, the number of exporting SMEs is average. The ratio of Hungary roughly corresponds to the EU average, and due to the low Czech value, it also exceeds the V3 average. Two factors explain the poor Czech result. On the one hand, the complexity of and the time required for export procedures in the Czech Republic hinders the external market entry (European Commission, 2019). On the other hand, Czech SMEs are likely to export indirectly (as suppliers). The latter assumption is supported by the fact that the Czech Republic has a higher domestic value added content of exports compared to Hungary. Two-thirds of the nearly 33,000 exporting Hungarian SMEs belonging to the selected sectors qualify as micro-enterprises. It should be noted that the statistics contains only the companies that appear in the foreign market independently. 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. On the other hand, it is warning sign that more than 1,500 micro-enterprises ceased exporting between 2016 and 2018, and presumably only a small proportion of these enterprises have changed size category, i.e. a larger part of them have truly abandoned exports.

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.

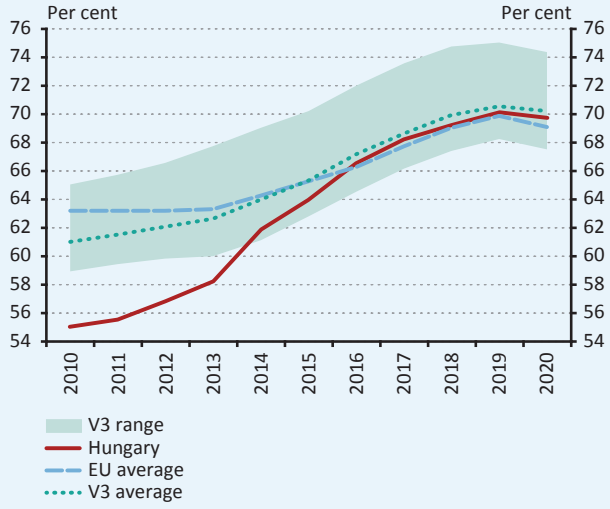
In Hungary, the steadily improving labour market processes of the past decade were slightly interrupted in 2020 by the crisis caused by the coronavirus pandemic. Between 2010 and 2019, Hungary's employment rate achieved one of the most significant rises in the European Union, in parallel with which unemployment also declined considerably, while wages rose dynamically. As a result of the foregoing, Hungary came close to full employment and the labour market has contributed significantly to economic growth, contrary to the period before and during the 2008 crisis. However, as a result of the global outbreak of the coronavirus pandemic in spring 2020, the changed supply and demand conditions had negative impact on the labour market in Hungary as well. Companies have adjusted to the fall in demand mainly by reducing working hours and laying off employees, and wage dynamics also became more moderate than in previous periods. Labour market adjustment was the most significant during the first wave of the pandemic, after which there was a rapid correction in both the headcount and the working hours. The impact of the crisis has been more significant in sectors affected by the restrictions to a larger degree (accommodation and food service activities, transportation and storage) and for some groups being in more disadvantaged position in the labour market. The later waves and the lockdown affected fewer sectors and therefore triggered smaller adjustment in the labour market.

The negative labour market effects of the coronavirus pandemic in Hungary were more moderate than those experienced during the 2008–2009 crisis. In 2020, the employment rate of the 15–64 year age group fell by 0.4 percentage points compared to the previous year, to 69.7 per cent, putting Hungary in the middle of the EU ranking. The unemployment rate rose by 0.8 percentage point to 4.3 per cent in 2020, being the fifth lowest in the EU ranking. In parallel with the rise in unemployment vacancies also declined, causing labour market tightness to decline overall in 2020; however, some sectors repeatedly experience labours shortage. Of the groups being in more disadvantaged position in the labour market, the number of the active decreased among young people, those with low qualification and women, while it rose among people close to retirement. As a consequence, increasing the labour market activity of several vulnerable groups remains a significant reserve in the labour market. The pandemic has increased the importance of part-time work and work from home, which has been less common in Hungary until now: the ratio of people working from home more than doubled in 2020.

Average wages continued to rise in 2020, albeit falling short of the growth of former years, but exceeding the EU average. However, the average wage in Hungary is still one of the lowest in the EU: in 2019, the average wage at purchasing power parity was around 70 per cent of the EU average wage, and slightly lower than the average of our Visegrád competitors. On the other hand, wage levels are in line with our productivity levels. The fall in the tax wedge continued in 2020, due to a further reduction in the social contribution tax, supporting a rapid recovery from the crisis and the achievement of full employment in the long run.

The negative effects of the crisis caused by the coronavirus pandemic were offset by a number of government measures specifically targeted at the labour market, as well as by the credit market. Wage subsidy schemes for job protection, job creation and R&D workers launched in spring 2020 supported the employment of around 280,000 workers in 2020, followed by sectoral wage subsidies and labour force subsidies for enterprises announced in the autumn, which supported the employment of further 80,000 workers. The moratorium on loan instalments and the central bank's FGS Go! programme helped companies bridge the period characterised by tight demand, and thus retain labour force. As a result of the foregoing, the labour market has moved only slightly away from full employment during the coronavirus pandemic.

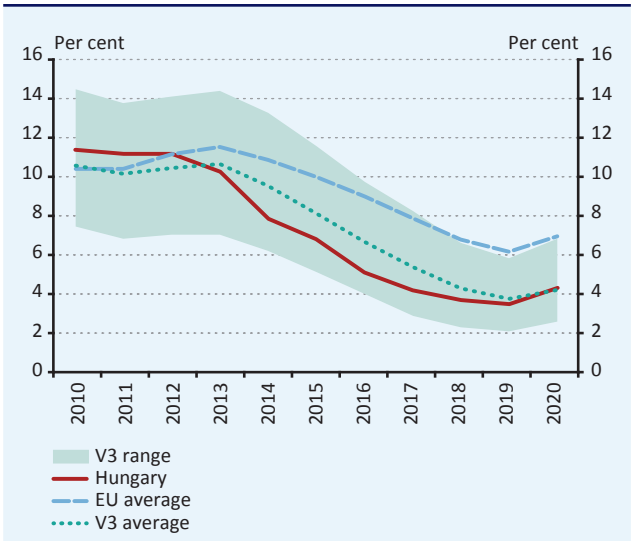
4.48 Employment rate in the 15–64 age group



Source: Eurostat.

The Hungarian employment rate achieved one of the highest increases in the European Union over the last decade; however, it decreased in 2020 – as in most EU countries – due to the coronavirus pandemic. Companies adapted to the adverse economic conditions by reducing the working hours of their employees and, to a lesser extent, by dismissals. The fall in employment was mitigated by the government's labour market programmes, which provided support for the employment of nearly 360,000 people in 2020. The employment rate in the age group of 15–64 years fell by 0.4 percentage point compared to the previous year, which is better than the EU average (-0.8 percentage point) and corresponds to the average of our Visegrád competitors. Accordingly, in 2020, the Hungarian indicator was 69.7 per cent, which exceeds the EU average, while it is slightly below the V3 average.

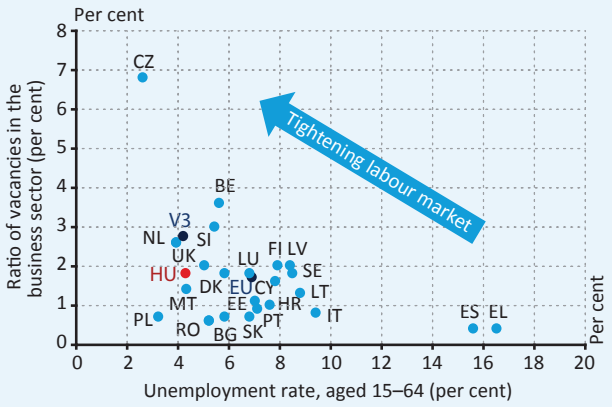
4.49 Unemployment rate in the 15-64 age group



Source: Eurostat.

In parallel with the employment developments, the decline in the unemployment rate observed in recent years was also interrupted by the coronavirus pandemic. In the spring of 2020, the sudden economic downturn forced some companies to lay off workers, and in addition to the increase in the number of unemployed people the number of the inactive also rose, as some of those who lost their jobs were unable to seek job actively due to the restrictions. The unemployment rate in the 15–64 age group increased by 0.8 percentage points compared to the previous year. The increase was in line with the EU average, while the V3 average was lower (0.4 percentage points). In 2020, the Hungarian indicator was 4.3 per cent, the fifth lowest in the EU ranking and significantly better than the 6.9 per cent average of the EU Member States. The average of our Visegrád competitors was 4.2 per cent.

4.50 Labour market tightness in the EU (2020)

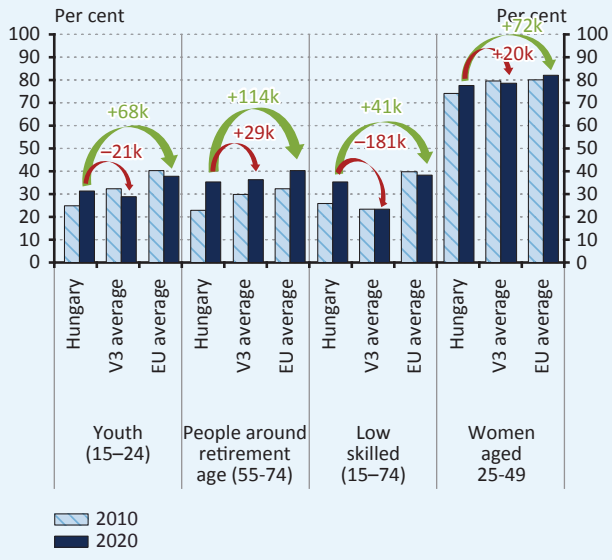


Note: Job vacancy rate in the business sector shows the number of vacancies as a percentage of the total number of jobs in the B-N sectors. There are no data available for France and the United Kingdom.

Source: Eurostat.

The coronavirus pandemic led to a rise in unemployment in a large majority of EU countries, while job vacancies decreased in all countries. As a result, labour market tightness in the EU decreased overall in 2020. In Hungary, despite rising unemployment and falling job vacancies, labour shortage can be observed in some sectors (e.g. manufacturing, construction, accommodation and food service activities), especially after the restart of the economy. Overall, the Hungarian labour market remains tighter than the EU average, but less tight than the average of our Visegrád competitors. The reduced demand for labour in the wake of the pandemic was also reflected by the fact that the labour shortage, as a factor hindering production, decreased for the enterprises.

4.51 Activity rate in certain social groups

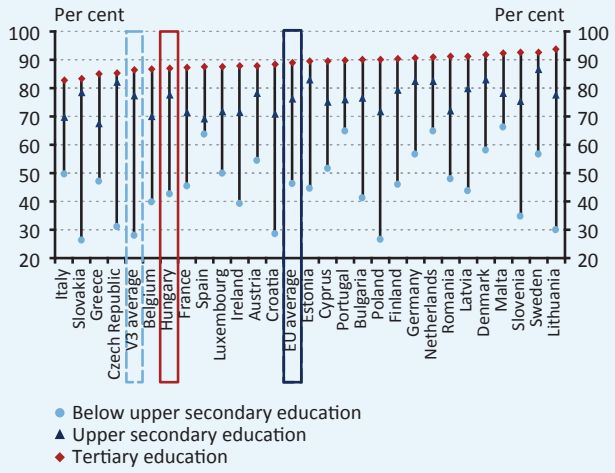


Note: The red and green numbers denote the additional activity needed to reach the V3 and EU ratios, respectively, in 2020.

Source: Eurostat.

For the majority of disadvantaged groups in terms of the labour market, the crisis caused by the coronavirus pandemic had a more negative impact on their activity than the average of the whole economy. In 2020, the only group in Hungary where the number and ratio of the active population increased compared to the previous year were those around retirement age, while it decreased among the low-skilled, young people and women aged 25–49. Similar trends can be observed in the EU and at our Visegrád competitors. Thus, in the case of vulnerable groups, substantial reserves can be identified. Compared to the EU, currently Hungary has the largest growth reserve at those close to the retirement age, but growth reserve can be identified at the other groups as well. In 2020, Hungary's activity rate in the groups of low qualification and young people was more favourable than the average of the Visegrád countries.

4.52 Activity rate by educational attainment level in the 15–64 age group (2020)

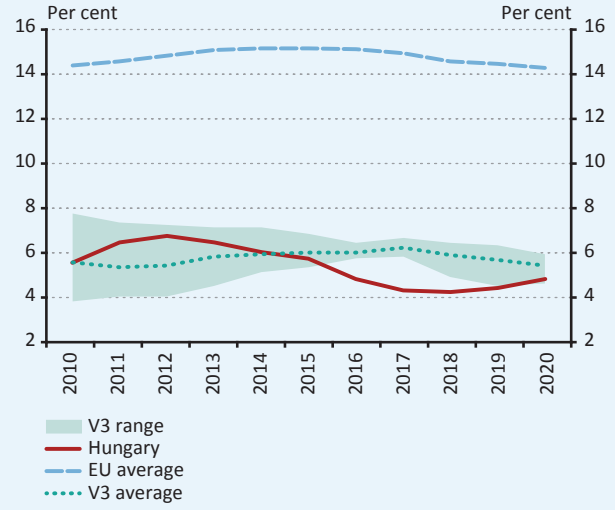


Note: There are no data available for the United Kingdom.

Source: Eurostat.

According to educational attainment level, the coronavirus pandemic had the largest negative impact on the activity of the those of low qualification, i.e. below upper secondary education. In Hungary, as in many EU countries, the activity rate of those below upper secondary education decreased in 2020, while the activity rate of those with upper secondary and tertiary education increased. Hungary continues to have the highest growth reserve in the case of the low-skilled (42.3 per cent) compared to the EU average (46.1 per cent), while the activity rate of those with upper secondary education (77.5 per cent) is above the EU average (76 per cent). In the Visegrád countries the activity of the low-qualified materially lags behind that of Hungary, while there is no significant difference in the other categories.

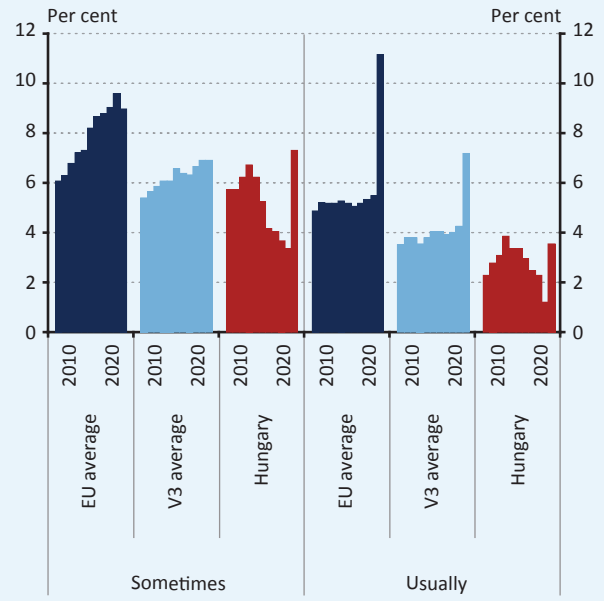
4.53 Part-time employees as a proportion of total employment in the 15–64 age group



Source: Eurostat.

Part-time employment in the Visegrád countries is among the lowest ones in a European Union comparison. However, in 2020, the number of part-time workers in Hungary increased to 211,000 from 195,000 in 2019. A significant part of the increase may have been due to companies adjusting to the coronavirus pandemic by reducing working hours, also supported by government job protection programmes. However, on the average of the V3 and the EU, the number of part-time workers fell, and in most countries the decline exceeded the fall in full-time employment. In 2020, the ratio of part-time employees in Hungary was 4.8 per cent, which is still significantly lower than the EU average (14.2 per cent).

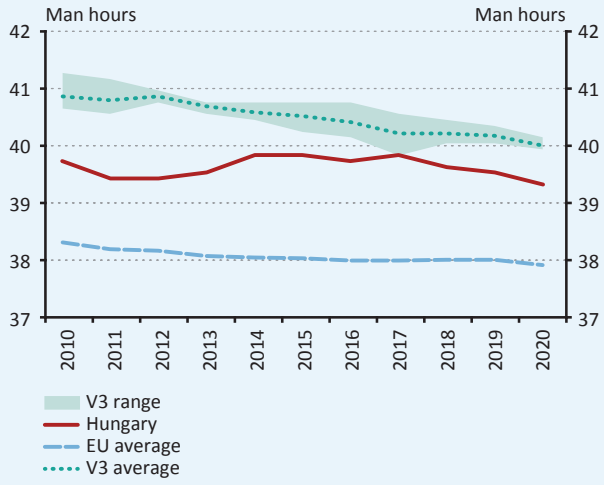
4.54 Employed persons working from home as a percentage of the total employment in the 15-64 age group



Source: Eurostat.

As a result of the coronavirus pandemic, work from home has significantly appreciated with a view to increasing social distancing in 2020. In Hungary, the ratio of employed persons who sometimes work from home more than doubled, rising to 7.4 per cent, while the ratio of those usually work from home tripled, reaching 3.6 per cent in 2020. In the EU and the V3 countries, the ratio of regular home workers increased significantly, while the ratio of occasional home workers slightly decreased or remained unchanged. Overall, working from home in Hungary is still less widespread than the EU or Visegrád average.

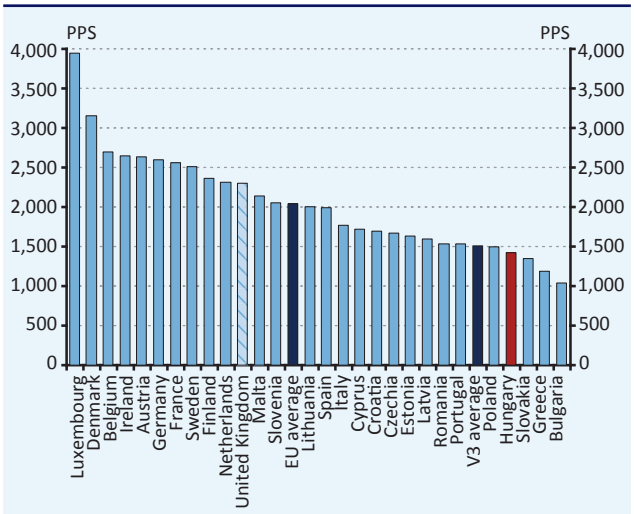
4.55 Average weekly number of hours worked



Source: Eurostat.

The average hours worked in the Visegrád countries is traditionally one of the highest in the European Union. In 2020, the decline in the number of hours worked continued at a similar rate as in previous years in the countries of the region, including Hungary. In most EU countries, the indicator did not decline or declined only slightly. In 2020, the number of hours worked per week in Hungary was 39.3 hours, compared to 40 hours in the V3 and 37.9 hours in the EU. The higher than EU average indicator in the Visegrád region reflects the traditionally lower penetration of part-time work in these countries. Compared to the Netherlands, the country with the highest part-time employment, the employees of the region work on average by almost 10 hours more weekly.

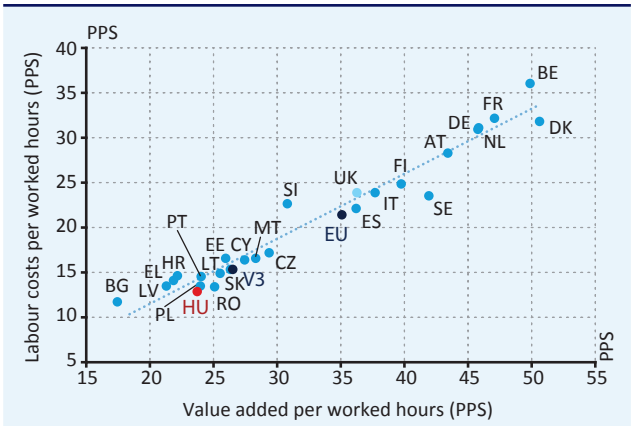
4.56 Monthly gross average wage in the EU at purchasing power parity (2019)



Source: Eurostat.

The coronavirus crisis decelerated the dynamic wage growth trends of recent years in Hungary only to a small degree in 2020. Gross domestic wages and salaries calculated based on national accounts increased by around 7 per cent in 2020. Although the rate of increase was slightly below that of previous years, it was the third highest in the European Union. Most EU countries also registered an increase in this indicator, with an average of almost 2 per cent and more than 3 per cent in the Visegrád countries. In 2019, the Hungarian average wage at purchasing power parity was around 70 per cent of the EU average wage, and slightly lower than the average of our Visegrád competitors.

4.57 Labour productivity and labour costs in the EU (2019)

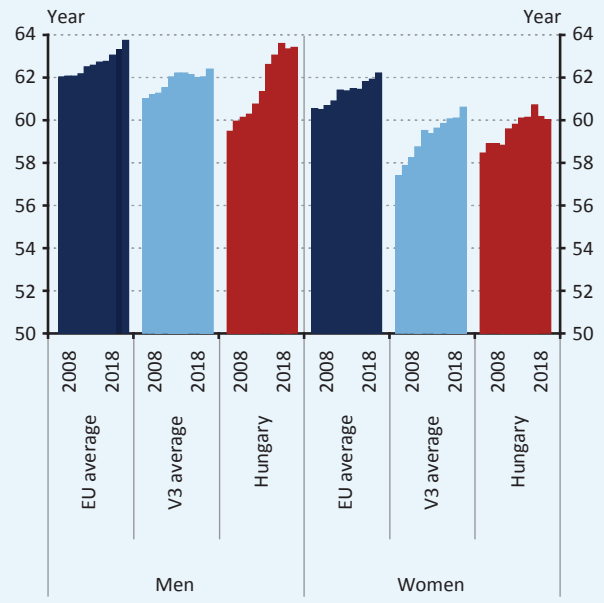


Note: Ireland and Luxembourg are not included because of their outliers.

Source: Eurostat.

The Hungarian wage level is in line with productivity. In 2019, wage costs and value added per hour worked continued to rise, but Hungary remains at the bottom of the EU rankings at both indicators. In parallel with the major wage differences, Hungary's productivity is below 70 per cent of the EU average measured at purchasing power parity. Wage costs and productivity are higher in each of our Visegrád competitors. 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.

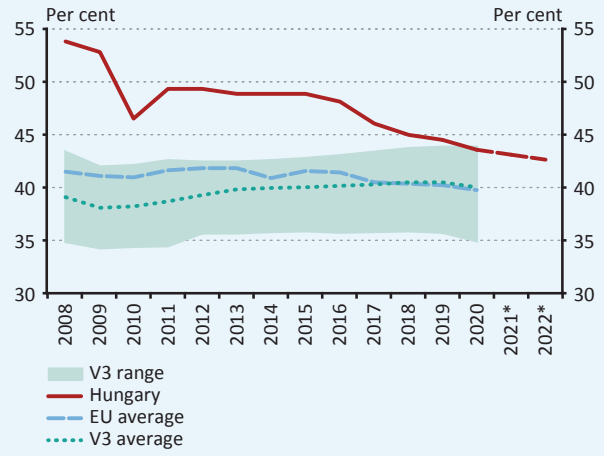
4.58 Effective age of retirement



Source: OECD.

The effective age of retirement may differ from the official retirement age due to allowances and individual decisions. In the past two decades, in Hungary the effective age of retirement increased on the whole, with major contribution by the government measures. The cancellation of the early retirement options, the tightening of the disability pensions and gradual increase of the retirement age to 65 years until 2022, raised the effective age of retirement, as a result of which Hungary came close to the EU average. However, recently the rise in the effective age of retirement stopped, which is partly due to the possibility of old-age pension for women with an eligibility period of at least 40 years. In 2018, the effective retirement age for men and women in Hungary was 63.4 years and 60 years, respectively.

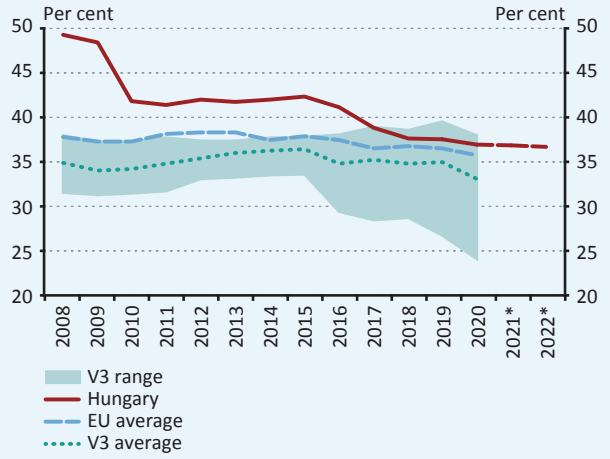
4.59 Average tax wedge of employees with no child, earning average wage



*Note: *Forecast based on currently available information.*
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 percent) in 2011, then it was reduced to 15 per cent in 2016, followed by a gradual reduction of the social contribution tax from 27 per cent to 15.5 per cent from 2017. As a result of the foregoing, the average tax wedge of employees with no child, earning average wage decreased, but it was still higher (43.6 per cent) than the average of the EU and the region (40 per cent) in 2020. Based on the plans announced in spring 2021, the social contribution tax will be reduced to 15 per cent from July 2022 and the vocational training contribution will be included in the tax, and thus the average tax wedge of people with no child may fall to 42.7 per cent.

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

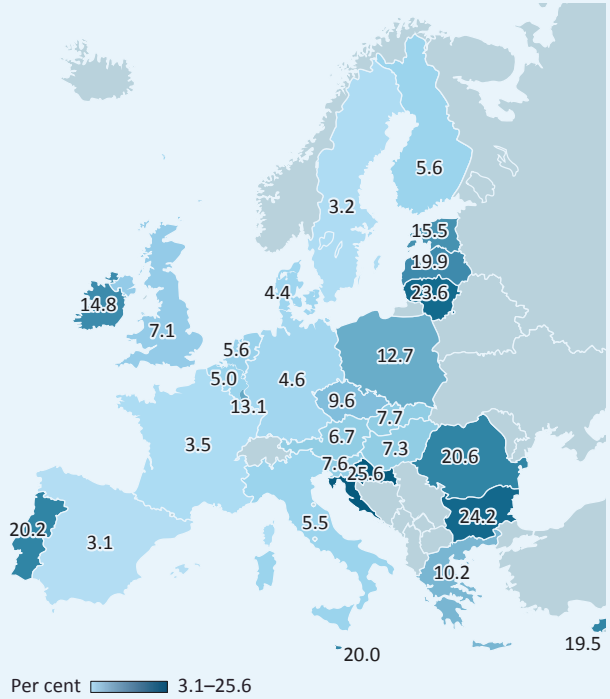


*Note: *Forecast based on currently available information.*

Source: European Commission, MNB-calculation.

As a result of the tax allowances, the tax wedge of families is lower than that of single persons. In 2020, the average tax wedge of families with two children and average wage was 36.9 per cent, which slightly exceeds the EU and regional averages, while it is lower by almost 7 percentage points than the tax wedge of those without children. 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 2022, as a result of the expected changes in the social contribution tax and the vocational training contribution the family wedge may decline to 36.7 per cent.

4.61 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 already 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; 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.

There are still significant regional disparities in Hungary. 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 1990[2]. Although as a result of the government measures and the regional development programmes implemented in the past decade, the differences between the counties declined in several economic indicators, they are still significant. In addition, because of the coronavirus pandemic, regional disparities slightly increased in 2020 in some indicators (e.g. labour market indicators).

The development level of the capital considerably exceeded the level of the counties also in 2019; in addition, as the only NUTS 3 region in Hungary, only the development of Budapest 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 2019, while that of the least developed Nógrád County was only 44 per cent of the national average and a third of the EU average. The NUTS 3 comparison also shows that most of Hungarian counties (15 counties) are in the last quarter of the EU ranking in terms of development. The development gap between counties in Hungary was the highest in 2009, then steadily declined until 2015 and remained stable until 2019. 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[3]. There is also significant concentration in terms of the production of GDP: almost half of the gross domestic product related to Budapest and Pest County in 2019, while the smallest contribution was made by Nógrád County at 1 per cent.

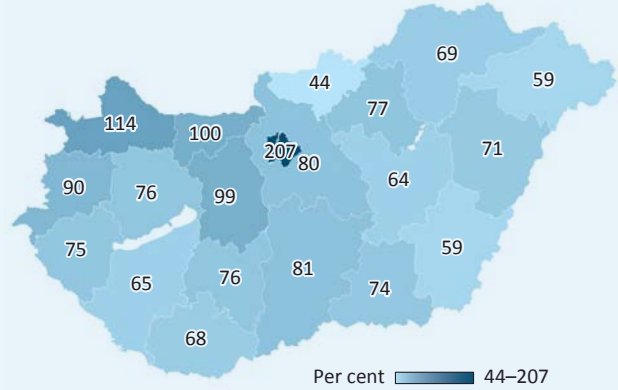
The larger inflows of foreign direct investment, the presence of advanced business services and manufacturing, significantly contributed to the development of counties in the past decade. There are still substantial differences in investment and industrial production. Moreover, investment and industrial activity declined in most counties in 2020 as a result of the coronavirus pandemic. In 2020, the value of investments per capita was 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, 2.5 times the national average, while the indicator of several counties was below half the national average.

Over the past decade, regional labour market disparities have generally decreased, but as a result of the coronavirus pandemic differences between counties in the labour market slightly increased. In 2020, employment rates fell in most counties, unemployment increased and job vacancies declined in all counties, but the changes affected counties to a varying degree. 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. In recent years, the Gini index based on income was stable, and although it exceeds the average of the V3 countries, it falls short of 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. Since 2010, the AROPE index, measuring the ratio of the population exposed to the risk of poverty or social exclusion, fell from roughly 30 per cent to 18 per cent, and is lower than the EU average.

[2] Source: Káposzta, J. (2014): Területi különbségek kialakulásának főbb összefüggései (Key correlations of the development of regional differences)
[3] Source: HCSO (2019): Tér-kép, 2018

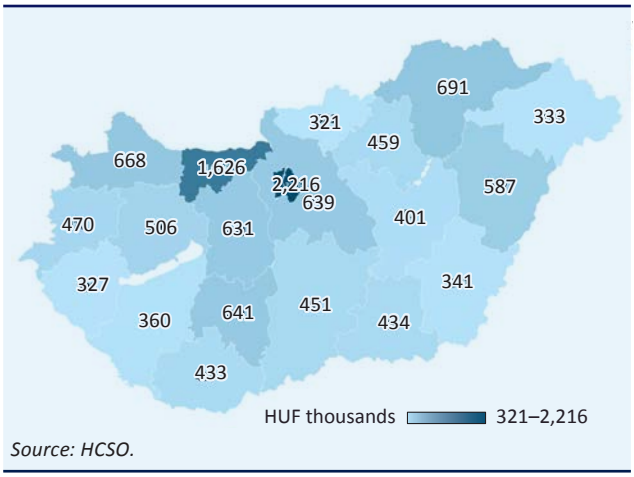
4.62 GDP per capita as a percentage of the average by counties (2019)



Source: HCSO.

In Hungary, the development disparities between counties decreased over the past decade, but there are still substantial disparities. When examining the ratio of GDP per capita compared to the national average, major difference can be identified between the development level of the capital and the countryside. In 2019, the development of Budapest was 207 per cent of the national average and one and a half times the EU average. By contrast, the GDP per capita of the least developed Nógrád County was only 44 per cent of the national average and only a third of the EU average. The index of Győr-Moson-Sopron, Komárom-Esztergom and Fejér counties exceeds or is around the national average, while the development level of most counties is between 60 and 80 per cent. Between 2009 and 2019 the GDP per capita rose to the largest degree in Bács-Kiskun County, by roughly 120 per cent, while the smallest growth was registered in the most developed region, in Budapest, at 68 per cent.

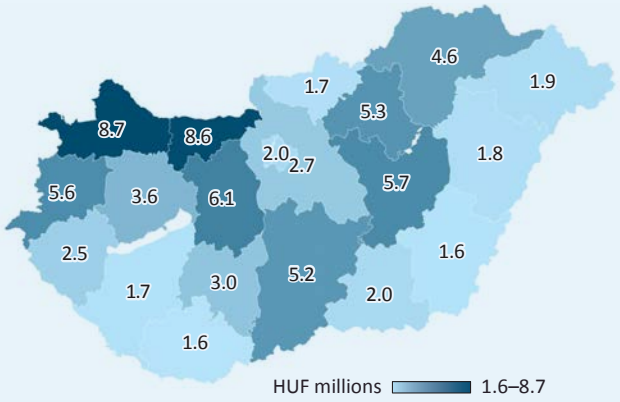
4.63 Investment per inhabitant by counties (2020)



Source: HCSO.

The strong growth in investments from 2017 onwards was interrupted in 2020 by the coronavirus pandemic, which led to a fall in investments in most counties: in 2020, the volume of investments rose only in four counties. The largest increase was in Komárom-Esztergom County (47 per cent) as a result of the development of manufacturing production capacity, while the largest decrease was registered in Győr-Moson-Sopron County (-28 per cent). The value of investment per capita was the highest in Budapest (HUF 2.2 million), which exceeds the national average (HUF 853,000) 2.6 times. The lowest investment activity was registered in Nógrád County (HUF 321,000). Major concentration can be observed in terms of the regional breakdown of investments: 46 per cent of investments were contracted by economic organisations based in Budapest in 2020.

4.64 Industrial production per inhabitant by counties (2020)

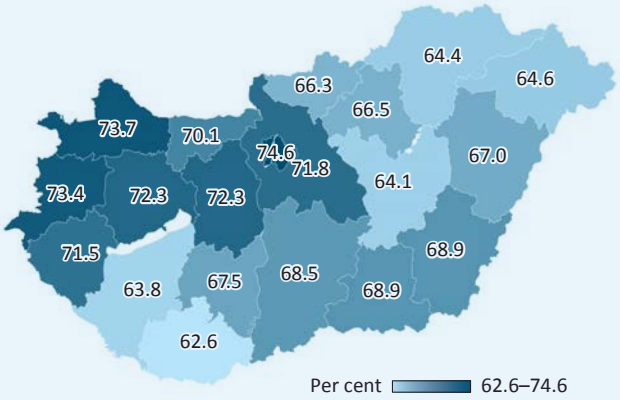


Note: Data of enterprises employing at least 5 persons by place of business.

Source: HCSO.

After years of steadily rising performance, the coronavirus pandemic caused industrial production to fall in the vast majority of counties in 2020. Production volumes increased only in Jász-Nagykun-Szolnok, Hajdú-Bihar and Pest counties last year. The largest loss in production was in Komárom-Esztergom (-12 per cent), while the largest increase was registered in Jász-Nagykun-Szolnok County (16 per cent). In 2020, industrial production per capita was the highest in Győr-Moson-Sopron and Komárom-Esztergom counties, amounting to HUF 8.7 and 8.6 million, respectively, exceeding the national average (HUF 3.5 million) by 2.5 times. By contrast, industrial production per capita in Baranya, Békés, Somogy and Nógrád counties was less than half the national average. In 2020, Győr-Moson-Sopron and Pest counties and Budapest produced a third of industrial output.

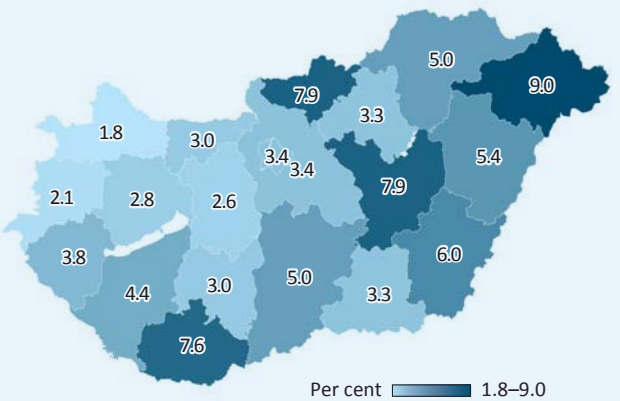
4.65 Employment rate by counties in the 15–64 age group (2020)



Source: HCSO.

The positive labour market trends of the past decade were slightly disrupted in 2020 by the coronavirus pandemic, leading to a moderate increase in labour market inequalities between counties. The employment rate of the 15–64 year old decreased in 13 counties, increased in 6 counties and remained unchanged in Békés County. The employment rate decreased most significantly in Jász-Nagykun-Szolnok County (-4.2 percentage points) between 2019 and 2020, while it increased to the largest degree in Somogy County (0.9 percentage points). The employment rate remains the highest in Western and Central Transdanubia and Central Hungary, above the national average (69.7 per cent), while the lowest rates are registered in Southern Transdanubia, Northern Hungary and the Northern Great Plain, averaging around 65 per cent.

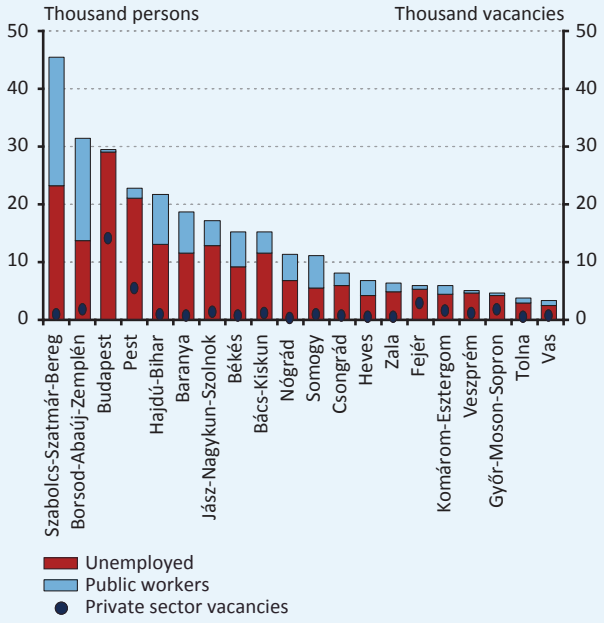
4.66 Unemployment rate by counties in the 15–64 age group (2020)



Source: HCSO.

As a result of the coronavirus pandemic, the unemployment rate rose in a large majority of the counties in 2020, in parallel with the average decline in employment. Unemployment rate decreased only in three counties (Vas, Tolna, Fejér) compared to 2019, with the largest decrease (0.5 percentage point) in Vas County. The indicator increased most in Bács-Kiskun and Jász-Nagykun-Szolnok counties, by 2-2 percentage points. There are still significant regional disparities: in 2020, the unemployment rate was the lowest in Győr-Moson-Sopron County at 1.8 per cent, and the highest in Szabolcs-Szatmár-Bereg County at 9 per cent. Szabolcs-Szatmár-Bereg, Jász-Nagykun-Szolnok and Nógrád counties are also significantly above the national average (4.3 per cent).

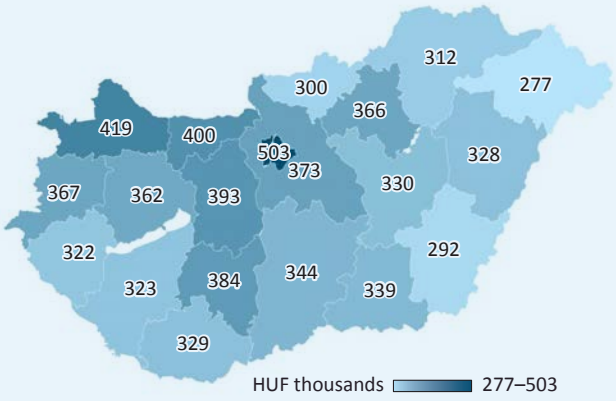
4.67 Vacancies in the private sector and labour reserve by counties (2020)



Source: HCSO, MNB calculation.

Due to the changes in the demand and supply of labour resulting from the coronavirus pandemic, the number of vacancies fell, while the number of those representing the labour reserve (the registered unemployed and public employees) rose in 2020. The number of job vacancies fell in all counties and in the capital compared to previous year, by 30 per cent on average. As regards the labour reserves, the number of the unemployed increased in all but three counties (Vas, Tolna, Fejér), while the number of public employees decreased in most counties. As a result, labour reserves increased in 10 counties and in Budapest, and decreased in 9 counties. Less developed counties are still characterised by higher than the average labour supply and lower than average labour demand (vacancies). In 2020, the number of job vacancies per 100 unemployed person was the highest in Fejér County and in Budapest (around 50), and the lowest in Nógrád and Szabolcs-Szatmár-Bereg counties (3-4).

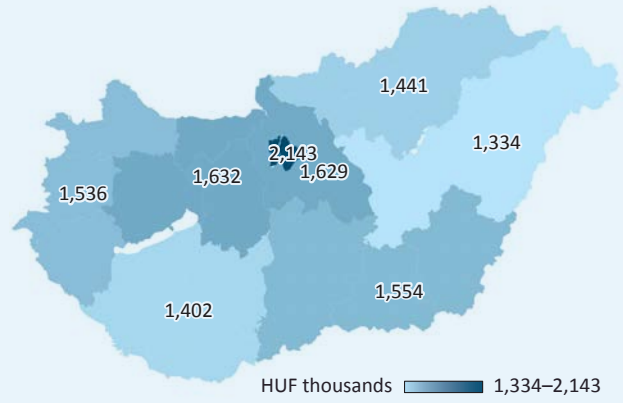
4.68 Monthly gross average wage by counties (2020)



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

In 2020, wages continued to rise in all counties, despite the coronavirus pandemic, albeit at a lower rate than the average of previous years. Compared to the previous year, the average gross monthly wage of full-time employees increased the most in Tolna County (13 per cent) and the least in Fejér County (7 per cent). The gross average wage was the highest in Budapest, at HUF 503,000, and the indicator of Győr-Moson-Sopron County also slightly exceeded the national average (roughly HUF 404,000) in 2020. There are still major wage differences: the average wage in the capital exceeds that in Szabolcs-Szatmár-Bereg County 1.8 times, which is significantly influenced by the differences in the structure of employment.

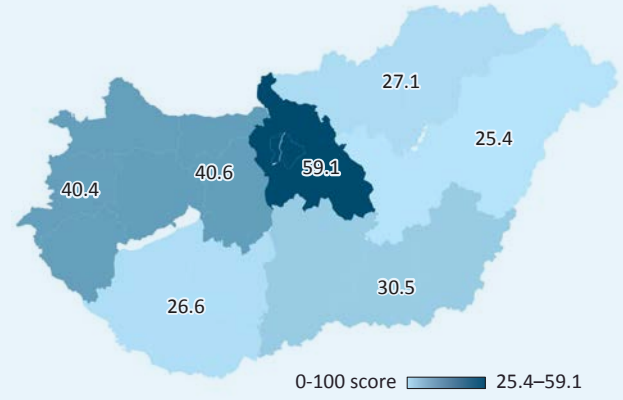
4.69 Annual net household income per capita by regions (2019)



Source: HCSO.

Hungarian households' income per capita varies significantly by regions, similarly to wages. In 2019 the annual per capita net income of households was the highest in Budapest, with HUF 2.1 million, which is 1.6 times higher than in the North Great Plain region (1.3 million), which has the lowest indicator. Per capita income rose significantly in all regions in recent years. 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.

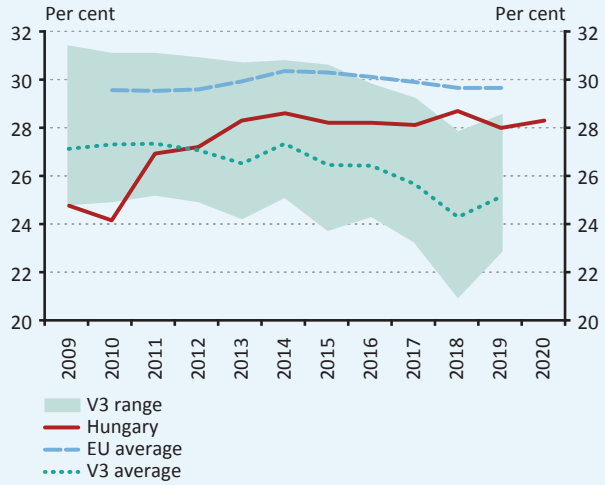
4.70 Regional Competitiveness Index (RCI) by regions (2019)



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 it 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.

4.71 Income Gini index

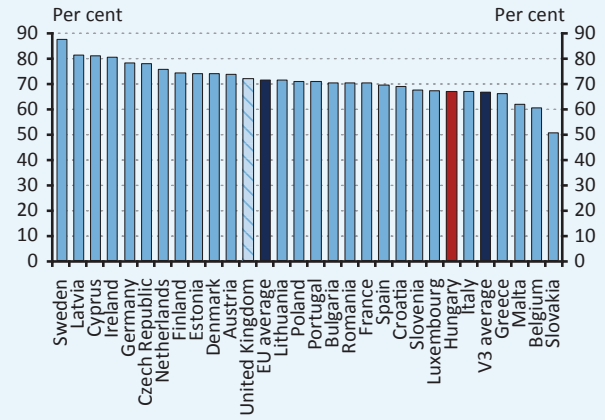


Note: The years indicate the year following the reference year.

Source: Eurostat.

In recent years, the Gini index, one of the most common indicators of economic inequalities within the society, has been stable in Hungary for around 28 per cent. The Hungarian indicator is better than the EU average, but exceeds the average of our Visegrád competitors. The rise in Hungary's Gini index following the global financial and economic crisis may have been the combined effect of the gradual increase in the capital income of those with higher income and the 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. (The possible impact of the coronavirus pandemic is not yet reflected in the data.)

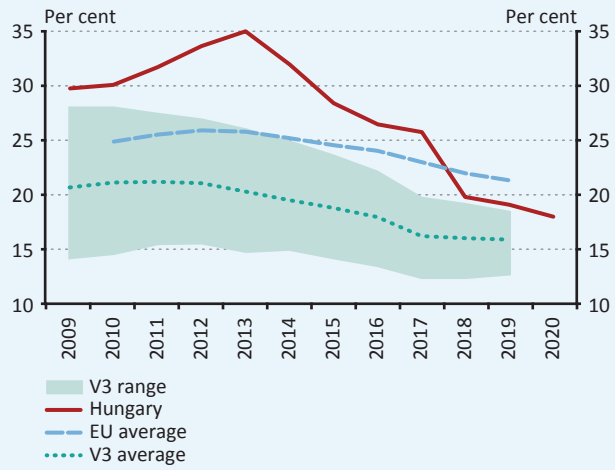
4.72 Wealth Gini index (2020)



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.

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



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

The AROPE indicator, which measures the proportion of the population at risk of poverty or social exclusion, showed that Hungary registered the second biggest fall in the last decade in the EU after Bulgaria. At present, the indicator is at its historic low – 17.8 per cent – which is better than the average of the European Union, but 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. Of the three AROPE sub-indicators, relative income poverty affects the most people, i.e. 12.3 per cent, while the ratio of people affected by severe material deprivation is 8 per cent and of those living in households with very low work intensity is 3.7 per cent in Hungary. The number of those affected by all three dimensions considerably declined in recent years, with significant contribution by the tax, employment, income and family policy measures after 2010. The possible impact of the coronavirus pandemic is not yet visible in the data; however, Eurostat's preliminary estimate for 2020 shows that AROPE was stable in Hungary, while it increased in Mediterranean countries.

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 almost half million 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 - ceteris paribus - may also have 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.

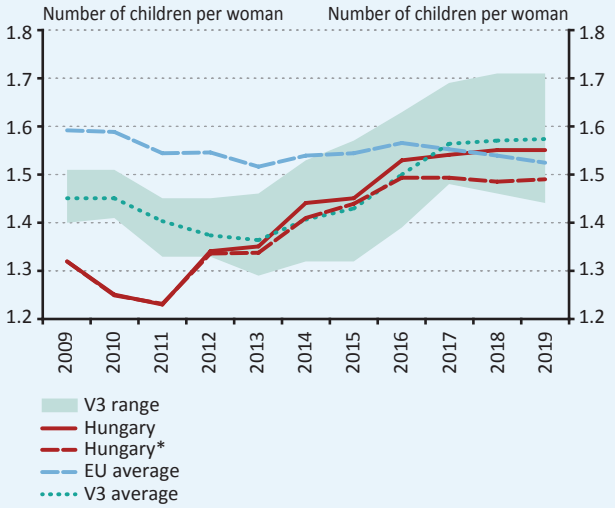
Boosting the fertility rate is a precondition for reversing the unfavourable demographic trend. In order to ensure constant population size a fertility rate of around 2.1 should be achieved and maintained in the long run. At present the ratio does not reach the reproduction threshold value in any of 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 1.5, coming close to the EU 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. The Family Protection Action Plan announced in February 2019 – further expanding the range of family benefits in Hungary, which can be considered wide-ranging by international standards – may have played a significant role in the increase in the birth rate in 2020. In order to achieve a demographic turnaround, the MNB's Competitiveness Programme in 330 point made several additional proposals, while the volume of essays entitled "Our Future is the Child" also presented innovative proposals covering several fields to halt population decline[4]

Another determinant factor of the population size is life expectancy at birth, the rise of which also increases the volume of available human capital. In Hungary, life expectancy at birth rose by 2 years in the past ten years; nevertheless, significant convergence reserve can be identified in this field compared to the EU average and also to the average of the other Visegrád countries.

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 2020, 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 social benefit systems in the long term.

[4] Source: Báger Gusztáv – Benda József (2019): Jövőnk a gyermek – Adalékok a népességgyarapodás társadalmi programjához I. (Jövőnk a gyermek – Adalékok a népességgyarapodás társadalmi programjához I. - Our future is the child - Contributions to the social agenda for population growth I.))

4.74 Total fertility rate

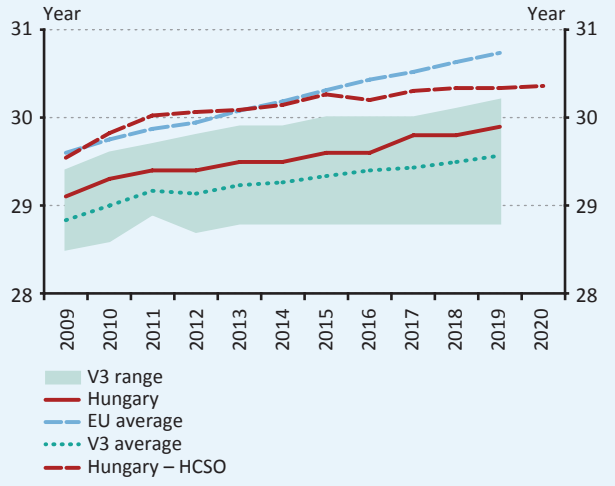


*Note: The Hungarian fertility rate published by Eurostat differs from the figure published by the Hungarian Central Statistical Office (HCSO) (1.49 for 2019) because according to the "habitual residence", used since 2013, it takes into consideration children born to mothers residing in Hungary, and 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. 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, and it is around 1.5-1.55 since 2016. According to the Eurostat data, the Hungarian fertility rate exceeded the EU average of 1.52 in 2019. 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 2019, which may have been attributable to the substantial strengthening of the family support system after 2010 and the sustained improvement in the economic environment.

4.75 Mean age of women at childbirth

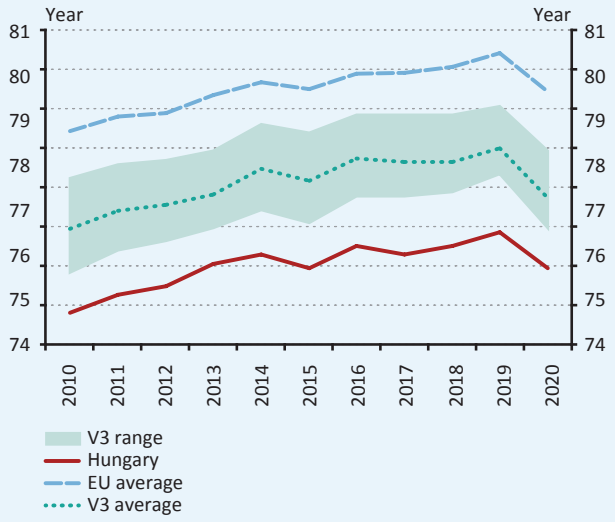


Note: In the case of Hungary, the time series of Eurostat and the HCSO slightly differ.

Source: Eurostat, HCSO.

In the past decades the age at childbirth substantially increased. According to Eurostat, in 2019, the average age of mothers at childbirth was 29.9 years in Hungary, which is a rise of 0.8 year in the last 10 years (based on the HCSO data, the indicator slightly exceeds 30 years). The Hungarian figure is lower than the EU average, and it essentially corresponds to the average of the V3 countries. The value of the fertility rate is reduced by the gradual increase in the age at childbirth , i.e. the postponement of having children to older age. When the increase in the age at childbirth stops and the postponed plans to have children are realised, the value of the fertility rate rises compared to the previous period.

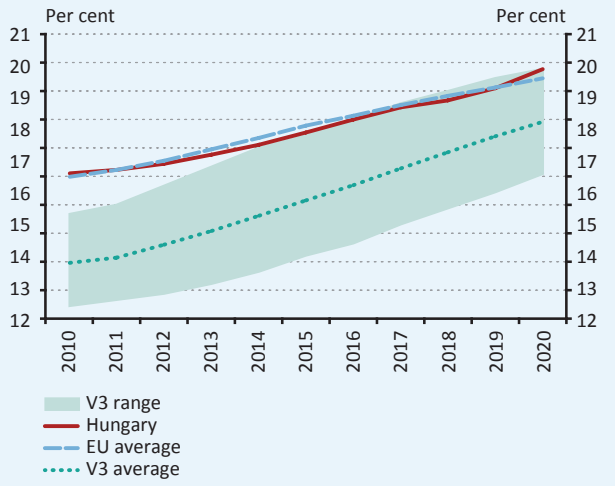
4.76 Life expectancy at birth



Note: The 2020 EU average includes no data for Ireland.
Source: Eurostat.

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 summarises the mortality statistics of the current population. The indicator 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 75.7 years in 2020, which is a decrease compared to 2019, similarly to the average of EU countries. The fall in life expectancy may have been due to the increase in mortality in 2020 compared to 2019, which is also observed in the Visegrád countries, as a result of the coronavirus pandemic. In Hungary, life expectancy at birth has been lower than the average value applicable to the EU and V3 countries for decades.

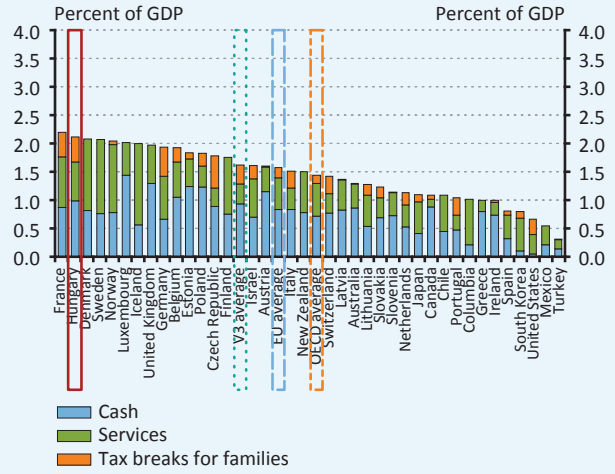
4.77 Proportion of population aged 65 and over



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, in 2020 slightly exceeding the EU average. In the V3 countries, the proportion of population aged 65 and over is lower than the Hungarian and EU average, but in recent years its growth rate was faster than in Hungary and in the average of the countries of the EU.

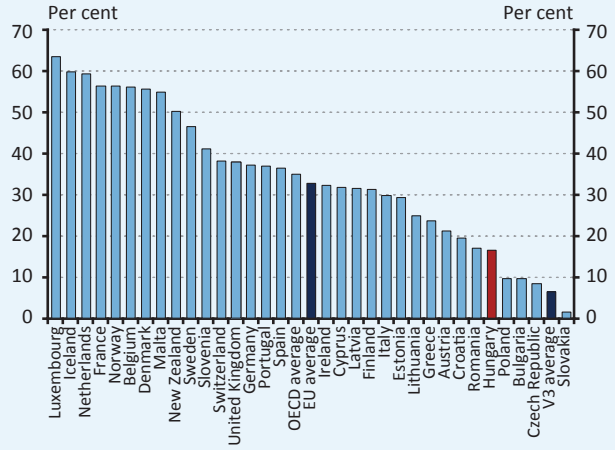
4.78 Public spending on family benefits as a percentage of GDP (2017)



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 public family allowances in Hungary is substantially higher than the OECD average of 2.3 per cent and the EU average of 2.6 per cent, which may have contributed to the large increase in Hungary's fertility rate after 2011. 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.

4.79 Enrolment rate in early childhood education and care under the age of 3 years (2017)

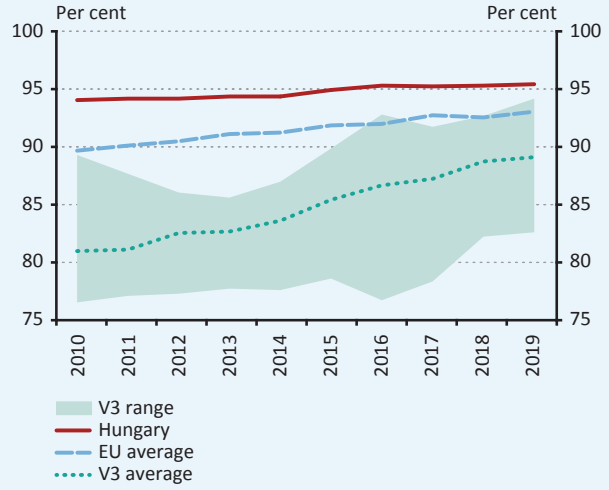


Source: OECD.

According to the international experiences, in those countries where the employment rate of women is higher, fertility rate is generally also higher. Namely, the realisation of plans to have children may be fostered if women of reproductive age can count on being able to return to labour market easily after childbirth, if they decide so. In Hungary, the ratio of children younger than 3 years participating in early childhood education rose from 10 per cent registered in 2010 to 16 by 2017, which was facilitated by the major increase in the capacity of nurseries in recent years. Based on the HCSO data, the capacity of nurseries operating in Hungary rose from 32,516 registered in 2010 to 42,217 by 2020.[5] However, in the EU countries the participation rate was 33 per cent in 2017, and thus there is still room in Hungary for increasing capacity. Recognising the problem, within the framework of the Family Protection Action Plan, announced in February 2019, the government decided on the further increase of nursery capacities, and by 30 June 2022 the capacity of nurseries will rise to 70,000 children.

[5] When also taking into consideration the family, mini and workplace nurseries, in 2020 the operating capacity of nurseries was 50,208 in Hungary.

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

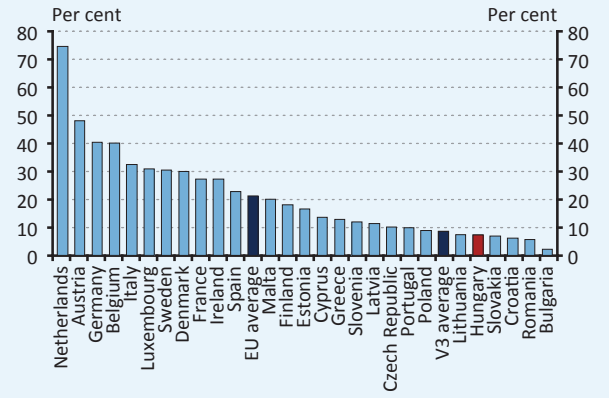


Note: Pupils between the age of 4 and school age

Source: Eurostat.

The ratio of children in early childhood education in Hungary is higher than the EU and regional averages. In Hungary 96 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). 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 76 to 95 per cent in 10 years.

4.81 Ratio of women in part time employment (2020)

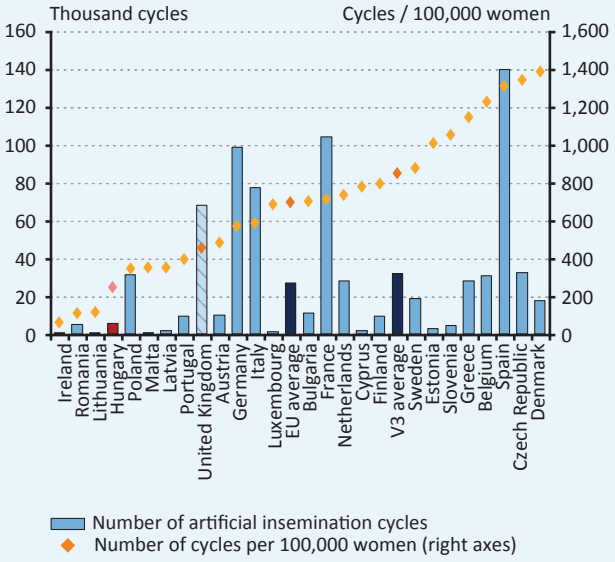


Note: Women in the age group of 20–64 years.

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. Based on the survey performed by the Hungarian Central Statistical Office in 2015, 41 per cent of the respondent mothers with small children regarded the work regime provided by the employer taking into consideration the individual life situation as the greatest help in terms of returning to the labour market. In 2020, the ratio of women employed as part-timers was merely 7.2 per cent in Hungary among women aged 20–64. This value is significantly lower than the average of the EU countries (21 per cent), and there is also room for improvement compared to the average ratio of the V3 countries (8.5 per cent).

4.82 Number of artificial insemination cycles (2016)



Note: Database relies on registers and does not provide full coverage. No data are available for Croatia and Slovakia. Projected on the number of women at reproductive age (age group of 15–49 years).

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 246, which is just over a third of the EU average (699) and falls short of the Czech average (1354) to an even larger degree. 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.

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 most of the indicators presented in this chapter, the pandemic also highlighted the importance of health to society.

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 (26 per cent) is the second highest in Hungary among the EU countries. Partly 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 international standards; therefore, these diseases do not pose problems in Hungary.

In 2019, healthy life years in Hungary reached the EU average for women, but there is still growth reserve in this area in the case of men. On average, Hungarian women and men live in health for 62.8 and 60.7 years, an increase of 1 year for women and 0.3 year for men compared to the previous year. 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 and avoided by proper treatment was the third 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 (6.7 per cent) falls short of the average of the other Visegrád countries (6.9 per cent) and of the EU Members States (8.2 per cent) in 2018. 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, 70 per cent of the health care expenditure come from public sources, which falls short of average of the European Union and the Visegrád countries by 4 and 9 percentage points.

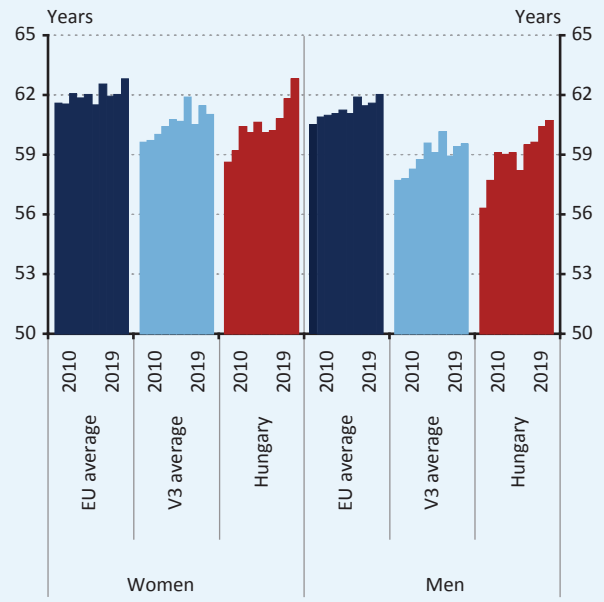
One of the problems of the Hungarian health care system is that the private health care expenses are spent not through health funds or supplementary private health insurances. Households' out-of-pocket health care expenditures amount to 1.8 per cent of GDP, which exceeds both the regional (1.2 per cent) and the EU average (1.7 per cent). This represents a problem primarily because, partly also due to this, 11.6 per cent of Hungarian households incurred catastrophic health expenses (i.e. households' direct, out-of-pocket health care expenditures amounted to at least 40 per cent of their expenses over their living expenses, i.e. food, housing and public utility), which is more than twice as high as the EU (5.7 per cent) and the V3 average (5.2 per cent), and the third highest one among the EU countries assessed to date.

Hungary can be considered 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 nursing professionals as a percentage of the population is lower than the EU averages, but broadly in line with the average of the other Visegrád countries. In Hungary, there are 2 nursing professionals (nurses and midwives) per doctor, which is about the same as the regional (2.2) and EU (2.1) average, but in countries with a truly developed health care system, the ratio is 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. Working abroad and changing career pose significant problems to the health care sector.

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 the expenditure level. In Hungary, the bed occupancy rate was 65 per cent in 2018, which - mostly due to the limits of public financing - is by almost 10 percentage points lower than the level registered in 2009. 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. 58 per cent of very common cataract removals were performed in Hungary in 2018 in same-day care, which is still lower than the EU average (82 per cent) despite a significant increase over the past ten 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, but this is partly due to the inherently unfavourable mortality rate resulting from the relatively poor health status of the population in general. However, the vaccination programme is one of the most successful in Hungary within the EU, as Hungary managed to vaccinate its population faster than most EU countries. However, overcoming the pandemic will require much higher vaccination coverage than at present, and thus increasing the scale of the vaccination programme is key to containing the pandemic.

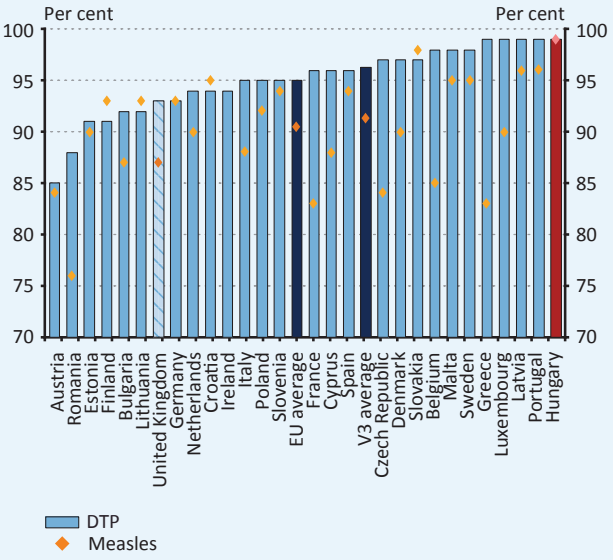
4.83 Healthy life years



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 2019, healthy life expectancy in Hungary was higher than the average of the V3 countries, and in the case of women it exceeded the EU average. On average, Hungarian women and men live in health for 62.8 and 60.7 years. The former is 1 year higher, while the latter is 0.3 year higher than in 2017. Among the Visegrád countries, Poland has higher values than Hungary for both sexes and the Czech Republic for men, while Slovakia has lower values than Hungary for both sex. Over the past decade, Hungary has made significant improvements in healthy life expectancy (men: 4.4 years; women 4.2 years), and thus Hungary is now in the middle range of the European Union in this indicator.

4.84 Immunisation rates for childhood vaccinations (2019)

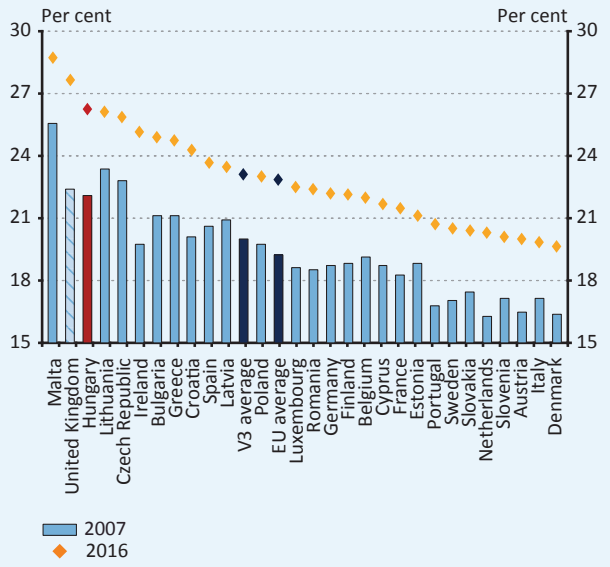


Note: Among children aged 3 years for the DTP vaccine and 2 years for the measles vaccine. No data on measles vaccination coverage is available for Ireland.

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, tetanus, and pertussis) and measles vaccination in the age group examined. The average of the EU countries is 95 and 90 per cent, while in the other Visegrád countries the vaccination rate is also only 96 and 91 per cent. The low vaccination rates of certain countries contributed to the fact that measles, which formerly almost fully disappeared, in several European countries (e.g. Ukraine, Romania, France) once again caused epidemic in recent years.

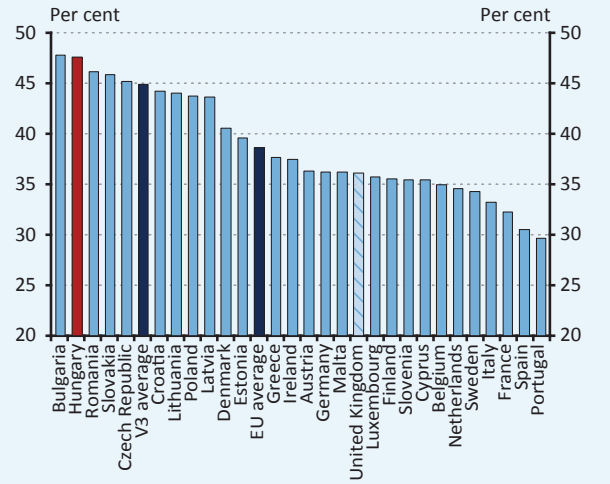
4.85 Ratio of obese adult population



Note: Body Mass Index (BMI) > 30; standardised by age, estimate.
Source: World Health Organization.

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, 23 per cent of the population older than 18 years are obese, while the average of the Visegrád countries was slightly higher than that. In Hungary 26 per cent of the adult population may be deemed obese, which is the second highest value in the EU, after Malta (29 per cent). In 2007 only 22 per cent of the Hungarian population was obese; accordingly, the ratio rose by 4 percentage points in 10 years. The prevention of obesity is one of the most efficient ways of improving the health status. 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.

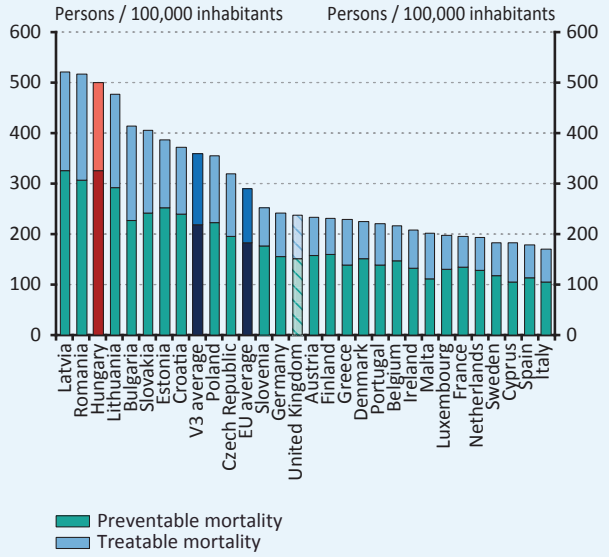
4.86 Share of mortality driven by behavioural risks (2019)



Note: Behaviour 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. The trend in this area has been stagnating, with no significant decrease in the indicator in the 5 years prior to 2019. 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.

4.87 Avoidable mortality (2018)

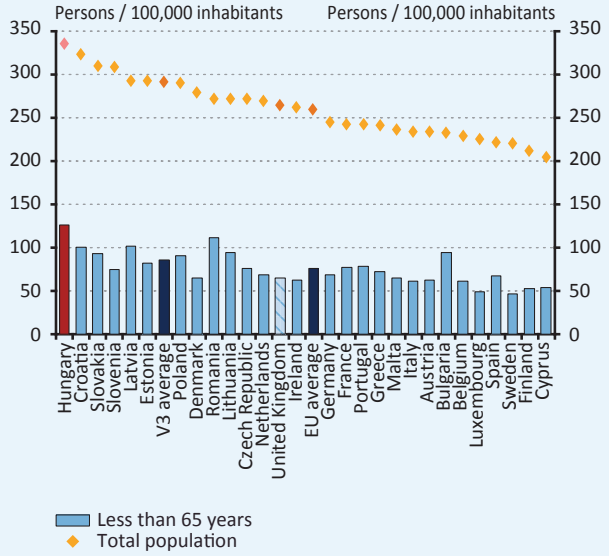


Note: Mortality rate per 100,000 inhabitants, standardised by age. France 2016. .

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 2018, Hungary had the third highest standardised avoidable mortality in the European Union (502 persons / hundred thousand inhabitants). The Hungarian mortality rate is higher than the EU average (290) by 73 per cent and exceeds the average of the other Visegrád countries (360) by almost 40 per cent. Although between 2011 and 2018 the Hungarian mortality rate declined by 10 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.

4.88 Standardised death rate – Malignant neoplasm (2018)

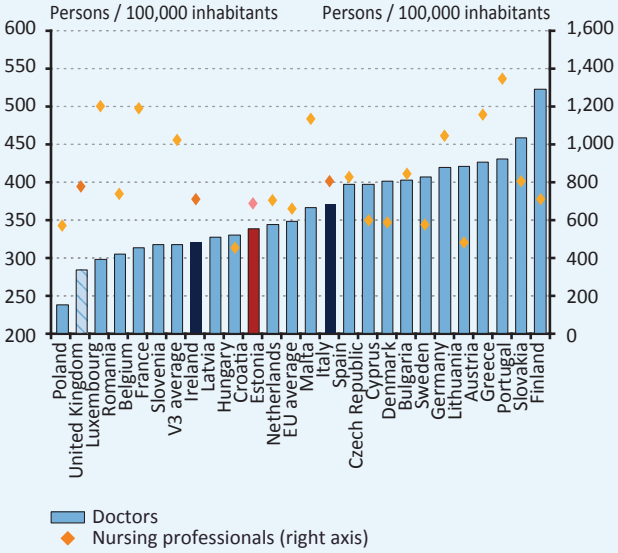


Note: Mortality rate per 100,000 inhabitants, standardised by age. France 2016.

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 the highest in Hungary within the European Union. In 2018 in Hungary the number of deaths per 100,000 inhabitants was 336 within the whole population and 126 in the age group under 65. Both values are much higher than the averages of the countries of the region (291 and 86) and the EU (260 and 76). Nevertheless, in Europe and within that also in Hungary, there is a decreasing trend in the mortality rate of malignant neoplasm. Between 2011 and 2018, the mortality rate related to malignant neoplasm decreased by 15 per cent among patients below 65 years (from 149 to 126); 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.

4.89 Number of practising doctors and nursing professionals per thousand inhabitants (2018)

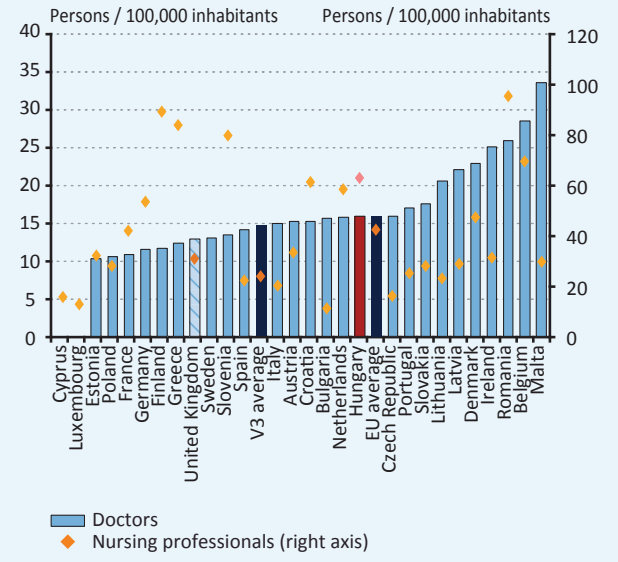


Note: The number of nursing professionals includes nurses and midwives. No data are available for Greece, Portugal, Slovakia and Finland.

Source: Eurostat.

The number of practising doctors per 100,000 inhabitants is slightly higher in Hungary (338) than the average of the other Visegrád countries (321), but is lower than the EU average (371). 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. On the other hand, the number of practising nurses and midwives per 100,000 inhabitants in Hungary (687) is below the average of the Czech Republic and Poland (708) and the EU average (807). In Hungary, there are 2 nursing professional per doctor, which is about the same as the regional (2.2) and EU (2.1) average, but in countries with a truly developed health care system, this ratio may be twice as high (e.g. Luxembourg 4.0; Belgium 3.8)

4.90 Number of newly graduating doctors and nursing professionals per thousand inhabitants (2018)

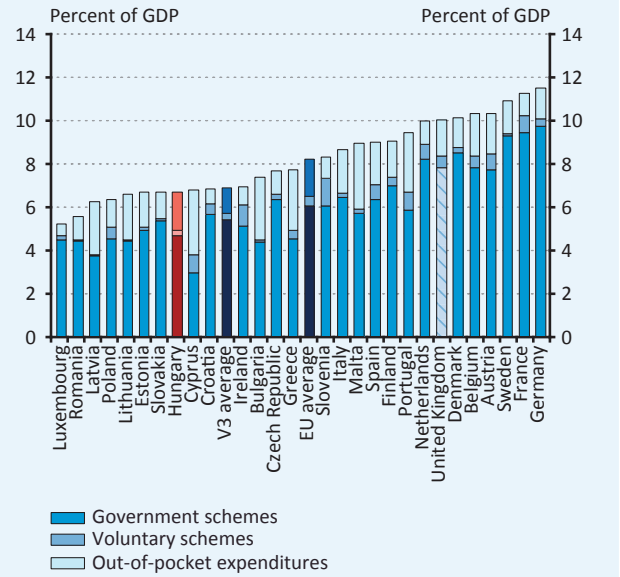


Note: The number of nursing professionals includes nurses and midwives. No data is available for Sweden for nursing professionals.

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 situation is better in Hungary in the case of nursing professionals, with 63 new graduate nurses and midwives per 100,000 inhabitants, which is significantly higher than the EU (42) and V3 (24) averages. The proportion of new graduates in Hungary is 5 per cent of the number of practising doctors, which corresponds to the regional average and slightly exceeds the EU average (4 per cent). In the case of nursing professionals this ratio is 9 per cent in Hungary, which exceeds both the regional (3 per cent) and the EU average (5 per cent). The relatively high proportion of new graduates and the lower than international average proportion of practising nursing professionals together point to a significant problem of career change of nursing professionals in Hungary.

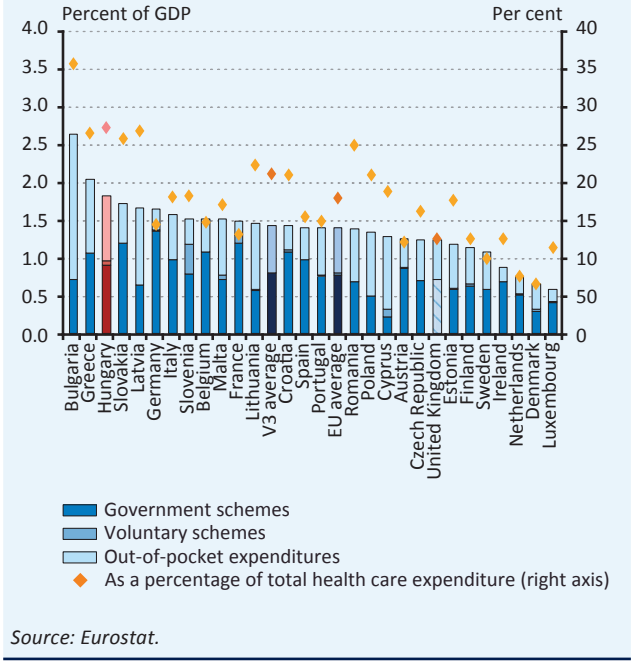
4.91 Health care expenditures as a percentage of GDP by financing scheme (2018)



Source: Eurostat.

Hungary's health care expenditure as a percentage of GDP (6.7 per cent) fell short of the average of the other Visegrád countries (6.9 per cent) and of the EU Members States (8.2 per cent) in 2018. 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 the public health care expenditures amounted to 4.7 per cent of GDP, lower than both the regional (5.4 per cent) and the EU average (6.0 per cent). By contrast, in Hungary the households' out-of-pocket health care expenditures (1.8 per cent), exceed both the EU (1.7 per cent) and the V3 average (1.2 average). All this means that in Hungary, 70 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 4 and 9 percentage points. Voluntary schemes cover 4 per cent in Hungary, which roughly corresponds to the regional and the international level.

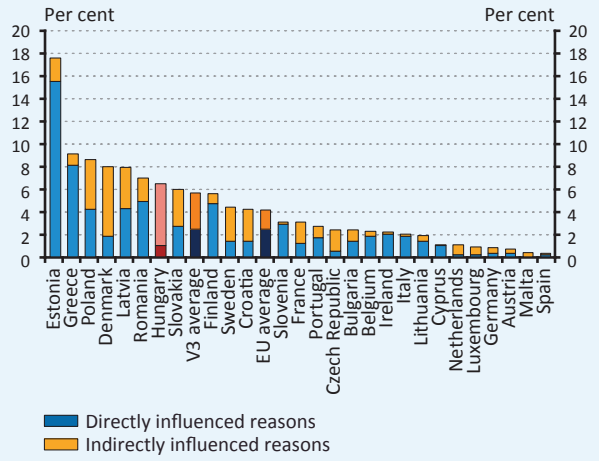
4.92 Pharmaceutical expenditures as a percentage of GDP by financing scheme (2018)



Source: Eurostat.

Hungary's pharmaceutical expenditures as a percentage of GDP is the third highest one in the European Union. In 2018, Hungary spent 1.8 per cent of GDP on the purchase of medicines, which is substantially higher than the 1.4 per cent average of the V3 and the EU average. Within total health care expenditure Hungary allocated 27 per cent for the purchase of pharmaceuticals, while this is only 18 per cent in the EU, on average. The difference primarily comes from the medicines purchased from households' out-of-pocket expenditures, which amounted to 0.9 per cent of GDP in 2018, and which exceeds the average of the EU and regional countries (0.6 per cent) by more than one third. 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.

4.93 Self-reported unmet needs for medical examination (2019)

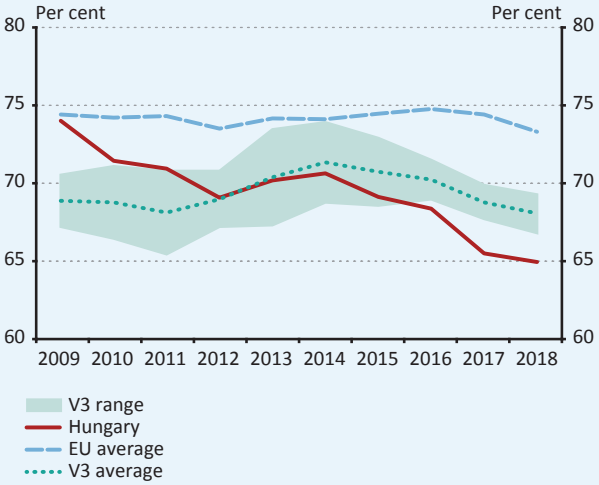


Note: The ratio of those who reported that they had unmet health care needs in the previous 12 months. Population over the age of 16 years.

Source: Eurostat.

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 6.5 per cent in 2019, which is lower by 1.3 percentage points than in 2010. In the same period, the EU average fell from 6.8 per cent to 4.2 per cent, while the average of the other Visegrád countries declined from 7.7 per cent to 5.6 per cent. The reasons influenced directly by the health care system ("too expensivej, "too far to travel" or "waiting list") accounted for only 1.0 percentage point for Hungary, which is substantially lower than the EU average of 2.5 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 5.5 percentage points in Hungary, compared to the 1.2 percentage point EU average.

4.94 Curative care bed occupancy rate

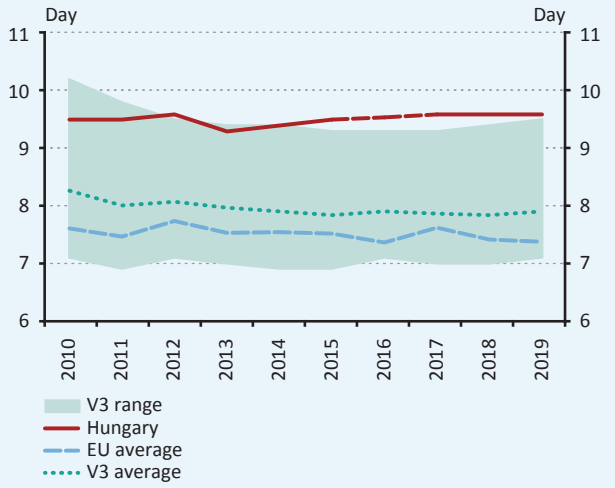


Note: No data is available for Poland

Source: Eurostat.

One key issue in service management is the number of beds needed for curative care in hospitals. The indicator of the efficient utilisation of capacities is bed utilisation, with a level of 70–85 per cent considered desirable in the relevant literature prior to the Covid-19 pandemic. In Hungary, the bed occupancy rate was 65 per cent in 2018, which is by almost 10 percentage points lower than the level registered in 2009. The average of the EU countries was 74 per cent, while the average of Czechia and Slovakia was 68 per cent in 2017 (no data is available for Poland). In the EU only four countries achieved 80 per cent, of which the result of 91 per cent achieved by Ireland rather suggest the underestimation of hospital capacities. The low level of Hungary's bed occupancy rate is a significant efficiency reserve; however, it is questionable how the experience of the pandemic will affect hospital capacity levels in the long term. It is possible that the level of this indicator, now deemed optimal, will change in the future.

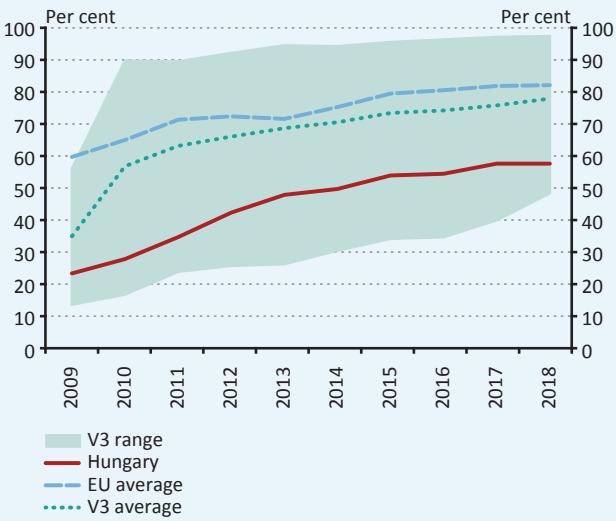
4.95 Inpatient average length of stay



Note: No data are available for Hungary in 2016 and Slovakia in 2013.
Source: Eurostat.

In Hungary the average length of stay in hospital was 9.6 days, which exceeds the EU average (7.4 days) by 2.2 days and the regional average (7.9 days) by 1.7 days. 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.

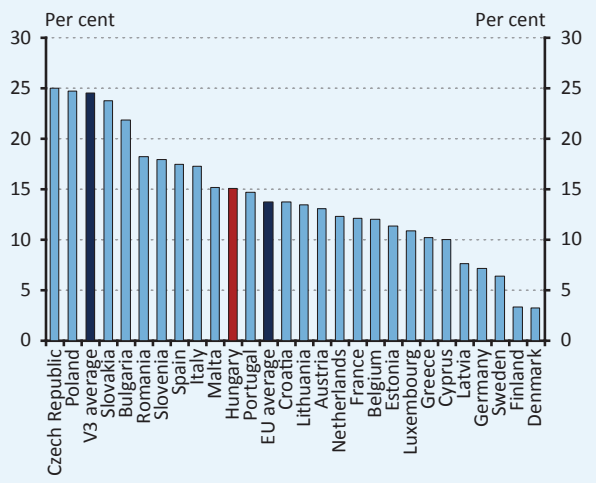
4.96 Ratio of cataract surgeries performed in same-day surgery and outpatient care



Note: No data is available for Czech Republic in 2009.
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 58 per cent of the cataract surgeries were performed as same-day surgery in 2018, which is by 34 percentage points more than in 2009. Of the Visegrád countries, Poland had the lowest ratio of surgeries performed in same-day care (49 per cent). By contrast, in Slovakia (88 per cent) and in Czechia (98 per cent) the vast majority of the surgeries were already performed in this form. 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.

4.97 Excess mortality since Covid19 (between 14/02/2020 and 15/08/2021)

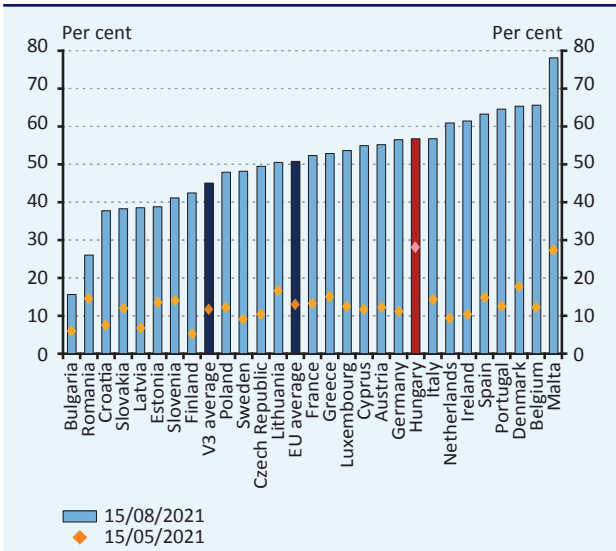


Note: The excess mortality since Covid19 is the total (not only Covid19) number of deaths since the first Covid19 death in the EU (14/02/2020, France) divided by the average number of deaths in the reference period (2016-19), based on actual weekly mortality data, using the latest available data for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

Source: Eurostat, MNB calculation.

Since countries' diagnostic and administrative practices differed significantly during the Covid-19 pandemic, the most objective way to characterise the impact of the pandemic on each country is perhaps the excess mortality rate. Since the first Covid-19 death in Europe (14 February 2020, France), considering all causes of deaths, in Hungary 15.1 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 (13.8 per cent), but significantly lower than the average of the other Visegrád countries (24.6 per cent), which take the last three places of the EU ranking. The statistics for all deaths from Covid-19 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.

4.98 Share of people fully vaccinated against Covid-19



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.

Only an extensive vaccination programme can ensure the definitive overcoming of the Covid-19 pandemic. Several indicators can be used to assess the vaccination coverage (e.g. number of doses administered, number of people receiving at least one vaccination), but in the long term the most important is to analyse the proportion of fully vaccinated population. The Hungarian vaccination programme has been one of the fastest in the EU to make protection available to the population. The percentage of fully vaccinated population on 15 May 2021 was the highest among EU countries (28.0 per cent). In August 2021, Hungary was more in the middle range of the EU in this indicator with 57.1 per cent, but this level was also above the EU (51.1 per cent) and regional (45.4 per cent) averages. The rapidity of the vaccination programme in Hungary facilitated the lifting of pandemic control restrictions earlier, which gave the Hungarian economy a significant competitive advantage.

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.

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.

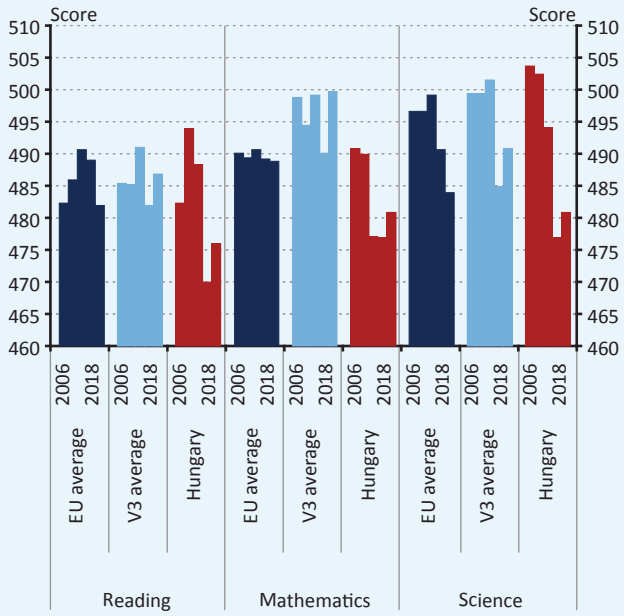
In 2017, Hungary spent 3.9 per cent of GDP on education expenses, which is in line with the average of the other Visegrád countries (3.8 per cent), but it is slightly lower than the EU average (4.3 per cent). The rate of public expenditures in Hungary is 3.3 per cent, which is also in line with the regional average, but falls short of the EU average (3.9 per cent). The role of private funding is slightly higher than the international level. 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 employees is 66–70 per cent of those holding a tertiary education degree, which is roughly in line with the average of the other Visegrád countries (72–73 per cent), but significantly falls short of the average in EU countries, which is 85–96 per cent of the average wage for tertiary graduates.

In Hungary, the degree of early school leaving without qualification is higher by more than 75 per cent than the average of the other Visegrád countries, while the ratio tertiary graduates is one of the lowest among the EU countries. 12.1 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 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. In the age group of 25–34 years the ratio of tertiary education graduates in Hungary was 31 per cent in 2020, which corresponds to the level registered in 2012 and it is the third lowest value in the European Union. The EU average in this indicator rose by 9 percentage points within 10 years from 35 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. In Hungary, the ratio of young people with STEM degree (12 percent) is the fourth lowest among the EU countries. Participation in lifelong learning affected 5 per cent of the adult population in Hungary, which corresponds to the regional level (4 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.

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, while there are 8 Hungarian universities in the list ranked between 501 and 1000. Despite this, the proportion of foreign students in bachelor's and master's courses in Hungary is above the regional and EU averages.

The numeracy competence of the adult population exceeds the international average, while there is a room for growth in foreign language and financial skills. 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. Furthermore, it is also a problem that the digital skills of the Hungarian youth at present are lower than the regional and the EU level; moreover, the results in this area tend to follow a deteriorating trend. 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.

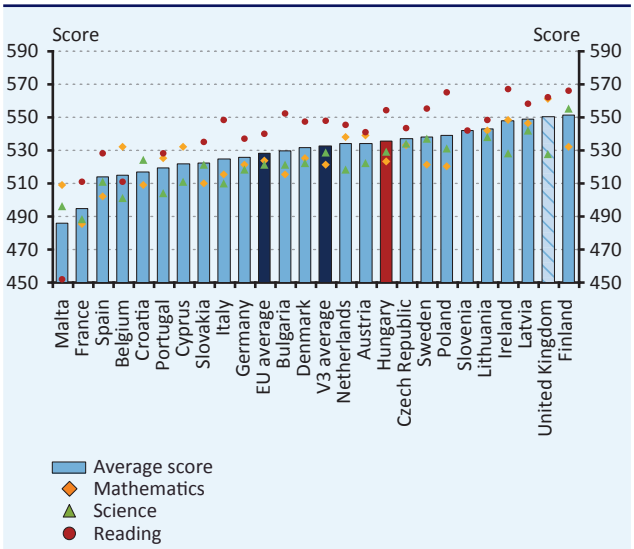
4.99 Results of PISA tests



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). The Hungarian 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.

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

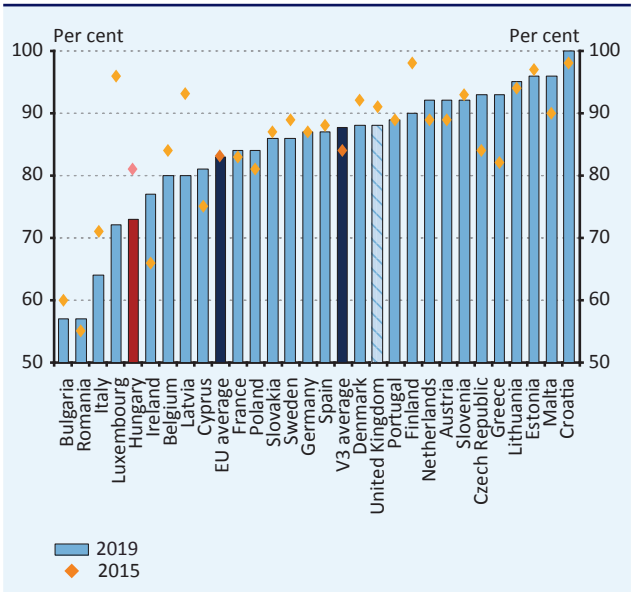


Note: Among fourth-grade pupils. TIMSS 2019; PIRLS 2016.

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 monitored 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 Visegrád 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.

4.101 Digital skills in the age group of 16–19 years

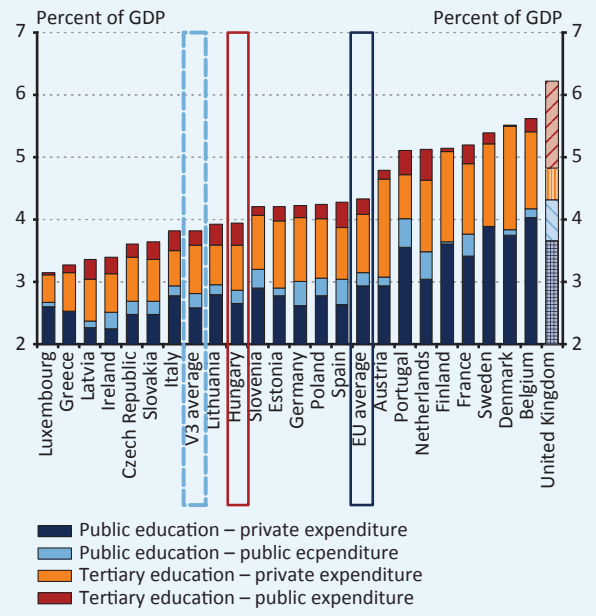


Note: Ratio of those with at least basic digital skills in the age group of 16–19 years. Slovakia 2018. The reliability of the results for Croatia and Malta is low.

Source: Eurostat.

At present, the digital skills of the Hungarian youth are less advanced compared to the level of the youth in the region and the EU. 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 lower than the EU average by 10 percentage points and the average of the other Visegrád countries by 15 percentage points. Since the first survey conducted in 2015, the Hungarian results fell by 8 points, which is the third largest decline among the European countries. The EU average stagnated between 2015 and 2019, which implies that the European education systems were still not able to adjust sufficiently to the expectations of the digital age. However, it should be noted that several of the member states that joined after 2004 (particularly Croatia, Malta and Estonia) performed better in this indicator than the old member states.

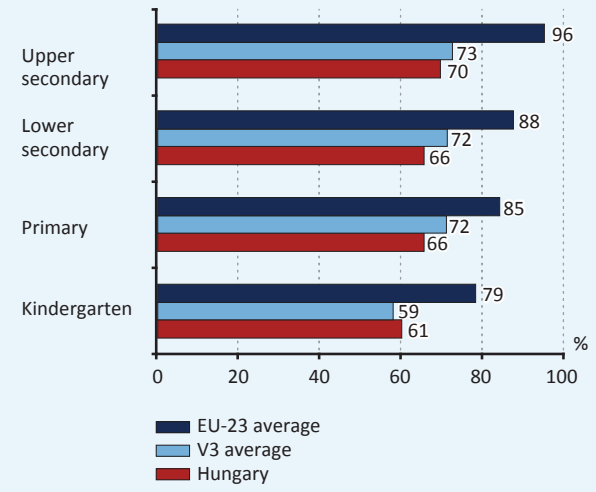
4.102 Education expenditures as a percentage of GDP (2017)



Source: OECD.

In 2017, Hungary spent 3.9 per cent of GDP on education expenses, which slightly exceeds the average of the other Visegrád countries (3.8 per cent), but it is fall short of the EU average (4.3 per cent) by 0.4 percentage point. The rate of public expenditures in Hungary is 3.3 per cent, which is also in line with the regional average, but falls short of the EU average (3.9 per cent). Hungary allocated 2.6 per cent of GDP to public education and 0.7 per cent to tertiary education. In Hungary, nearly 15 per cent of all expenditure came from private sources, the fifth highest ratio among EU countries. The level of tertiary education spending in Hungary has increased significantly since 2017, but the ratio of private funding in Hungarian tertiary education is likely to continue to rise as a result of institutional model changes.

4.103 Teachers' wages as a percentage of the average wage of tertiary education graduates (2018)

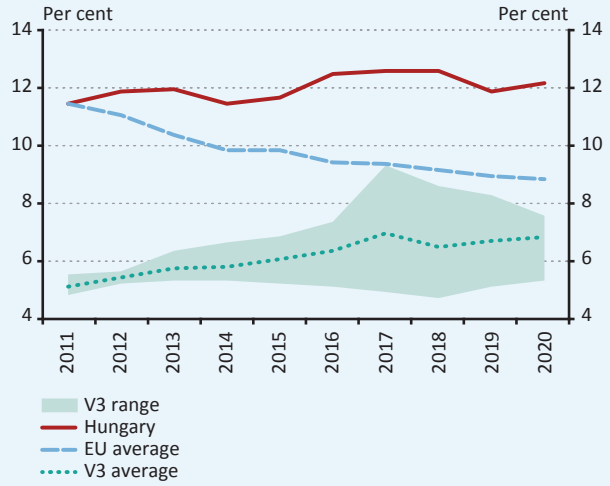


Note: As a percentage of the average wage of graduates holding tertiary education degree, employed full time throughout the year, in the age group of 25–64 years.

Source: OECD.

Financial reward for the teaching profession in Hungary – similarly to the EU countries – is lower than in other occupations requiring tertiary education degree. In Hungary – despite the introduction of the career path model – the average wage of public education workers amounts to 66–70 per cent of those holding tertiary education degree. This slightly falls short of the average of the other Visegrád countries (72–73 per cent), and it is significantly lower than the average level of the EU countries, being 85–96 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. The wages falling short of the expectations reduce interest in teachers' profession and cause teachers leaving the profession. The education of the new generation of teachers was further complicated by the introduction of an advanced final exam requirement in the tertiary education admissions process, which resulted in a 28 per cent fall in the number of students enrolled in teacher courses in Hungary in the 2020/2021 academic year.

4.104 Early leavers from education and training

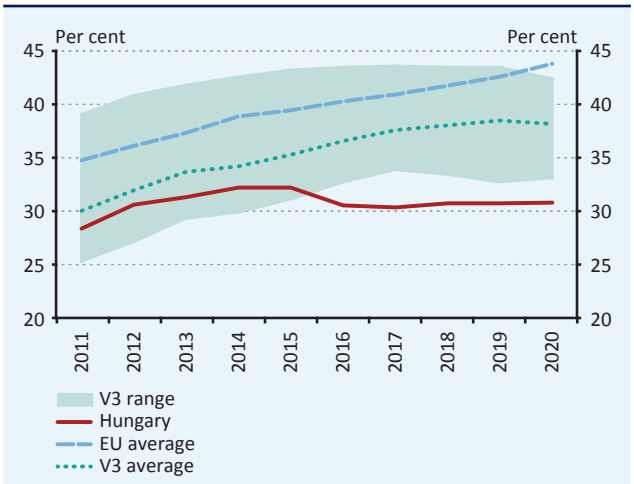


Note: Ratio of those having primary education at most and do not participate in further education in the age group of 18–24 years.

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 12.1 per cent in 2019, which exceeds the average of the other Visegrád countries (6.9 per cent) by 76 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 (8.8 per cent). By contrast, in Hungary the level of early school leaving rose from 11.4 per cent registered in 2011 to 12.1 per cent in the last 10 years. The other Visegrád countries also registered a growth (from 5.2 per cent to 6.9 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.

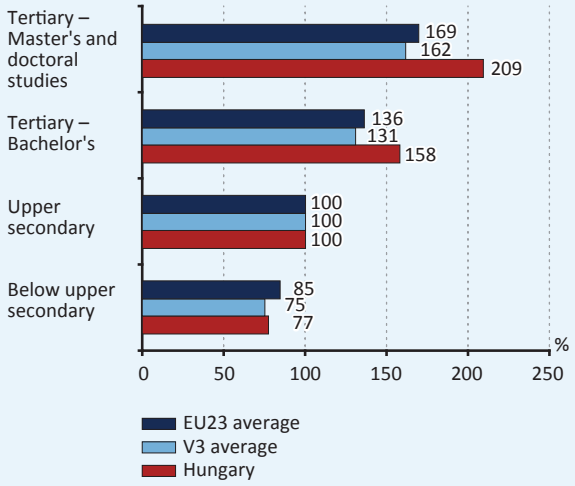
4.105 Tertiary educational attainment in the age group of 25–34 years



Source: Eurostat.

In Hungary, in the age group of 25–34 years, the ratio of tertiary education graduates was 31 per cent in 2020, which corresponds to the level registered in 2012 and it is the third lowest value in the European Union. The EU average rose by 9 percentage points within 10 years from 35 per cent registered in 2011, while the other Visegrád countries achieved almost 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 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.

4.106 Relative earnings of workers by educational attainment (2018)

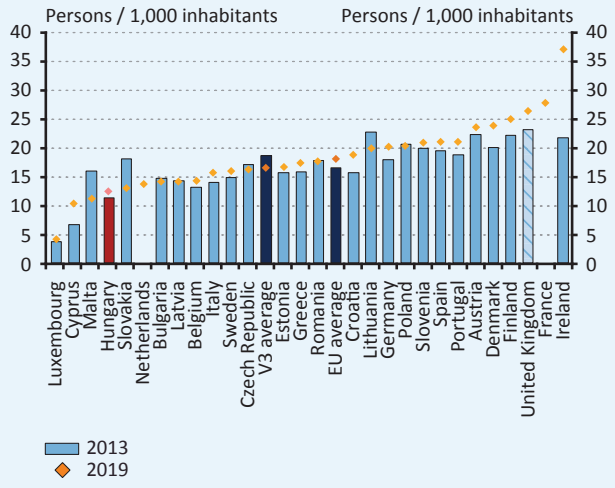


Note: Upper secondary education = 100.

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 58 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 second 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 (80 per cent) (OECD Education at a Glance 2020).

4.107 Ratio of STEM graduates

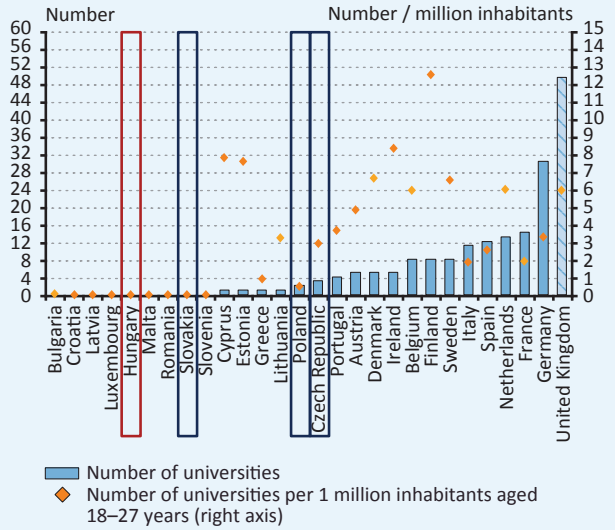


Note: STEM graduates include those who earned their degree in the area of natural science, mathematics, infocommunication, engineering, production and construction. Per thousand inhabitants aged 20–29 years. No data are available for the France and the Netherlands for 2013.

Source: Eurostat.

In Hungary the ratio of STEM graduates is the 4th lowest among the EU countries. For thousand inhabitants aged 20–29 Hungary had 12.3 new STEM graduates in 2019, is lower than the regional (16.4) and EU (17.9) averages. Compared to 2013, the indicator has improved by 1.1 in Hungary, which is broadly in line with the EU average (1.4), while the V3 average has decreased by 2.1 over the same period. 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. The detailed analysis of Hungary's tertiary education statistics shows that the low ratio of young STEM graduates available in the labour market is primarily due to the low ratio of tertiary education graduates rather than to the unpopularity of these disciplines.

4.108 Number of tertiary education institutions ranked in the world's top 500 universities (2021)

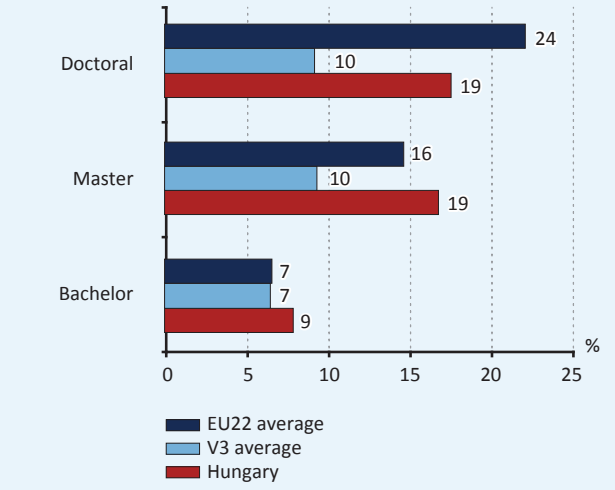


Note: Based on the ranking applicable to the academic year of 2020/21. Calculated based on the number of inhabitants on 1 January 2020.

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 501–510). The whole list, consisting of 1,000 universities, contains 8 Hungarian universities in total in the QS ranking. The best tertiary education locations are strongly concentrated in space: the top 500 universities of the world include 49 institutions in the United Kingdom, 30 in Germany and 14 in France. 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, Estonia, Cyprus and Denmark.

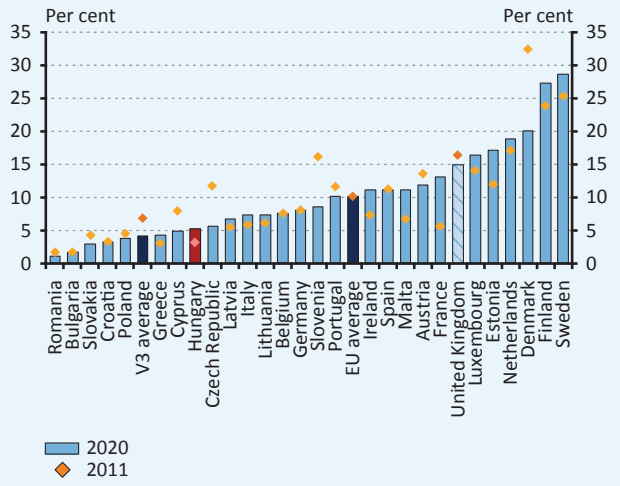
4.109 Ratio of international students by the level of tertiary education (2018)



Source: OECD.

One good 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 2 percentage points to 9 per cent, exceeding the EU and regional averages (7–7 per cent). The indicator is also higher in Hungary (19 per cent) than the EU average (16 per cent) and almost the double of the average for the other Visegrád countries (10 per cent). In the area PhD training, involving substantially fewer students, the ratio of international students in Hungary is between the EU and the Visegrád average. In 2018, altogether 11 per cent of the students came from abroad in Hungary, which exceeds both the regional (8 per cent) and the EU average (9 per cent). In 2010, the ratio of international students in Hungary was merely 5 per cent, which has more than doubled in 8 years.

4.110 Participation in lifelong learning

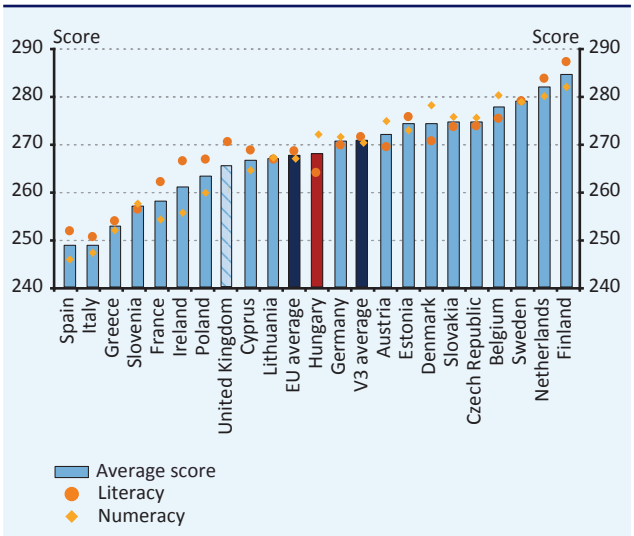


Note: In the age group of 25–64 years. Data of the United Kingdom is from 2019 instead of 2020.

Source: Eurostat.

According to the Eurostat definition, in the 25–64 age group 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 5 per cent of the adult population participated in lifelong learning in 2020, which slightly exceeds the average of the other Visegrád countries (4 per cent), but it is only half of the EU average (10 per cent). Compared to 2019, the Hungarian figure in 2020 became by 1 percentage point lower, but still exceeds the 2011 figure (3 per cent). There are major differences in this indicator between the European countries: while in the Scandinavian countries the ratio of those participating in regular continuing training is above 25 per cent, in Romania and Bulgaria this ratio is only 1 and 2 per cent.

4.111 Results of the PIAAC test assessing adult competencies (2011–2017)

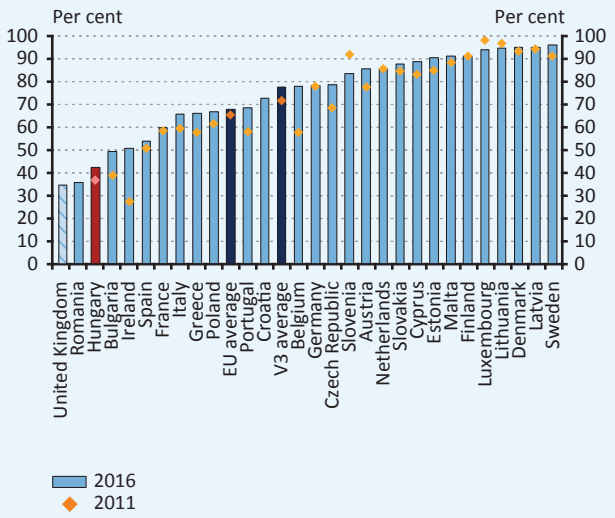


Note: In the age group of 16–65 years.

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.

4.112 Ratio of people speaking at least one foreign language

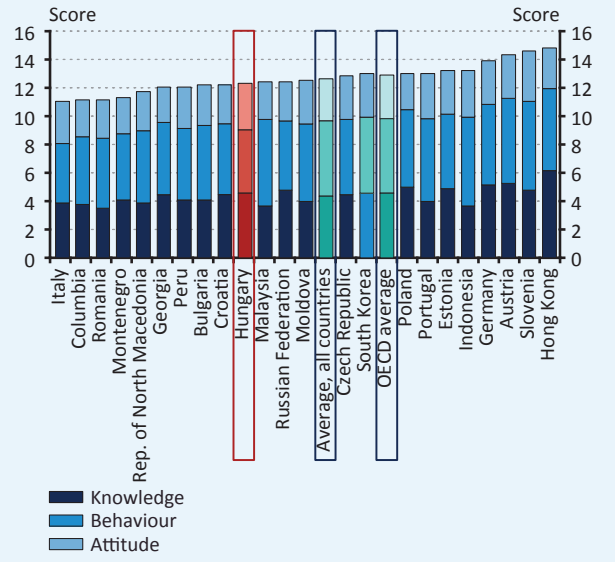


Note: In the age group of 25–64 years. No data are available for the United Kingdom, Romania and Croatia for 2011.

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 individual employees, as they have no access or have only limited access to several knowledge sharing channels (e.g. specialist literature, internet sources). All this in practice reduces knowledge, learning and innovation capacity, which curbs economic development.

4.113 Financial literacy (2020)



Note: In the age group of 18–79 years.

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 first in the survey, 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.

4.10 RESEARCH, DEVELOPMENT AND INNOVATION

Further strengthening research and development (R&D) and innovation activities is essential for the transition of the Hungarian economy to an advanced, innovation-driven growth model. The shift from an investment-driven to a knowledge- and innovation-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 capabilities of using the latest technologies, and thereby the penetration of digitalisation and automation across the national economy.

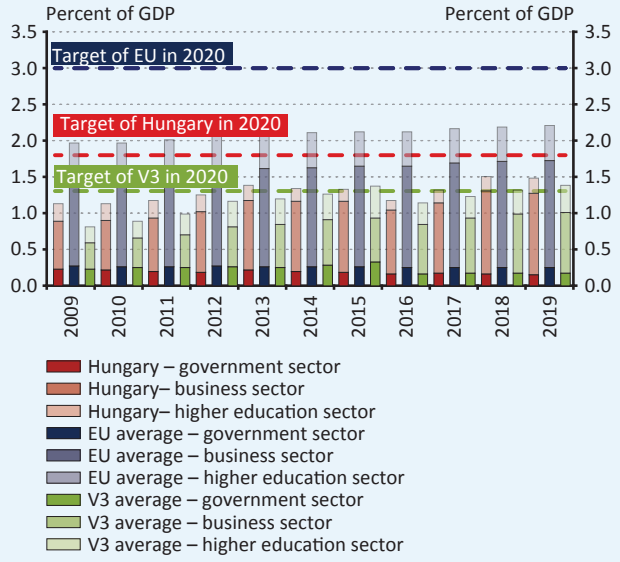
Hungary's R&D expenditure as a percentage of GDP was 1.5 per cent in 2019, which still falls short of the national target of 1.8 per cent set for 2020. In Hungary, between 2009 and 2019 the R&D expenditure to GDP ratio rose from 1.1 per cent to 1.5 per cent; however, this growth faltered in 2019. While business spending is high and public support for corporate R&D expenditure in Hungary is the fifth highest among EU Member States, there is room for improvement in higher education and, to a lesser extent, in public R&D expenditure in Hungary, using the EU and Visegrád region averages as benchmark. The R&D employment rate is above the V3 average, and between 2009 and 2019 Hungary moved closer to the R&D employment level of the EU. However, our region has not come close to the dynamically growing EU average.

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 there is convergence reserve inherent in the improvement of the efficiency of resource utilisation. 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 the past decade, research efficiency decreased more intensively than in 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 last quarter of the EU Member States, substantially lagging behind the EU average and being in a similar position as the other Visegrád countries. The ratio of SMEs engaged in product innovation in Hungary (20 per cent) increased by about 10 percentage points since 2013, but is still below the EU average (29 per cent), and slightly above the average of the Visegrád peers (17 per cent) by 2020. 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. Based on the Bloomberg Innovation Index, Hungary slightly exceeds the EU average and it is in the middle range in the ranking of EU member states. In the Global Innovation Index, Hungary ranked one place behind the average relative position of the other Visegrád countries in 2020, almost 10 places behind the EU average.

In the field of digitalisation in Hungary, the main competitiveness reserve is represented by the widespread use of enterprise digital technologies and the accomplishments of e-governance, and the development of digital skills of citizens for this. 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. Based on the former, Hungary ranks below the EU average, but slightly above the V3 average. Based on the indicators of EU DESI on connectivity, Hungary is more developed than the EU average, 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.

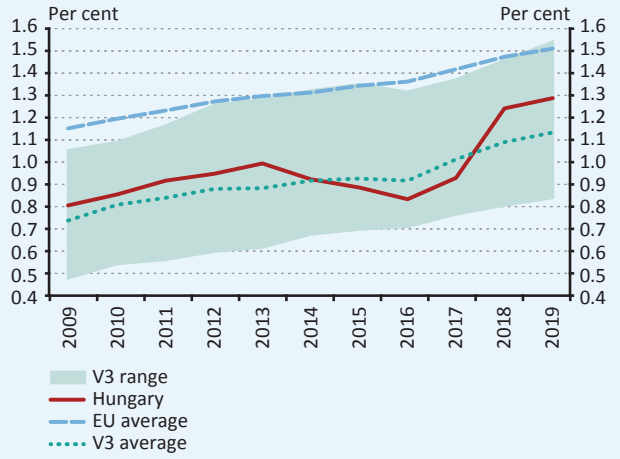
4.114 Research and development expenditures in the economy and by sectors



Source: Eurostat.

In Hungary the research and development expenditures as a percentage of GDP rose by more than one third between 2009 and 2019. Thus, the ratio of the R&D expenditures relative to gross domestic product (1.48 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 2.2 per cent, the 1.8 per cent target set by the government for 2020 and also of the 2.0 per cent target included in the MNB's Competitiveness Programme. R&D expenditure as a percentage of GDP in Hungary slightly declined between 2018 and 2019. Regarding the distribution of expenditures, expenditures on higher education R&D are lower than the averages of the EU and the Visegrád region. The halt in the growth of Hungarian expenditures in 2019 was mainly due to curbing research spending by companies.

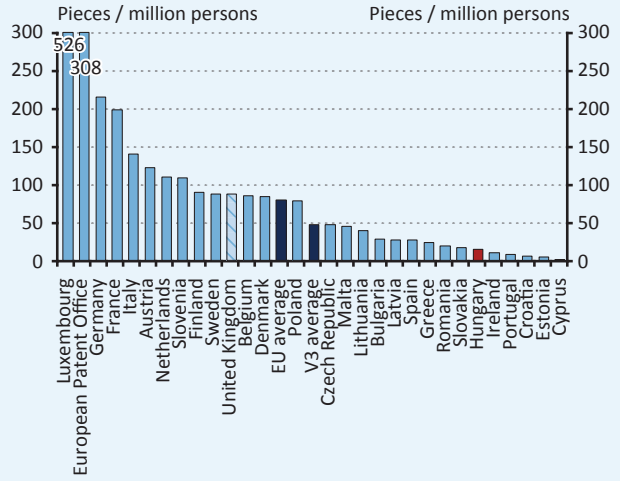
4.115 Research and development personnel as a proportion of the labour force



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 2016. 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 2019 the ratio of R&D employees in total employment increased to 1.3 per cent. In 2019, the gap between the EU average and the Hungarian value was more moderate than in 2009, but catching up with the EU average will require further development of the research communities. The realisation of this may contribute to the transition to a research and innovation-driven business model.

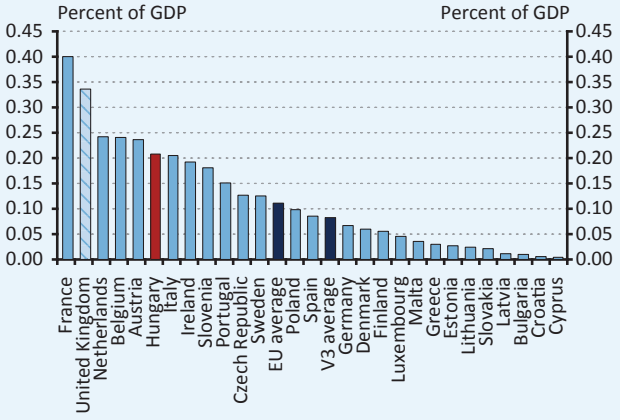
4.116 Total patent grants (2019)



Source: World Intellectual Property Organisation, World Bank.

In 2019 the number of patents registered in Hungary (14) in one year as a percentage of the population was less than one fifth of the EU average (81) and one third of the Visegrád average (48). 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. In addition, in an EU comparison, the favourable accounting treatment of patent revenues is not permitted in Hungary, which also curbs the intensification of the patent activity. In 2019, the highest number of new patent applications in Hungary, as a percentage of the population, were filed in the fields of instruments (5.5), machine components (5.5) and pharmaceuticals and biotechnology (3.2) (this does not mean that all these patents will be all registered). Green and digital transition represents an exceptional opportunity to boost patent activity in these and other segments.

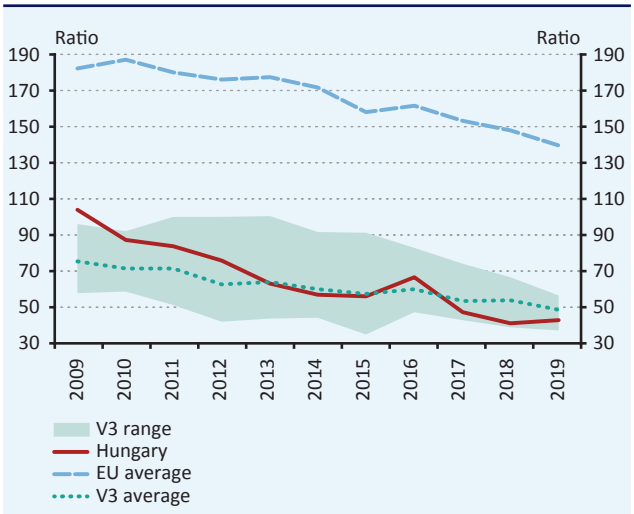
4.117 Direct and indirect government funding of R&D expenditure of enterprises (2017)



Note: There are no data available for Romania.
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 (0.2 per cent of GDP) is the fifth 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.

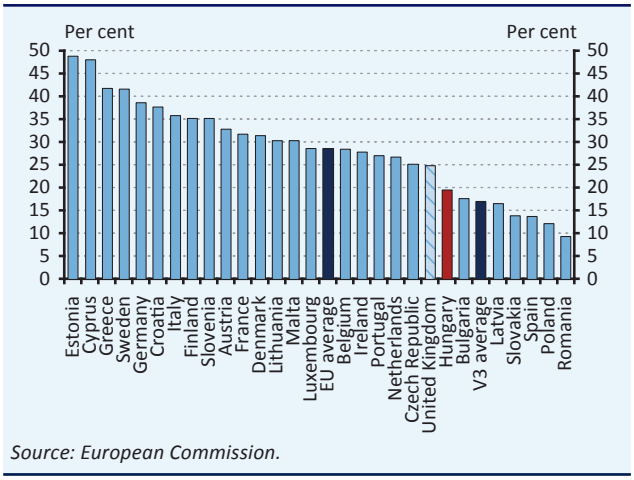
4.118 Efficiency of R&D expenditures



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. This may be due to the fact that developments in Hungary do not lead to practical results, i.e. patents. The weight of the Hungarian capital in Hungary's total R&D expenditure (61 per cent) is the highest in the Visegrád region. Bratislava accounts for 51 per cent of Slovak spending, Warsaw for 37 per cent of Polish spending and Prague for 35 per cent of Czech spending.

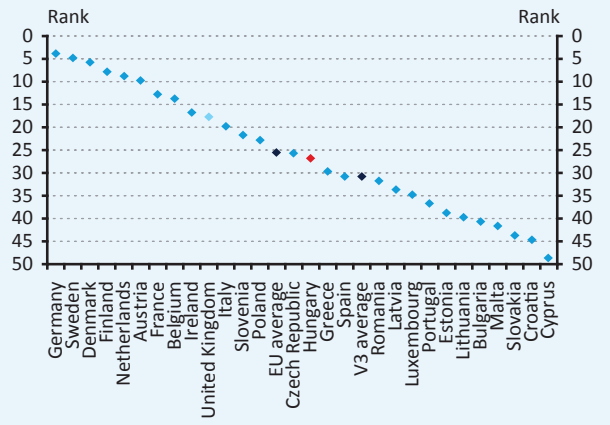
4.119 SMEs with product innovations (2020)



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 11 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 below the EU average of 22 per cent and the regional average of 16 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 into product innovations. 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 research and development and innovation activity in Hungary would contribute to the upgrading of the corporate sector in the global value chains.

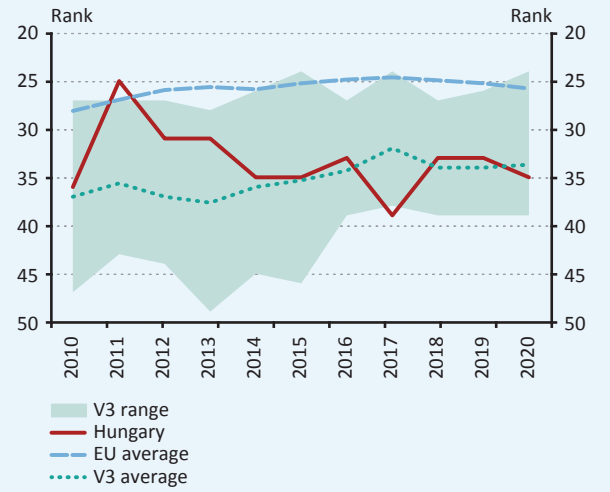
4.120 Bloomberg Innovation Index (2021)



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. 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.

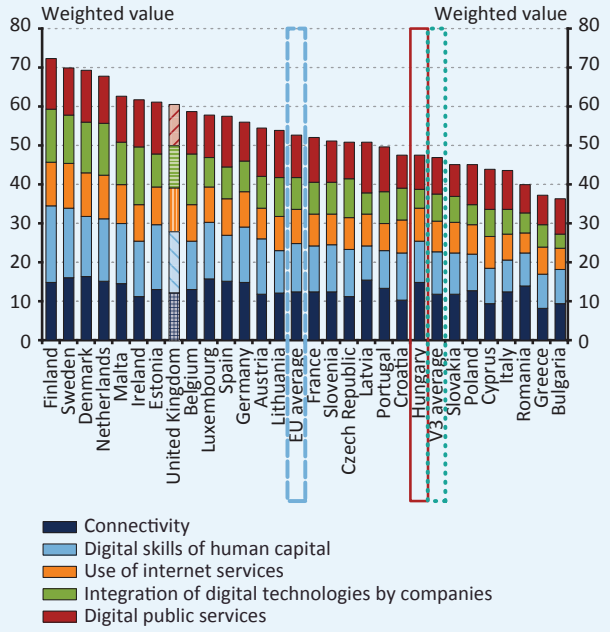
4.121 Global Innovation Index



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 131 countries. 70 per cent of the assessed 80 indicators are objective and 30 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 35th place in the ranking, preceding the average position (34th) of other Visegrád countries and lagging behind the average of the EU by nine places (26th). Hungary achieved the best ranking (22nd) in the knowledge and technological performance area, while its ranking is the worst (89th) in the sophistication of market economy operation. Hungary performs excellently in the number of researchers in the business sector and in the number of acquired environmental (ISO) standards. However, there is significant room for improvement to increase the number of venture capital transactions related to innovation financing, to strengthen market competition related to innovation and to increase foreign direct investment outflows reflecting successful innovation activity.

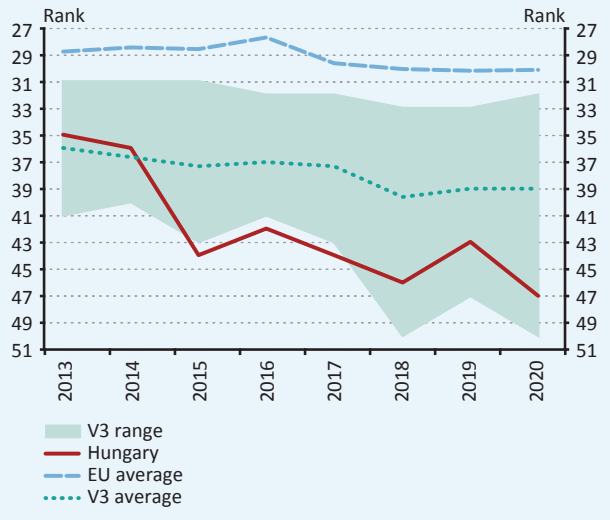
4.122 EU Digital Economy and Society Index (2020)



Source: European Commission.

The Digital Economy and Society Index calculated by the European Commission evaluates the digital development of EU Member States in a way that the individual components have different weights in the index: connectivity 25 per cent, digital skills of human capital 25 per cent, use of internet services 15 per cent, integration of digital technology by companies 20 per cent and digital public services 15 per cent. The indicators in the index are continuously changing in parallel with technological progress. Accordingly, it was supplemented with the indicator measuring the readiness of the 5G technology. The level of Hungary's digital maturity is below the EU average, but it is almost the same as the average of the other Visegrád countries. Hungary still has one of the largest reserve in the digital technology and e-commerce solutions applied by companies and in digital public services. Hungary also has development potential in terms of the digital skills of the workforce compared to the EU average. 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.

4.123 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, while 40 per cent is the result of questionnaire-based survey. The assessed 63 countries corresponds to the range of advanced economies analysed in the general competitiveness ranking of the IMD. Hungary and the Visegrád region also rank below the EU average. Ranking of Hungary fell by four places between 2019 and 2020. Of the sub-categories included in the ranking Hungary performed the best in the technological environment sub-category, which is attributable to the excellent performance in 4G penetration in an international comparison and to the fast internet network. Similarly to the EU Digital Economy and Society Index, based on the digital ranking of the IMD as well progress is needed in the digitalisation of companies and households, and in the increasing of the ratio of highly qualified employees.

4.11 EFFICIENT GOVERNANCE

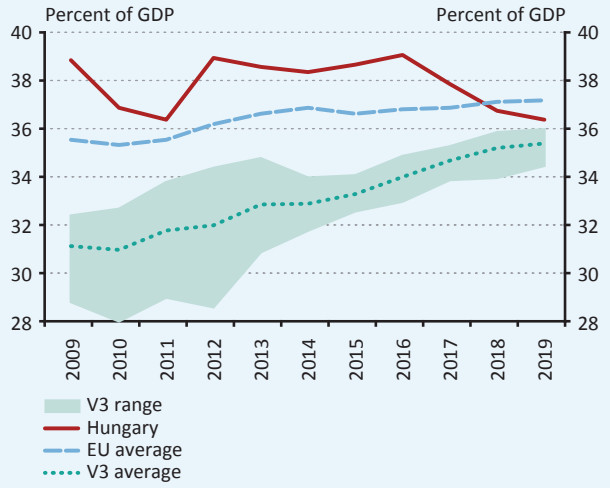
The state stands out among economic actors because of its position as an employer, regulator and service provider, and its efficient functioning is therefore essential for competitive economic activity and convergence. The state influences the country's business environment through a number of channels, among others, as the largest economic actor and as a regulator. Households and corporations make economic decisions under the basic criteria set by the state, and in this way the state also has a significant impact on the country's competitiveness. Efficiency is an important aspect of the functioning of the state, and this condition is satisfied when the environment is optimal for economic actors and the distortive effects are minimal. The effective functioning of the state is supported by the expansion of e-governance in public administration, both because it improves the quality and reduces the cost of public services and because it increases trust and confidence, which in turn enhances compliance within society. As a result of developing e-governance in Hungary, the proportion of people using e-governance more than doubled between 2010 and 2020. Nevertheless, the fact that the ratio of public employment and public expenditure as a percentage of GDP is above the EU and Visegrád countries' averages provides further growth potential.

The decline in the size of the shadow economy in Hungary remains unbroken, with the ratio of unpaid VAT falling from 22 per cent below 7 per cent since 2010. However, the negative effects of the coronavirus should be offset to maintain this positive trend. Over the last 10 years, the conscious reform of the Hungarian tax system has significantly supported the reduction of the shadow economy. An important part of this process has been the revision of the internal structure of the tax system and the shift from labour taxes to consumption taxes[6]. In addition, in parallel with the gradual penetration of digitalisation, the online cash register system, Electronic Public Road Trade Control System (EKÁER) and online invoicing have also been implemented in Hungary. As a result of these measures, Hungary's unpaid VAT rate fell to the 3rd largest degree in the European Union between 2010 and 2019. There is a lot of uncertainty about the short-term development of the indicator due to the coronavirus pandemic. However, draft VAT returns, available in Hungary from 2021, points to a further reduction in the shadow economy.

A further reduction of the bureaucratic burden on companies could help the corporate sector to recover from the temporary shock and increase its competitiveness. The World Bank's Doing Business ranking identifies several critical points for the corporate sector, where the bureaucratic burden on companies is significantly higher than the EU average. One of these areas is the number of procedures required to obtain construction permits, which exceeds those in the EU by one third in Hungary. The second one is tax administration, were according to the latest available figures a Hungarian company has to spend 277 hours a year on tax returns, compared to the EU average of 172 hours. The Hungarian government has taken targeted measures to reduce the bureaucratic burden on businesses, but the impact of these measures has not yet been reflected in World Bank statistics, partly because of the coronavirus pandemic. One of the measures with the biggest impact is the draft VAT returns, to be implemented in 2021, which could greatly reduce the time companies spend on tax declaration.

[6] Source: Bianka Parragh – Dániel Palotai (2018): Az ösztönző adórendszer felé (Towards an Incentive Tax System)

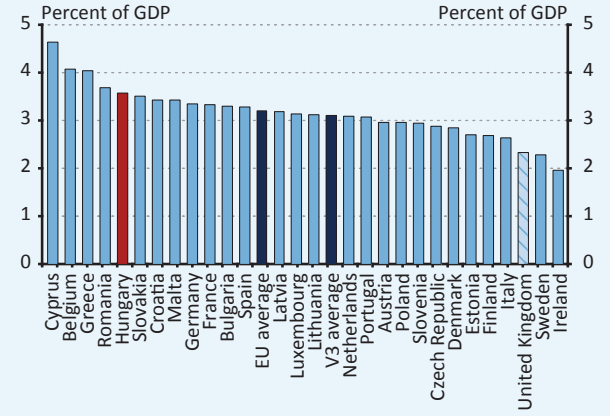
4.124 Tax centralisation



Source: Eurostat.

Tax centralisation shows the ratio of tax and contribution revenue as a percentage of GDP. Tax centralisation in itself says little about the structure and effectiveness of a country's tax system. Tax centralisation in Hungary declined between 2012 and 2019, starting from a higher level in an EU comparison. By the end of the period, tax centralisation in Hungary stood at 36.4 per cent, lower than the EU average (37.2 per cent) and slightly above the average of the Visegrád countries (35.4 per cent). The convergence reflected by the chart is attributable to two factors. On the one hand, the post-2010 tax reform, combined with measures aimed at the reduction of the shadow economy, led to a favourable fiscal position and a significant reduction in labour taxes in Hungary from 2016. On the other hand, in sharp contrast to the trends in Hungary, tax centralisation in the Visegrád region registered a trend increase as a percentage of GDP. As a result of these two effects, the gap between Hungarian and regional tax centralisation has narrowed to just 1 percentage point in 2019, down from 7 percentage points in 2012.

4.125 Public administration wage cost as a percentage of GDP (2019)

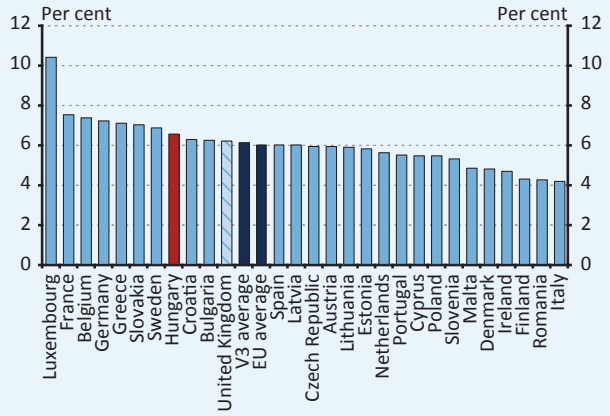


Note: The Hungarian figure does not include the estimated wage bill of public employment. Data for France and the United Kingdom are from 2018.

Source: Eurostat, MNB.

The maintenance of public administration is a core task of the state, performing which in high quality is expensive. Accordingly, cost-effectiveness must be a key priority. The main cost item of public services is the total wage bill, which is closely related to the number of staff in the public administration. In 2019, the public administration wage bill in Hungary was 3.6 per cent of GDP, compared to the EU average of 3.2 per cent and the V3 average of 3.1 per cent. Among the Visegrád countries, Hungary had the highest rate (3.6 per cent) and the Czech Republic the lowest one (2.9 per cent), with 20 countries between the two outliers. Trends in recent years show that the ratio of public expenditure in Hungary has increased, largely due to the revision of public administration wages to ease wage tensions.

4.126 Ratio of public administration employees (2020)

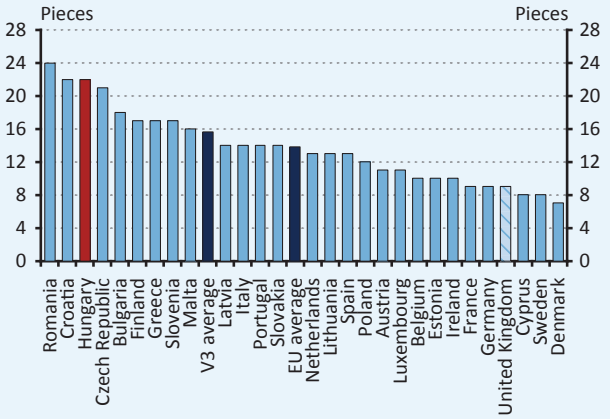


Note: Net of armed forces occupations and elementary occupations. Data for France and the United Kingdom are from 2019.

Source: Eurostat, MNB.

Inevitably, the state has to deprive the economy of a certain volume of human resources in order to carry out its administrative tasks. According to the indicator adjusted for armed forces occupations and elementary occupations, 6.5 per cent of those employed in Hungary worked in public administration in 2020. By comparison, administrative employment in the narrow sense was 6.1 per cent in the V3 countries and 6.0 per cent in the EU. In Hungary, above-average public employment may contribute to the above-average operating costs of the state apparatus. In order to increase cost-effectiveness, the focus should be on expanding e-governance as widely as possible in the future, while maintaining an optimal level of employment.

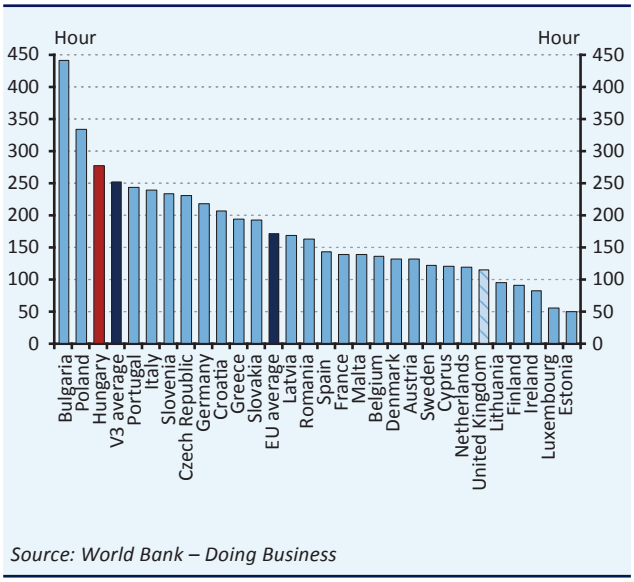
4.127 Number of procedures required to obtain construction permits (2019)



Source: World Bank – Doing Business

The World Bank's indicator on the number of procedures required to obtain construction permits shows how many permits a company needs for building a warehouse. This number is one of the highest in Hungary within the European Union, with a total of 22 permits needed to build a warehouse. By comparison, the average in the V3 countries is 16 permits, while the EU average is 14 permits. This means that the average company in the European Union has to go through more than a third less administrative procedures to obtain a construction permit for a warehouse than in Hungary. Reducing bureaucratic burdens on companies could foster willingness to invest. Furthermore, as capacity is freed up, the resources available for value creation also increase.

4.128 Time to comply with tax filing for enterprises in one year (2019)



Source: World Bank – Doing Business

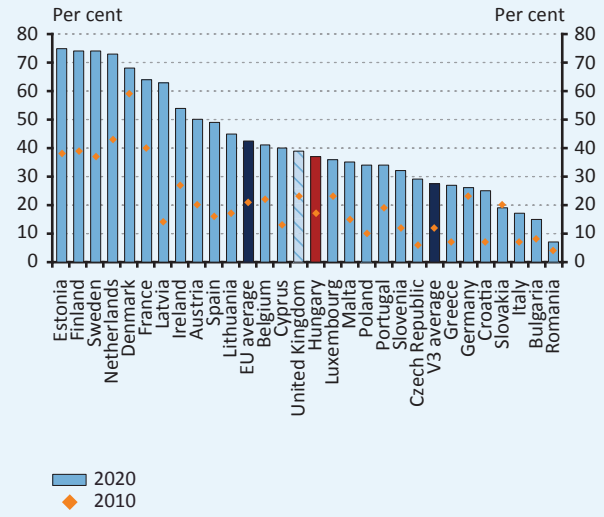
The time spent on tax administration has a significant impact on the day-to-day operation of enterprises, and thereby on their profitability. By speeding up tax compliance, enterprises have more time to carry out productive/service activities. According to the World Bank's data, Hungarian companies have to spend 277 hours a year on tax returns, significantly more than the EU average of 172 hours. The average of the Visegrád countries is close to Hungary's average, with companies in the region spending an average of 252 hours a year on tax returns. Out of the 277 hours, 96 hours are spent on VAT returns. In this area a significant amount of time may be saved once the draft VAT returns scheme is implemented. Namely, one of the most significant measures to simplify tax administration in Hungary is that from 2021 the tax administration has access to all invoices, which will facilitate the introduction of the VAT proposal scheme.

4.129 Time to start a business (2019)

Source: World Bank – Doing Business

The number of days required to set up and formally launch a company has a major impact on the willingness to start a business. This is exactly what the World Bank's time required to start a business indicator quantifies. It takes just 7 working days to obtain the necessary permits to start a business in Hungary, compared to an average of 13 days in the European Union and 29 days in the Visegrád countries. Hungary performs well in this indicator compared to its closest competitors; however, in the top-ranked countries (Denmark, Estonia, France, the Netherlands), the time to start a business is less than 4 days. While continuing to develop e-governance, it is a realistic goal to reach the top 5 countries in the indicator. Utilising the potentials of digitalisation can reduce the bureaucratic burden of setting up a business, thereby increasing the willingness to start a business.

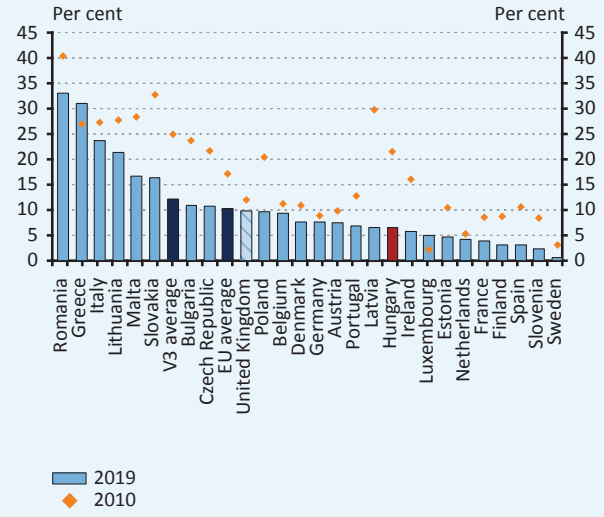
4.130 Public administration through the internet (2020)



Source: Eurostat.

The rollout of e-governance can support competitiveness to the maximum when as many as possible public services are available online and there is no need to be present in person. The e-governance participation indicator shows the proportion of the population that submitted a completed form online in the past year. Hungary has made significant progress in this indicator, with only 17 per cent using the service in 2010, compared to 37 per cent in 2020. The latter is above the V3 average (27 per cent), but there is room for improvement to reach the EU average (42 per cent). In the best performing countries in the EU, nearly three quarters of the population used the service. The top performers are among the Northern European countries, where the use of digital technology by the households is traditionally high. In Hungary, experience shows that the technology is available, but the population is only gradually moving away from personal presence to the online space. International experience shows that there are real economic benefits from increasing the penetration of e-governance among the population.

4.131 Ratio of unpaid VAT

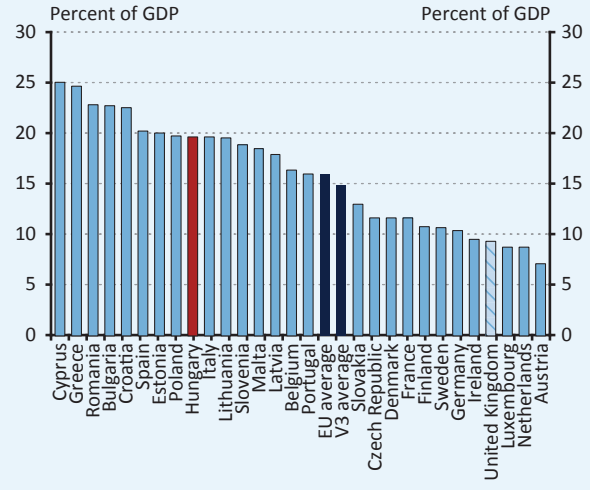


Note: Values for 2019 are based on preliminary estimates. Data for the Netherlands, Luxembourg and Sweden are available for 2018. Data for Cyprus and Croatia are missing.

Source: European Commission.

Unpaid VAT, or VAT gap, is an internationally recognised indicator to measure tax evasion, which shows the gap between the actual VAT revenue and the potentially collectible VAT. Since 2010, Hungary has introduced a number of important measures to reduce the shadow economy (online cash register, Electronic Public Road Trade Control System, online invoicing), which significantly reduced the proportion of unpaid VAT. According to European Commission estimates, the VAT gap in Hungary was 6.6 per cent in 2019, down to less than a third from 21.7 per cent registered in 2010. Owing to this, between 2010 and 2019, Hungary realised the third largest fall in VAT evasion in the European Union. The favourable Hungarian trend in the indicator is expected to continue, as the draft VAT returns scheme will be introduced from 2021. The NTCA practically has access to every invoice in the economy, and in addition to processing the data collected, the use of improving technologies may also help to detect VAT frauds more quickly and efficiently.

4.132 Estimated size of the shadow economy as proportion of GDP (2017)



Source: IMF.

It is inconceivable to be competitive with a large hidden economy, and thus it is common practice in Europe to introduce measures aimed at the reduction of the shadow economy. Internationally comparable estimates of the hidden economy are available for 2017, based on which shadow economy in Hungary amounted to 20 per cent of GDP. Meanwhile, the average of the European Union was 16 per cent and of the Visegrád countries 15 per cent. The best performing country in Europe was Austria, where the size of shadow economy was 7.1 per cent. This implies that the shadow economy cannot be fully eliminated. Since the last estimate, Hungary has implemented a number of measures to reduce the shadow economy and cut taxes (e.g. online invoicing, reduction of social contribution tax), which may have reduced the ratio of shadow economy.

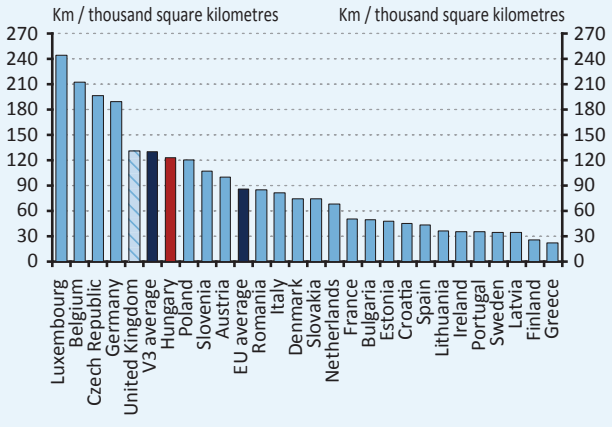
4.12 MODERN INFRASTRUCTURE

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.

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 respects compared to the EU average. Railway network of Hungary was the fifth densest one in 2019 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 rail transport. Within the public road network, the density of expressways 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. In nearly half of the counties more than half of the roads are in bad condition. City traffic is also hindered by traffic congestions.

Internet infrastructure of Hungary is competitive also by international standards, but there is still room for improvement in the deployment of 5G technology for Hungary to preserve its competitive advantage in infocommunications. In terms of the speed and penetration of broadband internet, Hungary is among the leaders in the EU. The first is faster than the average of Visegrád countries and the EU by 50 and 35 megabits per second, respectively, while the latter is almost two and half times of the Visegrád average and almost twice the EU average. It is positive that in the sales of the 5G frequencies, being in the initial phase, performance of Hungary is the 8th best in the European Union, however, based on maps showing commercial 5G coverage, there is still a significant area in Hungary not covered by this service. 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. The higher value is due to the shortcomings of the insulation of electrical wiring and the low proportion of underground wiring less exposed to weather anomalies.

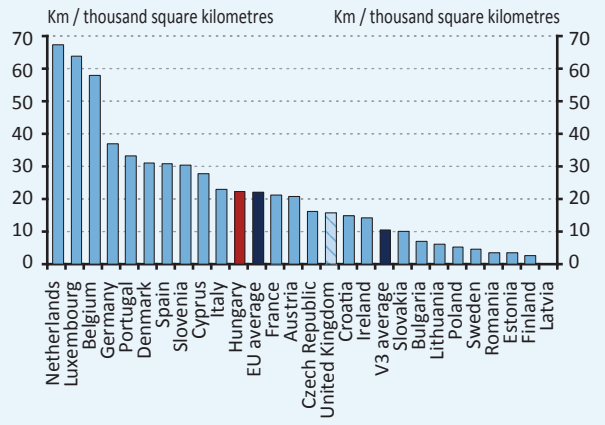
4.133 Density of the railway network (2019)



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 large number of rail lines only provides a competitive alternative to road transport and traffic, if the quality of the tracks is suitable for fast and reliable transport and the management of the railway lines takes into account the location of densely populated areas, depending on their function. It is also essential for rail competitiveness that the infrastructure along the railway provides comfortable and attractive travel conditions.

4.134 Density of the motorway network (2019)

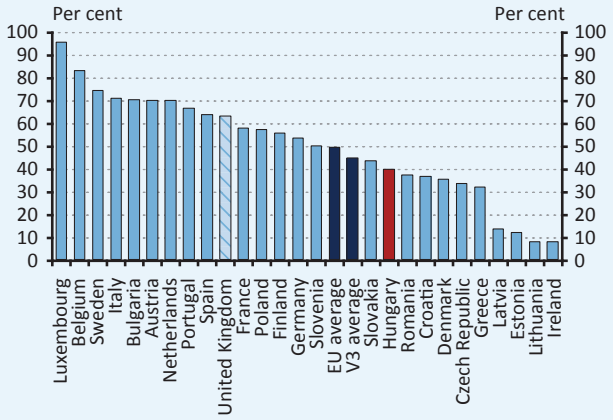


Note: There are no data available for Greece and Malta. Zero is not for denoting missing data.

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 twice as densely as in other Visegrád countries, corresponding to the average of the EU. Since 2010 the length of motorways increased by more than 40 per cent in Hungary. At present the construction of several motorways is in progress, including a motorway in Zala County that will be suitable for autonomous cars. 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.

4.135 Ratio of electrified railway lines (2019)

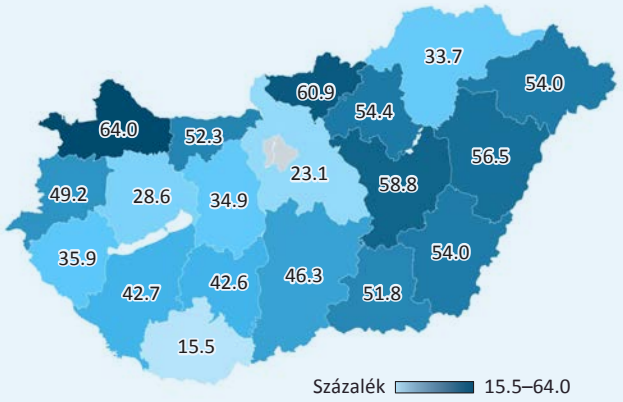


Note: There are no data available for Cyprus and Malta.

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 5 percentage points, respectively. Almost three-quarters of the Austrian and Swedish railway lines 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. At present only a few Hungarian railway lines are suitable for transport at a speed of 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 tighter interconnection of large towns of the Carpathian Basin and may partially substitute the more polluting short distance flights.

4.136 Roads of substandard surface as a share of the total road network (2020)

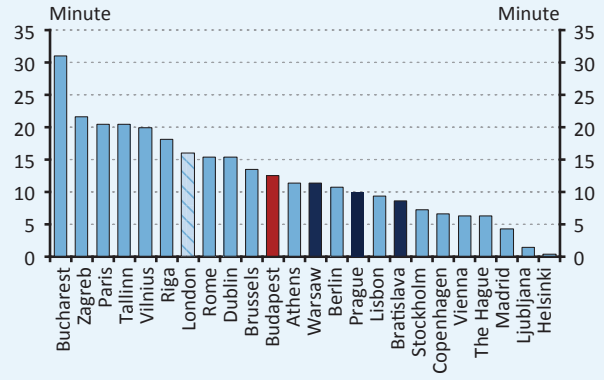


Note: The 44 per cent figure showing the proportion of poor-quality roads is the arithmetic average of the county's values, weighted by road length.

Source: Magyar Közút (Hungarian Public Road Nonprofit Pte Ltd Co.)

In Hungary, 44 per cent of the roads are in bad condition (as defined by Magyar Közút). The best quality roads are in Baranya, Pest and Veszprém counties. Győr Moson-Sopron, Nógrád and Jász-Nagykun-Szolnok counties have the worst road conditions, but all counties have a significant proportion of 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.

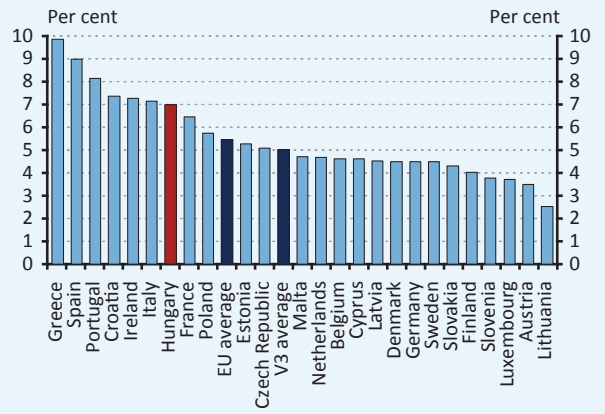
4.137 Average time lost daily in traffic congestions (2020)



Source: INRIX.

As a result of traffic congestions productive time or leisure time is lost. According to the 2020 data, the coronavirus pandemic resulted in lower road traffic than in previous years (by 9 minutes per day compared to 2019), but Budapest still has the highest daily time loss due to congestion among the capitals of Visegrád countries. Regular drivers in Budapest lost an average of nearly 13 minutes per day in 2020, which could result in a loss of more than half a per cent of the annual added value of the capital. The average time lost in one year in traffic congestions was the 27th longest in the Hungarian capital among the 1000 ranked cities in 2020, according to INRIX, a consulting company on traffic and mobility issues. In each of the Visegrád capitals, congestion in 2020 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 28 minutes based on the 2020 data.

4.138 Electricity losses on the entire electrical grid (2018)

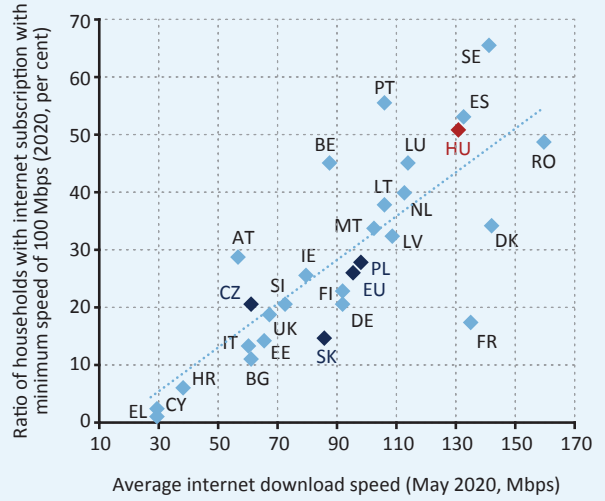


Note: Data for Finland is from 2015, data for Greece and Italy are from 2017. There are no data available for Bulgaria, Romania and the United Kingdom.

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.

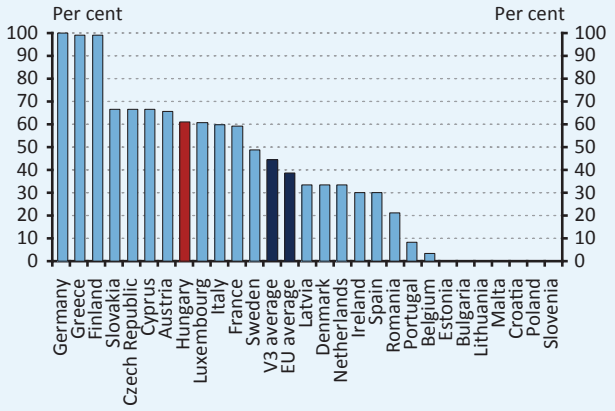
4.139 Speed and penetration of the broadband internet (2020)



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 50 megabits per second compared to the other countries of the Visegrád region and by 35 megabits per second compared to the average of the EU. The ratio of households with subscription for internet with minimum speed of 100 megabit per second reaches 50 per cent in Hungary, which exceeds the average of other Visegrád countries by 30 percentage points and of the EU by 25 percentage points. The fast domestic internet, which is widely spread among the Hungarian households, facilitates, among other things, the penetration of digital solutions to households, the use of e-governance solutions and the rise in their usage rate. However, based on 2020 data, the number of mobile internet subscriptions in Hungary is the lowest among the EU Member States (75 subscriptions per 100 people compared to the EU average of 104 and the Visegrád average of 124). The fast internet also supports companies in their production and services activity, thereby increasing their competitiveness in the international market.

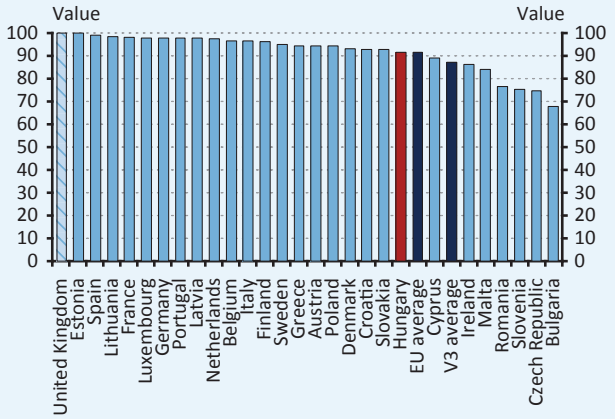
4.140 5G mobile internet readiness (2021)



Note: Missing columns mark zero values rather than 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 2021. Hungary is ranked eighth in the European Union in this indicator. By the end of 2021 the technology will be able to operate on 61 per cent of the entire volume of eligible frequencies, exceeding the EU and the Visegrád average. However, 5G coverage, which shows the proportion of households with access to commercial 5G services, was only 7.3 per cent in 2020 in Hungary. Even according to EU 5G coverage maps, there is still a significant area in Hungary and the Central and Eastern European region where the service is not available. The 5G technology fosters the penetration of the Internet of Things (IoT) among enterprises, which may substantially increase productivity. Therefore, providing first of all the industrial parks operating in Hungary and secondly the Hungarian households with full 5G coverage as soon as possible is of key importance and may represent a competitive advantage.

4.141 Global Cyber Security Index (2020)



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. This is a composite index comprising of 20 indicators developed based on 82 questions, where the best score is 100 and the worst one is 0. Cyber security of Hungary exceeds the average of other Visegrád countries and corresponds to the average of the EU, but lags behind the 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

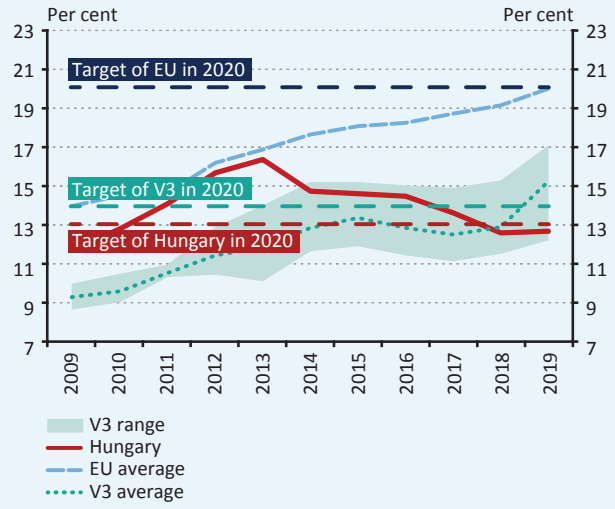
State can reduce energy dependence of the country by developing the right energy mix and reducing the share of net energy imports. Energy mix of a country is sustainable if at least half of total energy consumption is provided by environmentally friendly energy sources produced inland. Making energy use environmentally more sustainable can contribute to the green transition and the decarbonisation of the Hungarian economy. While low energy prices for household consumers increase disposable income of households and the savings from moderate corporate energy costs can be used for investment, environmental sustainability considerations are also essential in fossil fuel pricing in addition to competitiveness aspects.

The share of renewables in the energy consumption of Hungary, which has been decreasing since 2014, stopped at 13 per cent in 2019, but reaching the 21 per cent target for 2030 would be a breakout point for Hungary. The government would achieve this target primarily by expanding solar and geothermal energy capacity. In this respect, it is encouraging that 2,000 MW out of the 6,000 MW solar capacity to be reached by 2030 had already been built by the end of 2020. In addition to expanding capacities, finding a solution for the storage of renewable energy and preparing the network infrastructure are essential to meet the targets.

Energy expenditure of Hungarian households is lower than the EU average, but there is room for improvement in strengthening the environmental sustainability of the energy sources used, while maintaining low energy prices. In Hungary, as a result of reduction of regulated prices in several steps, between 2011 and 2014 the price of electricity for households decreased first below the average of the Visegrád region, and then below the EU average. A two-earner household spends 2.7 per cent of its income on energy, which is lower than the EU average (3.3 per cent). Similarly to the prices for households, electricity and gas prices for industrial use declined between 2013 and 2017, but they were unable to fall below the average of the EU. Since energy prices for industrial use are mainly determined through the stock exchange, these prices may be reduced as cross-border capacities are built to reduce energy dependency. Low industrial gas prices can be a competitive advantage for companies in the short term, but in the long term, substitution of natural gas would be desirable from a sustainability perspective.

The ratio of net energy imports is still high in the Hungarian economy. The dynamic economic growth of recent years resulted in larger energy consumption, as a result of which the ratio of net energy imports rose by roughly 20 percentage points by the end of the 2010s compared to the early 2010s. In 2019, the indicator was extremely high, standing at 70 per cent, due to the high rate of filling the gas storage facilities for safety purposes. The import ratio exceeded the regional average of 53 per cent and the EU average of 61 per cent.

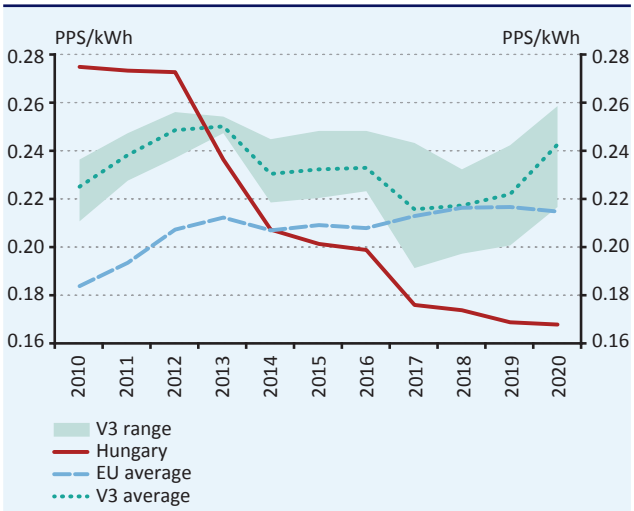
4.142 Use of renewable energy sources



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. Hungary has already fulfilled the national target value undertaken for 2020 before, but in 2018 the use of renewable sources fell below it. However, the decline partly stems from a favourable trend, because as gas heating became cheaper – as a result of the utility cost reduction – the use of firewood, regarded as renewable but highly polluting, decreased. The installed solar capacity has increased from 35 MW in 2013 to nearly 2000 MW in 2020. In addition to the expansion of the solar energy capacities to 6,000 MW by 2030, the energy policy is built on the use of non-firewood based biomass and the exploitation of geothermal energy, which 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 target of 32 per cent by 2030. 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.

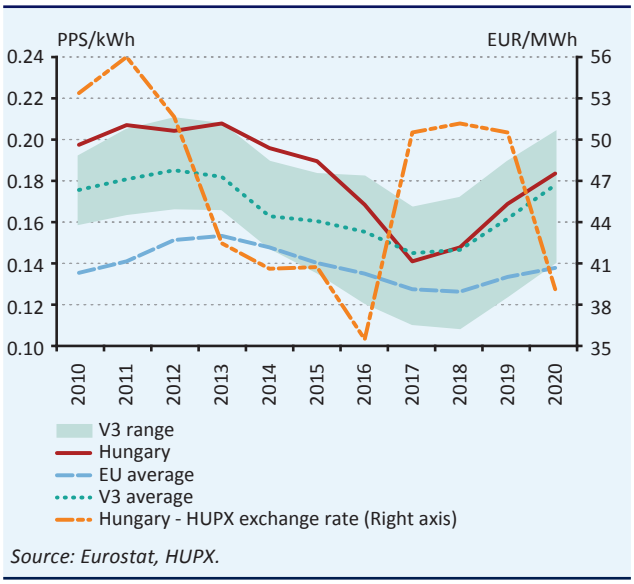
4.143 Electricity price (for households)



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 rate of decline between 2010 and 2020 was nearly 40 per cent. Based on the comparison of international prices by the Hungarian Energy and Public Utility Regulatory Authority, the price of household electricity measured at purchasing power parity in June 2021 was the sixth lowest one in Budapest among the capitals of the EU. A modelled household with two wage-earners spends 2.7 per cent of its income on energy expenses, which is below the average of the EU capitals (3.3 per cent).

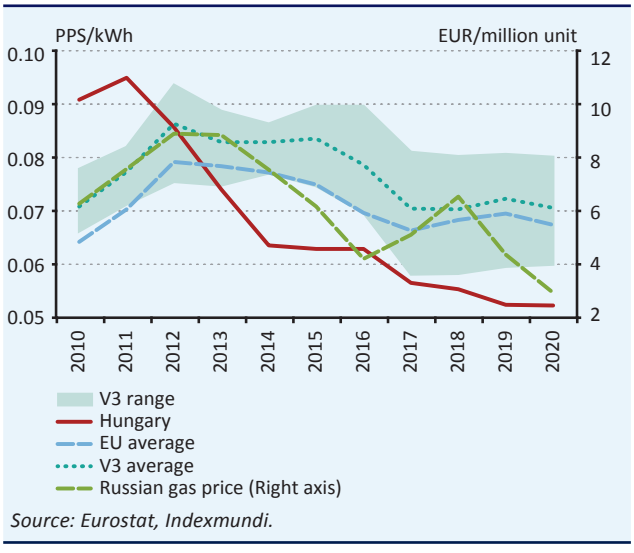
4.144 Electricity price (for industrial consumers)



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. The favourable conditions on which a company can access electricity also depends greatly on a company's individual management abilities (and individual trading structure). 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 fell by more than 20 per cent between 2019 and 2020, partly due to a drop in demand due to the coronavirus pandemic. 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 from 2018 they are moving away from it along with the other countries in the region. In 2019, the price of Hungarian electric energy for industrial use (including taxes and other levies) amounted to EUR 0.11 / kWh. Decline in industrial electricity prices would be important in order to allow the fixed costs of companies to remain at low levels in Hungary over the long term as well. This could be facilitated by the new Hungarian-Slovak electricity transmission line, which was completed in April 2021.

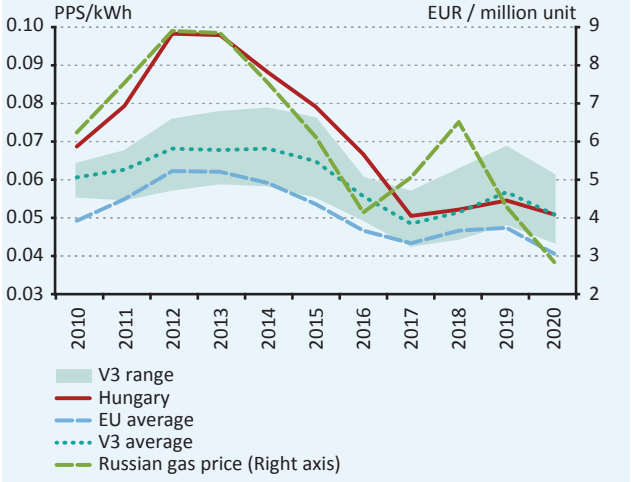
4.145 Gas price (for households)



Source: Eurostat, Indexmundi.

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 2020, the price of 1 kWh of gas for households (including taxes and other levies) costs 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 third lowest one in Budapest measured at purchasing power parity in June 2021 among the capitals of the EU. The low level of household gas prices increases the consumption of other goods or the savings of households in the short term, and, through that, economic competitiveness as well. However, in the longer term, it is essential that gas consumption is complemented or replaced by more environmentally friendly alternatives in order to take account of sustainability criteria.

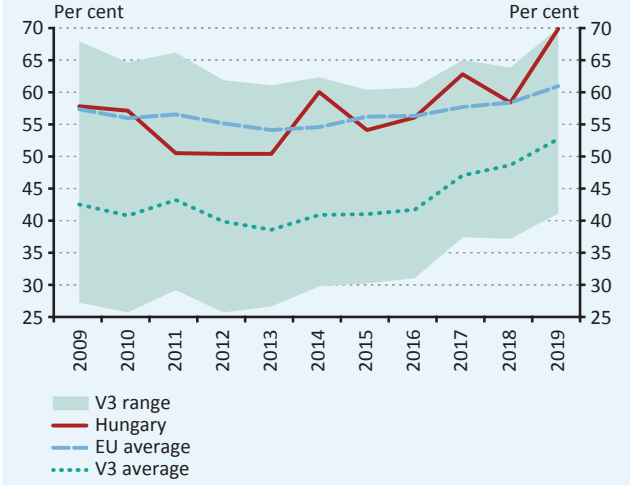
4.146 Gas price (for industrial consumers)



Source: Eurostat, Indexmundi.

Similarly to household gas prices, as a result of global market trends, the gas prices 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 they still lag behind the average of the EU, albeit to a much lesser degree than in previous years. In 2020, the price of 1 kWh of gas for industrial consumers was EUR 0.03 (including taxes and other levies). Between 2013 and 2017, the Hungarian price materially declined, as a result of the fall in world market prices and in other, regulatory burdens on the basic price of gas. As the world price of natural gas is constantly fluctuating, increasing the number of natural gas import routes by building cross-border gas interconnections for bi-directional transport between Hungary and Romania, Hungary and Serbia and Hungary and Slovenia and Italy could contribute to maintaining lower energy prices.

4.147 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 55 per cent between 2009 and 2018, above the V3 average, but reached almost 70 per cent in 2019. This was 17 percentage points higher than the average of the Visegrád competitors, 10 percentage points higher than the EU average and more than 10 percentage points higher than the Hungarian figure in 2019. The increase in the ratio of energy imports of Hungary in 2019 may have been caused by higher-than-usual replenishment of natural gas storage facilities for energy security reasons. With a decline in net energy imports, a country's energy dependency also declines, resulting in an improvement in the given country's economic independence and competitiveness. A further reduction of the energy dependency would improve the energy security of Hungary.

4.14 GREEN ECONOMY

No sustainable convergence exists without transition to a green and circular economy. Competitiveness and sustainability are inseparable concepts. 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 and sustainable 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.

The energy use of the Hungarian economy is still high. Although between 2010 and 2019 energy demand per unit of output declined by more than 20 per cent in Hungary, the energy intensity of the V3 and Hungary is 1.7 times higher than the average of the EU. Calculated at purchasing power parity, the energy efficiency gap between Hungary and the European Union is much moderate (12 per cent). The cheapest and least costly energy for companies and the national economy is the energy that is neither produced nor consumed.

In the EU, the per capita carbon dioxide emissions is one of the lowest in Hungary and the carbon dioxide emission per one unit of economic output is also below the EU and the V3 average; however, the level of air pollution exceeds the EU average. Hungary is one of those countries that in the past decades, despite their economic growth, were able to reduce their carbon dioxide emissions substantially. However, in the coming period, we must strive to optimise domestic production and manufacturing processes with even lower carbon emissions, as Hungary has also committed to the target of becoming climate neutral by 2050, along with the rest of the European Union member states. In Hungary, the population's exposure to air pollution from fine particulate matter exceeds the EU average – in larger cities due to emissions from transport, and in rural areas due to combusting solid fuel for heating. Reducing air pollution would decrease the number of respiratory illnesses, thereby improving the health of the population, which is a competitiveness factor.

Hungary, like most countries on the planet, has a negative ecological balance. 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. In 2017, Hungary over-consumed its environmental assets by 11 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, we would need 1.7 times the Earth's environmental resources to maintain the world's current consumption. Earth exceeded its annual biocapacity on 29 July 2021, almost a month earlier than in 2020, when it happened on 22 August (Earth overshoot day).

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 and came closer to the average of the EU. However, it is still necessary to increase the ratio of recycling. In addition, in Hungary, almost half of all waste generated unfortunately still ends up in landfills or dumped on the earth's surface, which is the most environmentally damaging way of waste management.

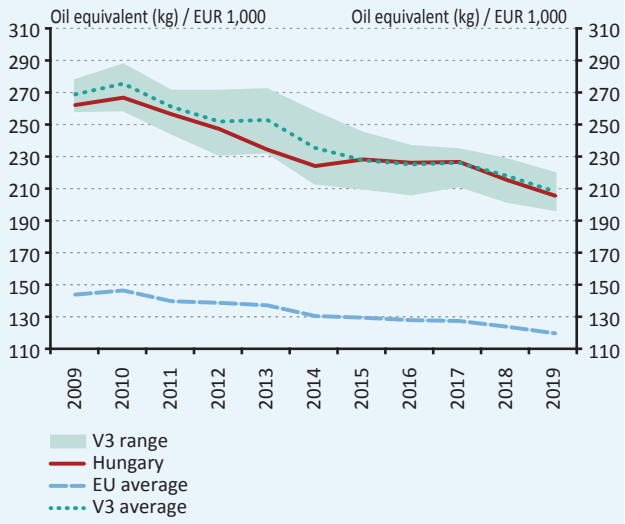
Responsible land and water management is also essential for combating climate change, but the proportion of both forested and irrigated land in Hungary is low, and there is still room for improvement in the case of households connected to the sewage network. Forests play a significant role in carbon sequestration, water retention and soil improvement, as well as providing habitat for many species. Hungary has the seventh lowest proportion of forests and other wooded land in the EU, partly because of its natural geography. Agricultural irrigation is essential for food security, as it makes larger areas productive and increases crop yields. More efficient and precise water distribution results in larger irrigated areas. In Hungary, only around 80 per cent of the population has access to sewerage. Although progress has

been made in this area, due to the expansion and development of the sewerage network in recent years and the opening of a new sewage treatment plant in Budapest in 2010, further action may be needed, as 20 per cent of the Hungarian population lives in settlements with less than 2,000 inhabitants without a sewage treatment plant.

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 and the issuance of one of the most widely used green financial instruments, i.e. green bonds. In Hungary, revenues from environmental taxes contribute to budget revenues to a higher degree than the average of the EU, while among the Visegrád countries, Hungary precedes only the Czech Republic. The level of environmental protection expenditure is also lower than the EU and Visegrád averages, and thus there is room for improvement in this indicator as well. Therefore, the proportion of green bonds issued compared to other bonds is an important indicator. In Hungary, the Hungarian government issued the first green bond in 2020, followed by several corporate issuances. Aggregate issuance shows that Hungarian green government bonds had a high issuance rate in 2020, both in a regional and EU comparison. Although there is still significant room for improvement in the issuance of green bonds in Hungary, the fact that these products were launched in Hungary last year in a market that practically did not exist before 2020 is a big step forward for both the green government bond and the corporate green bond markets. The MNB's commitment 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.

ECOLOGICAL SUSTAINABILITY

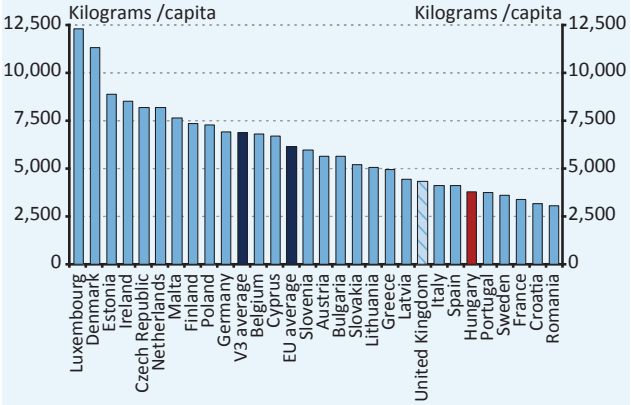
4.148 Energy intensity of the economy



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 2019, the energy demand per unit of output in Hungary decreased by nearly 25 per cent. However, the energy intensity of Hungary and the Visegrád region is still about 1.7 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 (12 per cent), however the Hungarian economy's more energy-wasting operation compared to the EU average is also apparent when looking at this indicator. Lower energy intensity is cheaper for the operation of the economy, it would reduce our energy dependency and in addition to increasing efficiency, it provides more environment-friendly and greener conditions for successful convergence over the long term.

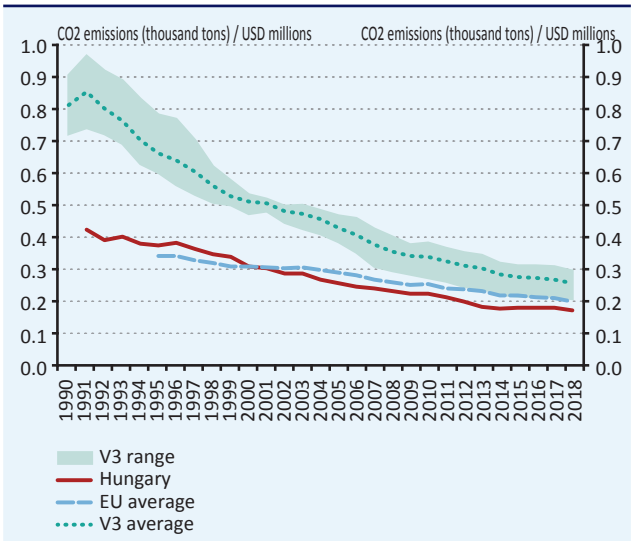
4.149 Carbon dioxide emissions per capita (2019)



Source: Eurostat.

Hungary is one of the relatively few countries that substantially reduced their carbon dioxide emissions in the past decades under expanding economic performance. Hungary is among the leaders in terms of reducing carbon dioxide emissions per capita. Due to this, the Hungarian figure is below the averages of the European Union and the V3 countries, although in recent years it moderately increased due to the fast economic growth. By 2050 - subject to the availability of adequate financial resources - it may be a realistic objective to convert the economy gradually to become carbon neutral. This would not only help to protect the environment, but also to spread new technologies and higher value-added industries, thereby contributing to sustainable convergence.

4.150 Carbon dioxide emissions per one unit of economic output

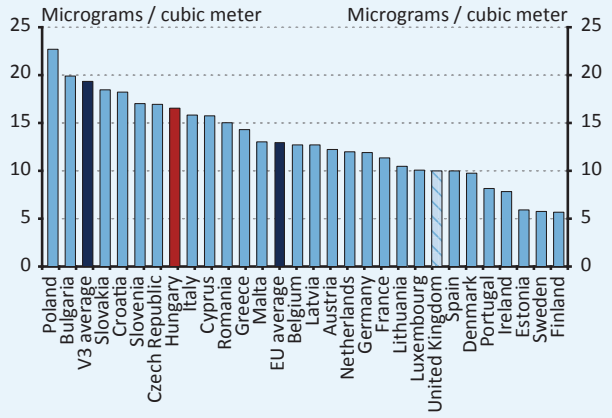


Note: Value at constant price calculated at purchasing power parity. Data for Bulgaria, Cyprus, Croatia, Malta and Romania are not included in the EU average, due to lack of data.

Source: OECD.

In Hungary, the carbon dioxide emissions per one unit of economic output are around the EU average, but lower than in the other Visegrád countries. It is primarily the Czech and Polish economies that produce under extremely high emissions values. On the other hand, Sweden - leading the EU ranking - emits less than half of the volume of carbon dioxide as Hungary. In recent years, economic output rose faster than the carbon dioxide emissions per one unit of product decreased, and thus Hungary's total CO_2 emissions increased. Switching to technology and knowledge-intensive growth model, the economy would be able to achieve sustainable high growth under low emissions.

4.151 Population exposure to air pollution (2019)

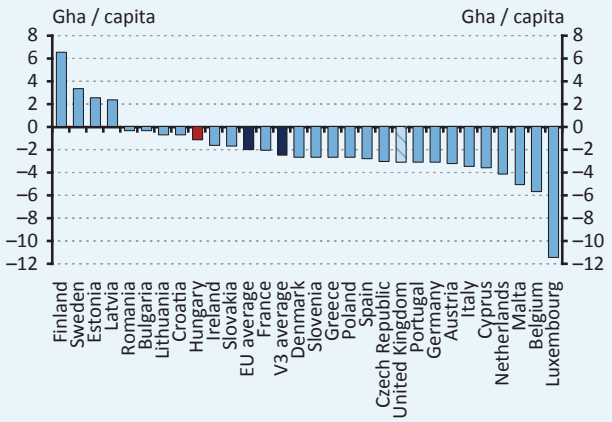


Note: The chart shows the concentration of particles smaller than 2.5 microns in the air.

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 fine particulate emissions exceed the benchmark value specified by the World Health Organisation by more than one and a 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.

4.152 Eco-balance (2017)

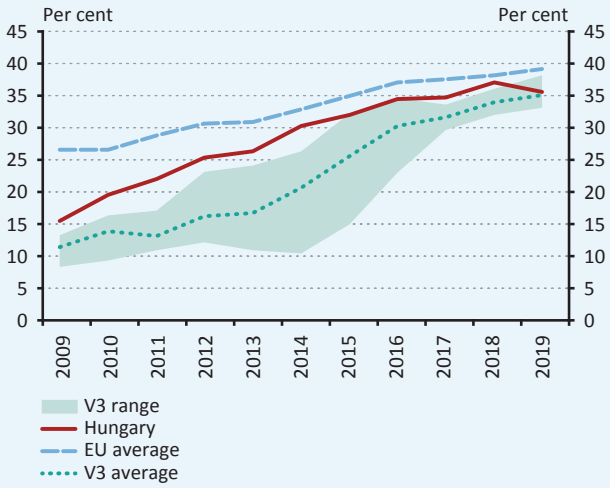


Note: The eco-balance is obtained by subtracting the ecological footprint of a country from its biocapacity. A country has an ecological deficit if its ecological footprint exceeds the available biocapacity.

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. According to the latest (2017) available data, only four countries in the EU realised an ecological surplus. Hungary's ecological balance is slightly in deficit, but to a lesser degree than the EU or Visegrád average.

4.153 Recycling rate of municipal waste

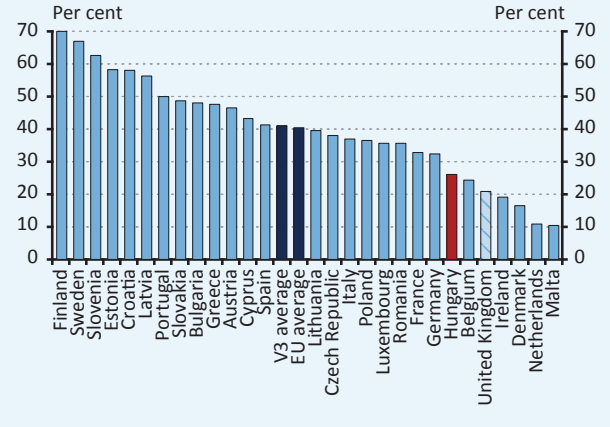


Note: When calculating the 2019 EU average, for Bulgaria and Ireland figures from 2018 were used due to a lack of data.

Source: Eurostat.

Waste management plays an important role in the efficient utilisation of resources and in the reduction of resource intensity. In the past ten years, major improvement was achieved in the area of recycling or reprocessing of municipal waste. Hungary managed to reduce its lag compared to the EU average to less than half, at the same time maintaining its leading position among the Visegrád countries. In 2019, the recycling rate decreased by 1 percentage point compared to 2018. By increasing the current 36 per cent rate further, the wasting of resources can be prevented, harmful environmental impacts can be reduced and need for primary natural resources may be mitigated.

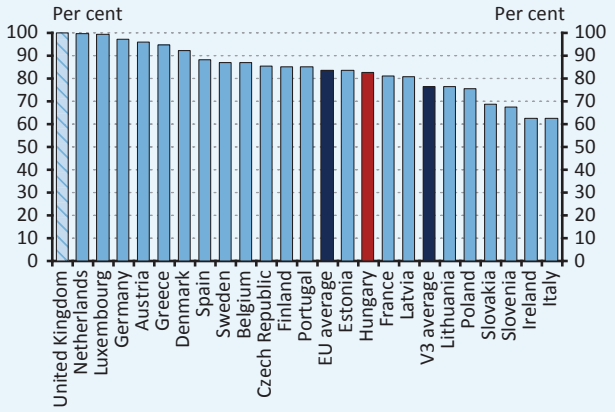
4.154 Forests and other wood land as a percentage of the countries' total territory (2018)



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. Finland, Sweden and Slovenia have the largest forested area as a proportion of their territory, while Malta and the Netherlands have the least.

4.155 Ratio of population connected to a wastewater treatment plant (2019)

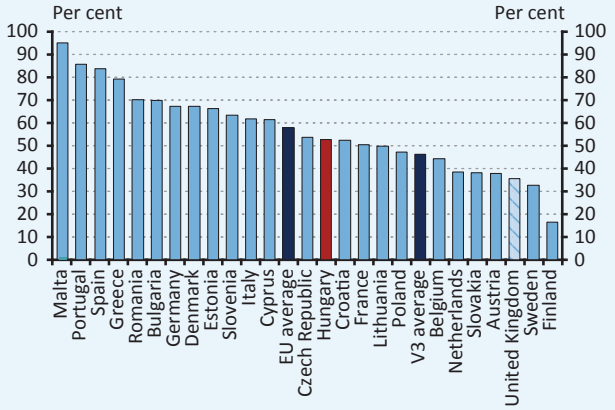


Note: There are no data available for Bulgaria, Cyprus, Croatia, Malta and Romania. Data for the United Kingdom, France, Greece, Ireland, Germany, Italy, Portugal, Spain and Sweden are available for a previous year.

Source: OECD.

In Hungary, 83 per cent of the households are connected to the sewerage system, which represents a progress compared to 72 per cent registered in 2010, and the Hungarian figure is below the EU average only by 1 percentage point. In Hungary the ratio of households connected to the sewerage network exceeds the average of the other Visegrád countries by 6 percentage points; however, the connection ratio of most of the developed Western European exceeds that of Hungary. Of the countries assessed by OECD, the ranking is led by the United Kingdom, the Netherlands and Luxembourg. In Hungary the development of sewage disposal and wastewater treatment are inadequate primarily in the settlements with fewer than 2,000 inhabitants.

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



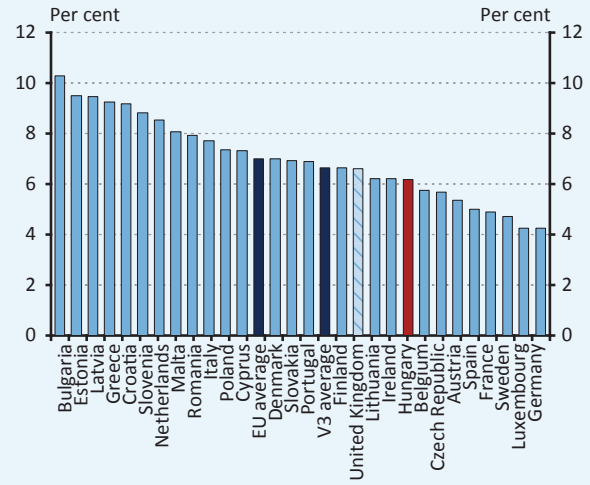
Note: Data are not available for Ireland, Latvia and Luxembourg.

Source: Eurostat.

In Hungary, roughly half of the areas suitable for irrigation is effectively irrigated (supplied with sprinkling appliance), which is roughly the same as the average of the EU and the other Visegrád countries. 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 (5.2 million hectares), around 100,000 hectares, is irrigated annually. Considering that the share of crop production, directly exposed to weather conditions, is around 60 per cent, this is below the optimal value. It is particularly important to prepare agriculture for the impacts of climate change, which affects the Carpathian Basin as well to an increasing degree. Protein crops, fruit and vegetables and seeds, which offer higher revenues, can only be grown on irrigated land. Seed exports are essential for future food production, and thus Hungary should participate in it to the greatest extent possible. Increasing the ratio of irrigated areas and the efficient use of the available water resources would considerably increase the agricultural sector's productivity and reactivity to the impacts of climate change.

GREEN FINANCES

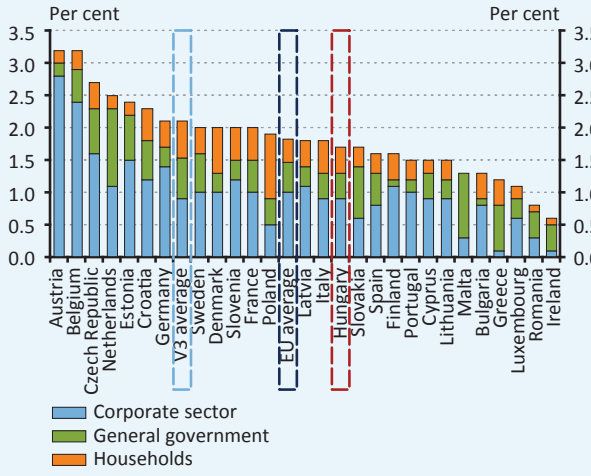
4.157 Revenues from environmental tax as a percentage of the total tax revenue (2019)



Source: Eurostat.

The ratio of environmental taxes in the total tax revenue of Hungary was more than 6 per cent in 2019. However, this is slightly lower than the EU and Visegrád averages, and thus environmental tax revenues in Hungary contribute to a lesser degree to total government tax revenues compared to the EU and Visegrád averages. Eurostat distinguishes three categories of environmental taxes (energy taxes, transport taxes, pollution and resources taxes). Of these, the revenues from energy taxes are the highest, followed by tax revenues from transport. The first accounts for roughly three quarters of the green tax revenues, while the latter for one-fifth of them in the European Union. The revenues from taxes imposed on pollution and resources account only for a fraction of green tax revenues. However, Hungary's green tax structure is also dominated by taxes on energy, while the revenues from pollution and resources taxes exceed the average, accounting for almost 10 per cent of green taxes as a result of the revenues from the charges on substances emitted into the air, water and soil. 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.

4.158 National expenditure on environmental protection as a percentage of GDP (2018)

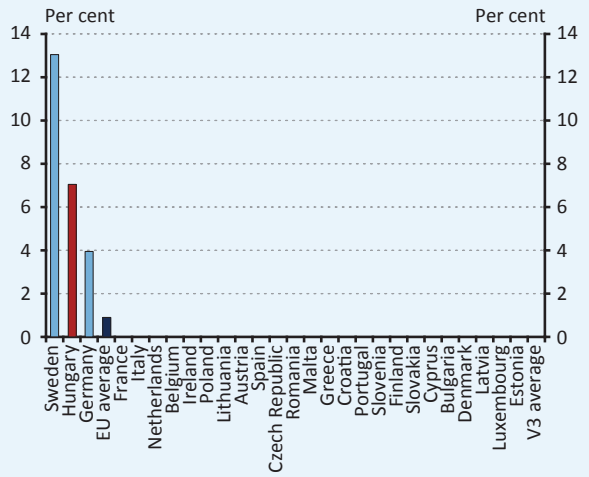


Note: There are no data available for the United Kingdom.

Source: Eurostat.

In terms of environmental expenditure, Hungary's expenditure is lower than the average of the Visegrád region and the EU average of around 2 per cent, and thus there is room for improvement in this indicator as well. In the EU, the corporate sector accounts for more than half of such expenditures, the government for a quarter of them, and households have the lowest environmental expenditure (around 20 per cent). The sectoral breakdown of these expenditures is similar in Hungary, while the other Visegrád countries have a slightly higher share of government spending on environmental protection. The data show that synergic cooperation between sectors is needed to mitigate the negative impacts of climate change.

4.159 Ratio of green government bonds issued (2020)



Note: Ratio of sovereign green bond issuances.
Source: Bloomberg.

Green bonds are the best-known green financial instruments. Although green bond issuances have been present since 2007, the first European government bond of this type was issued in 2016, with Poland being the first country to subscribe. In the following years, several European countries have issued similar instruments and since last year, Hungary has also become an issuer. In 2020, Hungary achieved a high issue share compared to the EU. 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. The MNB's commitment 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.

Albert Szent-Györgyi

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

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

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

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

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

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

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

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

COMPETITIVENESS REPORT

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