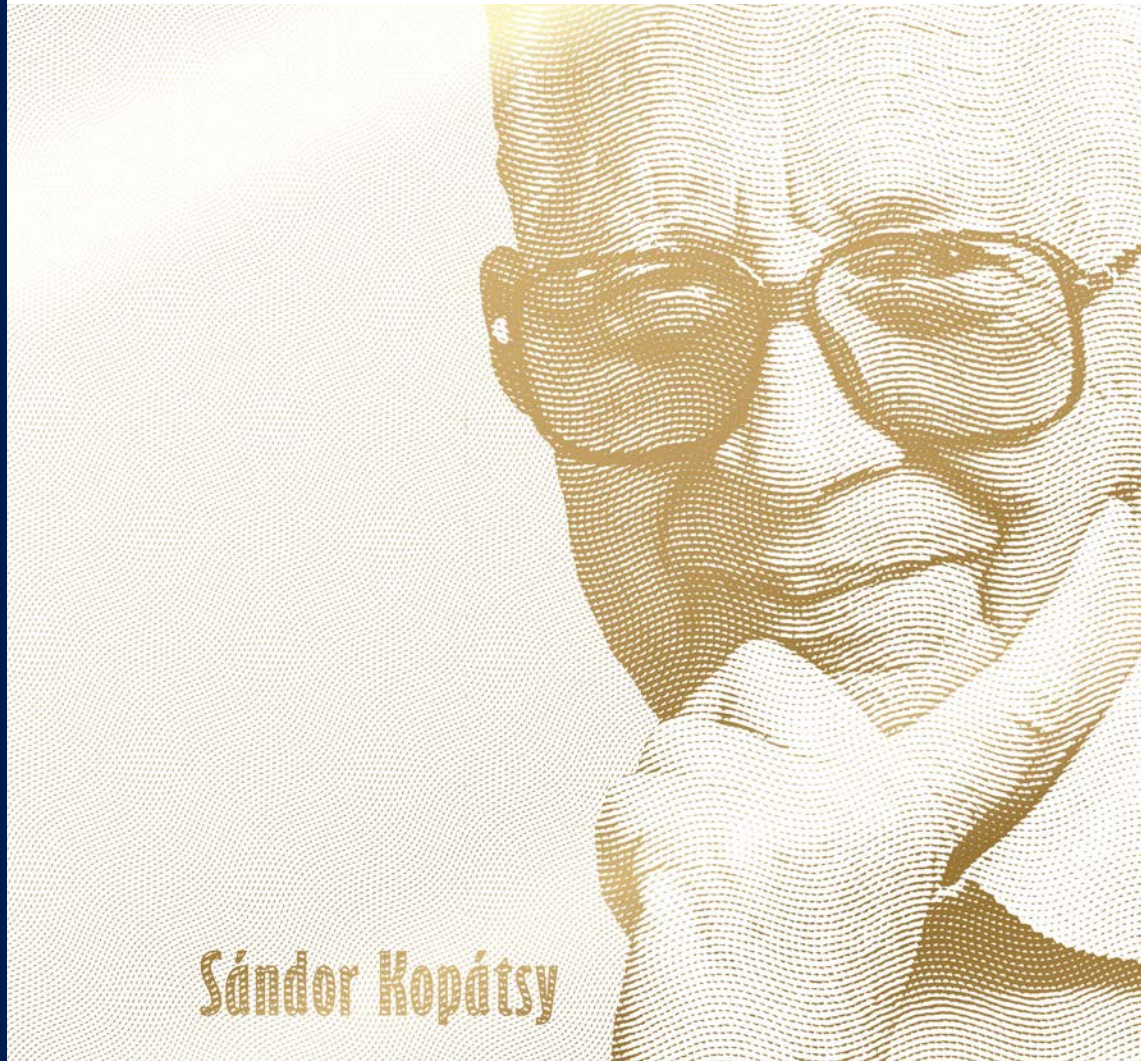




SUSTAINABILITY REPORT



Sándor Kopátsy

2021

'Nature, morality, knowledge, talent.

The value and efficiency of societies is expressed by the product of these four factors. This is the case already today, but it will be even more so in the future.'

Sándor Kopátsy



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Pursuant to Act CXXXIX of 2013 on the Magyar Nemzeti Bank, the primary objective of Hungary's central bank is to achieve and maintain price stability. Without prejudice to its primary objective, the MNB supports the maintenance of the stability of the system of financial intermediation, the enhancement of its resilience and its sustainable contribution to economic growth, as well as the economic policy of the Government using the instruments at its disposal.

The Sustainability Report supports the central bank in the fulfilment of its statutory duties. The Report serves this by assessing and making measurable the key factors of Hungary's long-term sustainable convergence and inclusive growth, which supports the formulation and implementation of reforms that ensure sustainable convergence. The Sustainability Report achieves this in a complex manner: in addition to the real economy factors it also examines whether, in an international comparison, financial, social and environmental resources are also utilised in a sustainable manner with a view to achieving successful convergence and social welfare.

The Sustainability Report was prepared under the general guidance of Gergely Baksay, Executive Director for Economic Analysis and Competitiveness. The Sustainability 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 Directorate for Digitalisation, the Directorate Financial Infrastructures, the Directorate Sustainable Finance and Supervisory Coordination, and the Directorate for Social Relations. The Sustainability Report is based on data available for the period ending on 19 March 2021. Until this date for a large part of the analysed indicators internationally comparable data were available only for 2019. Accordingly, the impacts of the coronavirus pandemic unfolding in 2020 are included in the data only partially.

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1 Executive Summary

The purpose of the Sustainability Report is to assess and make measurable the long-term sustainable key factors of Hungary's convergence, which are in the focus of central banks' traditional macroeconomic and financial analyses to a lesser degree despite the fact that they have a determinant role in the lasting fulfillment of economic and social welfare and successful convergence. The terms "sustainability" and "sustainable convergence" are not yet integral parts of (economic) political decision-making, economic thinking and everyday life in Hungary. This is why it is necessary to develop a framework that determines economic and social convergence in the 21st century, to quantify the results achieved and to make it suitable for providing feedback. In 2019, the MNB published the book entitled Long-term Sustainable Economy, with a view to identify the global trends and problems that determine our future the most. The Sustainability Report examines the status and prospects of Hungary's long-term success in the spirit of this publication.

The socio-economic model of a country may be deemed sustainable in the long run, if in addition to the real economy factors, its financial, social and environmental resources are also utilised in a sustainable manner to achieve successful convergence and social welfare. An essential element of sustainable development is the finding laid down in the 1987 report of the UN's World Commission on Environment and Development (Brundtland Commission), according to which the resources of the present should be utilised without compromising the ability of future generations to meet their own need, thereby ensuring the long-term welfare of the citizens of a country. Similarly to the analyses that analyse sustainability and sustainable development in an international comparison, this report also examines various dimensions, and in addition to numerical results it also contains the analysis, assessment and the cause and effect relations of those. Contrary to the central bank's publications on competitiveness, this report intends to estimate the long-term sustainability of the current national economy and social models rather than the performance achievable by individual countries in the medium run.

Relying on the 108 – practically solely objective – indicators of the Sustainability Report, the central bank has created the MNB Sustainability Index, where Hungary is ranked 15th among the 27 Member States of the European Union. In addition to textual evaluation, the developed framework also facilitates the quantification of the results and providing feedback based on objective diagnosis, where 108 factual indicators in four main areas are analysed and aggregated to different levels to facilitate transparent evaluation. For the ranking of the individual countries, the MNB created a composite index. In the Sustainability Index, which ranks the performance of EU countries in areas that determine sustainable convergence, Hungary is in the mid-range and based on the aggregation of the indicators used for the index it scored 51.8 points. This result is slightly better than the average of the V3 countries (51.1) and is below the EU average (53.9) only by 2.1 points.

Hungary performs the best (11th) in the field of environment, out of the 4 main dimensions of sustainability. In the area of environmental sustainability, Hungary performed better than the EU average in the indicators on energy production, energy use, air cleanness, use of natural resources and green finance. Hungary has the best ranking in the Green Finance sub-pillar (3rd), which is partly due to the fact that its issuance of green government bonds was the 2nd highest in the EU in 2020 as a percentage of all government bonds. It should be noted, however, that comparable data for the banking sector are not yet available, but qualitative surveys indicate a significant lag. Environmental sustainability is strengthened by Hungary's moderately polluting energy mix, but there is still a need to increase the share of renewable energy sources, improve energy efficiency and reduce net energy imports. Hungary has been able to reduce its greenhouse gas emissions over the EU average and its regional competitors over the past 30 years, but achieving an environmentally sustainable economy will only be feasible by further reducing air pollution, improving water management and increasing the ratio of irrigated land (through sustainable irrigation methods based on water conservation) and making land ecosystems more sustainable.

In the area of social sustainability (18th), Hungary's performance is slightly below the average of the other Visegrád countries and the EU countries. It is favourable that the state of public security in Hungary is among the best in the EU and that wealth and income inequality in Hungary is below the EU average. While employment and demographic trends

show a mixed picture and there is substantial room for growth in each area, Hungary is in the bottom quarter of the EU ranking in terms of housing and qualification of human capital. Although the unemployment rate is one of the lowest in Hungary in an EU comparison, the ratio of young people not in employment or education is above the EU and Visegrád averages. Hungary has exceeded the average of EU and Visegrád partner countries in real wage growth between 2017 and 2019, while the consumption-to-income ratio is lower than the EU average, supporting sustainable growth with a higher ratio of savings and investments. The decline in population is decelerated by rising fertility rates, but the childbearing years of women start later in Hungary as well, like in other Visegrád countries. In addition to substantially improving housing conditions, increasing the number of those with STEM (science, technology, engineering and mathematics) qualifications and digital competences to support changeover to a knowledge-intensive growth model and improving the health of the population also represent social challenge.

There is still major growth reserve for Hungary (ranked 21st) in the financial dimension of sustainability. In this pillar Hungary's performance lags behind the EU and the V3 average. Analysing the sub-pillars, Hungary performed better than the EU and regional competitors in the area of households' financial sustainability. Among other things, low debt-to-income ratio of households contributed to Hungary's performance over the average. The score of the banking sector, companies, public finances, digital financial services and electronic payment services is lower than the EU and Visegrád level. The banking sector's cost-to-assets ratio is the second highest in the EU, while return on equity of companies rose in recent years, but it is still lower than the EU average. The penetration of digital financial and payment services is a precondition for the banking sector to improve its efficiency and sustainability.

The sustainability of Hungary' economic growth (16th) exceeds the average performance of the other Visegrád countries, but slightly falls short of the EU average. Hungary's favourable position in sustainable economic growth is attributable to the dynamic GDP growth in recent years even by international standards and to the more favourable inflation trends than the EU average. Average growth of the economy (2.1 per cent) was the ninth highest in Hungary between 2010 and 2020 in the European Union, which exceeded the EU average (0.9 per cent), but slightly lagged behind the V3 average (2.3 per cent). The fact that Hungary had the second highest investment rate (27.2 per cent) in the European Union in 2019, contributed to successful economic growth. Between 2009 and 2019, the average growth in Hungarian labour productivity (0.5 per cent) was lower than that of the Visegrád competitors (2.1 per cent) and the EU average (1.1 per cent), but it is encouraging that in the period of 2017-2019 the average growth rate of the Hungarian indicator (3.5 per cent) already substantially exceeded the EU's productivity growth of 0.8 per cent. However, Hungary's gross domestic product per working hour is still merely two-thirds of the EU average, and in the Visegrád region it only exceeds the productivity of Slovakia. Accordingly, there is still plenty of room for growth. Improvement is also required in the broadening of business digitalisation and e-commerce activities, closely related to boosting productivity, as well as in increasing research, development and innovation activities and in the rise in the number of exporting companies. In recent years, the MNB has been extremely successful in meeting its inflation target, as Hungary's inflation has been steadily close to the target level since 2017.

2 Methodology and results of the MNB Sustainability Index

2.1 METHODOLOGY

The MNB's Sustainability Report assesses and ranks Hungary's sustainable convergence position in the European Union relying on a composite index created from 108 – almost solely objective – indicators. In the Sustainability Report the MNB identified the main areas that are key to sustainable development. In addition to textual evaluation, the framework developed by the central bank also facilitates the quantification of the results and providing feedback, in which 108 factual indicators in four main areas are analysed and aggregated at different levels to facilitate transparent evaluation. For the ranking of the performance of individual countries, the MNB created a composite index, relying on its self-developed methodology applicable to the Banking Sector Competitiveness Index¹. In proportion to their performance, countries are allocated scores of 0-100, with the best performing country scoring 100 points, while the score of other countries depend on how much they deviate from the optimal value of the best performing country. When calculating the score, only countries that are at least 4 standard deviations from the best score receive zero point². The main advantages of the methodology include that the data are not required to follow normal distribution, the optimal value of the indicator can be freely chosen, it is not necessary to rely on a fixed statistical indicator and the calculation of the score tracks the variance in the values of the countries included in the sample. The overall country score of the MNB Sustainability Index is the average of the 4 pillars that constitute the index, each weighted by 25 per cent, and within the individual pillars the sub-pillars were also included with identical weight. This ensures that in a top-down approach the distinct areas represent the same weight; however, to this end, the weights of the individual indicators may marginally vary. The EU averages in the MNB Sustainability Index are values calculated based on the arithmetical average of the 27 EU Member States. When presenting the components of the index in the form of cross-sectional charts, we also indicated the United Kingdom in the chart (with different colour than the other countries); however it is excluded from calculating the EU averages.

The Sustainability Index examines the factors that determine the long-term welfare of nations based on four pillars: environmental, social, financial and real economy considerations. The MNB Sustainability Report has defined these four main areas based on the UN conceptual framework for sustainable development. When developing the set of indicators in our report, we have taken into account the results of international sustainability rankings. Long-term sustainable welfare may only be achieved if policy-makers take into consideration environmental, social, financial and real economy aspects in an integrated way. Environmental considerations determine sustainability because only ensuring the reproduction of resources can guarantee the welfare of future generations, which requires reducing pollution and energy consumption. Strengthening the green economy – and particularly decreasing air pollution – also improves health of people. Sustainability can only be achieved with a sufficient volume and quality of human capital, coupled with public security, sufficient income and housing for a carefree subsistence and family life. Accordingly, we examine the social aspects. Maintaining economic competitiveness of Hungary in the long run requires accessible financial capital of sufficient volume and sound structure, the status of which is examined by the financial sustainability indicators. However, sustainable convergence is unfeasible without stable and persistently improving economic fundamentals, innovative and modern economic structure; accordingly, as the fourth main area, we also analyse the sustainability of economic growth in the MNB Sustainability Index.

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

² If an indicator in the sample has an outlier optimum value from which the majority of countries are more than 4 standard deviations away, the best performing country automatically gets 100 points. Following this the calculation of the scores continues as presented above, using the best value of the next country in the order as benchmark to ensure that the results are measurable.

In the environmental sustainability pillar we examine environmentally friendly and efficient energy consumption as well as the state of the green and circular economy. We assess the area in six sub-pillars, based on 24 indicators. Energy production is presented based on the structure of energy supply and the import share of the produced energy, while energy consumption is approached through the volume and price of the energy consumed. The maturity level of the green economy and environmental protection is assessed in terms of air cleanness and the utilisation of natural resources, in particular greenhouse gas emissions, the sustainability of land ecosystems and waste management, as well as water management and water purity. A carbon neutral economy requires a significant volume of green investment, which can be sourced from revenues from environmental taxes, green corporate and government bonds, and direct public expenditure. Accordingly, we also quantify the changes in these factors.

In the social sustainability pillar we assess, in addition to the volume and quality of labour force available in the long run, the conditions for safe and sustainable family life. We examine the area in eight sub-pillars, based on 32 indicators. Successful convergence is unfeasible with a declining population, therefore we examine the demographic indicators relevant for the demographic turnaround, such as fertility rates and average age of women at childbirth. In addition to a family-friendly society, full employment is also necessary for convergence and for maintaining the welfare achieved. Accordingly, we analyse changes in employment and unemployment. It is not only the volume, but also the quality of labour force that are key to a sustainable economic model. Accordingly, we assess the qualification of the population based on, among other things, the ratio of STEM graduates and participants in lifelong learning along with the health status based on the number of healthy years of life and the ratio of unsatisfied healthcare needs. Considering the complexity of social welfare, we also focus on the sustainability of income and wealth position of citizens. Accordingly, we examine changes in real wages and consumption, housing conditions based on the price and quality of property, the income and wealth inequalities, which also determine social opportunities, and the state of public security.

In the financial sustainability pillar, we examine the long-term sustainable financial situation of the financial intermediary system, the general government, the national economy as well as of corporations and households along with the penetration of digital financial solutions. We assess the area in seven sub-pillars, based on 29 indicators. Long-term maintenance of welfare also calls for financial stability, easily accessible, diversified and cheap funds as well as financial solutions that keep pace with technology. We assess the cost efficiency of the banking sector based on the cost-to-assets and cost-to-income ratio. We examine the financial situation of households and corporations based on the outstanding borrowing to GDP ratio, and in the case of households and companies by assessing the net financial wealth and return on equity, respectively. Macro-financial stability, which guarantees welfare, calls for balanced general government and national economy finances, measured by – among others – the public debt-to-GDP ratio, the maturity of the public debt and net external debt of Hungary as a percentage of GDP. Technological progress also pervades finances, which is of key importance with a view to reducing the physical and cost burdens of access. We examine the sustainability of digital financial solutions and the penetration of electronic payment services based on the ratio of customers using online financial services and changes in payments by bankcard, respectively.

Sustainable growth is essential for the convergence of our development and living standards, which calls for – in addition to macroeconomic balance – a more productive, innovative and digitised economic system. We examine the area in six sub-pillars, based on 23 indicators. Solid macroeconomic fundamentals serve as precondition for a sustainable economic model. Accordingly, we also assess economic growth and inflation developments. Sustainable convergence requires an increase in labour productivity, which is conditional upon technology-intensive investments. Accordingly, in addition to the changes in the investment ratio, we also analyse economic value added per hour worked and the change in labour productivity of SMEs. Productivity growth is strongly related to the strengthening of the research-development and innovation ecosystem, which is assessed based on the status of R&D expenditures and patent activity as well as the application of digital solutions. The development of a sustainable economic model also necessitates structural reform of the economy, i.e. a growth in value added within production and high economic complexity. Accordingly, this report also touches upon these considerations. The MNB Sustainability Report is also unique in the sense that in several cases it presents the changes in macroeconomic variables based on multi annual averages and changes in the indicator over time.

2.2 INTERNATIONAL SUSTAINABILITY RANKINGS

The purpose of the UN's Sustainable Development Report (SDR) is primarily to measure social and environmental sustainability along sustainable development goals defined by the institution. The UN Member States signed an agreement in 2015, where they committed to achieving 17 sustainable development goals (SDG) by 2030. The report ranks countries according to the extent to which they have realised the goals. The closer a country is to the target, the higher it scores on a 0-100 point scale. Goals include, among other things, the elimination of poverty and hunger, reduction of inequalities, climate protection, strong institutional system, decent work and economic growth. In the 2020 ranking, aggregating 115 indicators, Hungary scored 77.3 points and was ranked 29th among 166 countries. Of the Visegrád countries, the Czech Republic is ranked 8th, Poland 23rd and Slovakia 27th in the global ranking.

The Solability Global Sustainable Competitiveness Index (GSCI) is a comprehensive competitiveness ranking, which ranks countries focusing on sustainability, departing from the traditional methodology. Solability, a Swiss-Korean think tank, has been publishing its competitiveness ranking since 2012, using 127 indicators across 5 pillars (natural capital, social capital, intellectual capital, governance efficiency, resource efficiency), more than 90 per cent of which are objective indicators. The organisation's ranking, which is based on more than 90 per cent objective indicators, differs from the methodology generally used to calculate scores, because it takes into consideration not only the deviation from the country considered to be the best. The least and most optimal countries (5-5 per cent each) are automatically scored 0 and 100, while the scores of the other countries vary depending on their distance from the extreme values. In the 2020 ranking, Hungary was ranked 24th out of 180 countries with 52.9 points, while of the Visegrád countries the Czech Republic, Slovakia and Poland were ranked 19th, 21st and 26th, respectively.

The Sustainable Society Index (SSI) of the Cologne University of Applied Sciences assesses the sustainability of countries in the human, environmental and economic wellbeing dimensions. The index, produced by the German higher education institution, assesses a total of 21 indicators across 9 pillars in 3 different dimensions. A different approach is used in the methodology in several respects: firstly, the indicators are scored using more than one scoring method, and secondly, the scale is 0-10 points instead of 0-100 points. The presentation of the results is special, because the Cologne-based institute publishes aggregated scores along the three dimensions, and lets users decide on the weights to construct the composite index. Weighting the human, environmental and economic dimensions equally, Hungary is ranked 22nd in the 2018 ranking. Of the Visegrád countries, the Czech Republic ranked 9th, Slovakia 12th and Poland 25th out of 154 countries.

The Planetary-pressures adjusted Human Development Index (PHDI) aims to provide a global ranking with a relatively narrow set of indicators that take into account the impact of human pressure on the planet. The revised version of the Human Development Index (HDI), developed by the UN, adds two new indicators – i.e. carbon dioxide emission per person and material footprint per capita – to the original four (life expectancy at birth, expected years of schooling and mean years of schooling, GNI per capita) indicators. The ranking based on PHDI shows a significant difference compared to the HDI, with Hungary ranking 16th out of 169 countries in PHDI, while it is 40th out of 189 countries in the traditional HDI. Of the countries in the region, the Czech Republic was ranked 30th, Poland 38th and Slovakia 57th in the adjusted HDI ranking.

Table 1
Main sustainability indicators and structural features of the MNB's new Sustainability Index

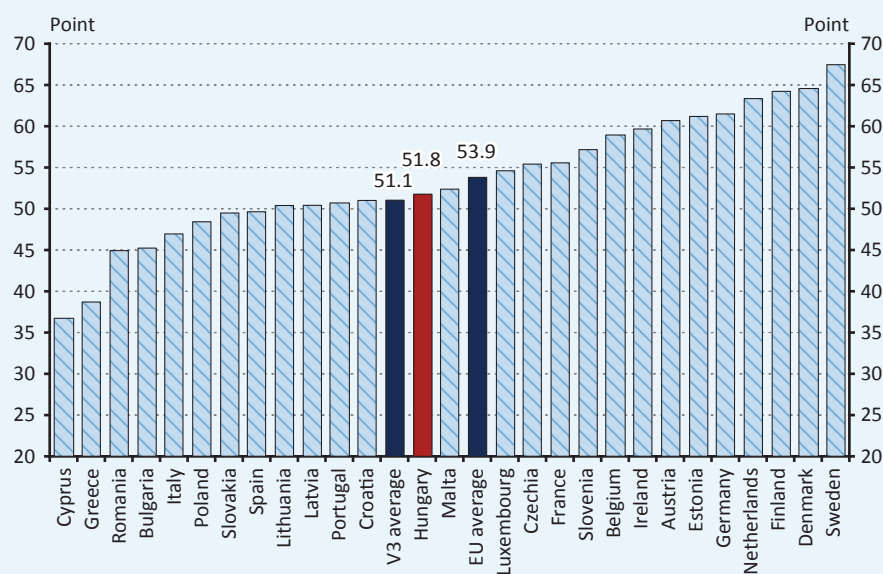
	Sustainable Development Goal Index	Global Sustainable Competitiveness Index	Sustainable Society Index	Planetary pressures-adjusted HDI (PHDI)	MNB Sustainability Index
Ranking of Hungary	29.	24.	22.	16.	15.
Number of countries assessed	166	180	154	169	27
Number of indicators	115	127	21	6	108
Ratio of objective indicators	92%	>90%	95%	100%	98%
Comprehensive	✓	✓	✗	✗	✓
Global	✓	✓	✓	✓	✗*
Objective	✓	✓	✓	✓	✓

Note: The MNB's Sustainability Report is a national, not an international report, so it is not intended to be global.

2.3 RESULTS OF THE MNB SUSTAINABILITY INDEX

In the MNB Sustainability Index Hungary is ranked 15th among the 27 Member States of the European Union. (Chart 2.1). Based on the aggregation of the indicators used for the index, Hungary scored 51.8 points, which was slightly higher than the average of the V3 countries (51.1) and only 2.1 points below the EU average (53.9). Sweden, Denmark and Finland scored highest in the Sustainability Index, while Cyprus, Greece and Romania scored lowest. Of the V3 countries, only the Czech Republic (12th) scored above the EU average, with Slovakia and Poland lagged behind, ranking 21st and 22nd, respectively. Eight of the top ten places in the sustainability ranking were taken by developed European countries, but two converging countries (Estonia, Slovenia) managed to catch up to the leader countries. Meanwhile, Mediterranean countries and Central and Eastern European countries tended to be in the middle or at the bottom of the ranking.

Chart 2.1
Aggregated results of the MNB Sustainability Index
(2021)

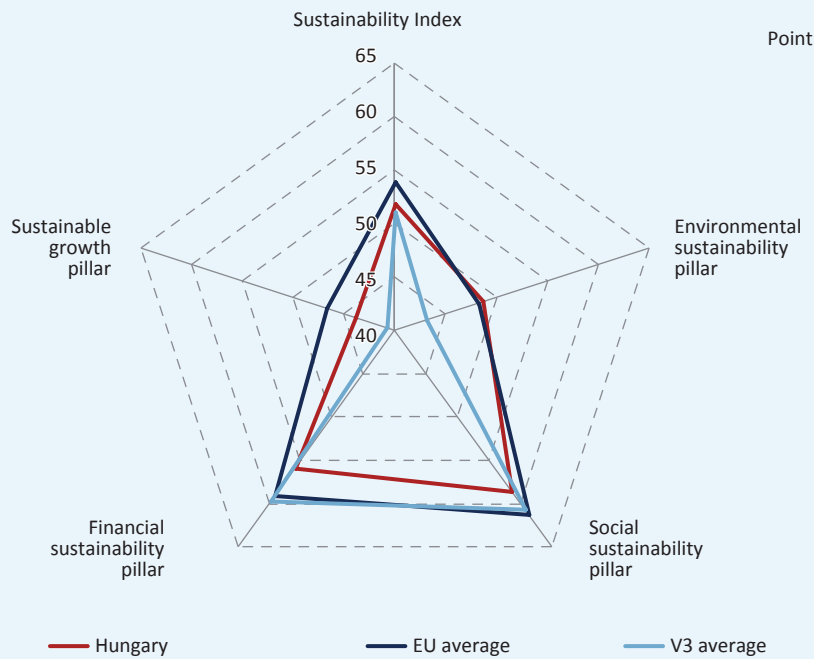


Note: The scale range is 0-100 points, with 100 being the best value.

Source: MNB.

Among the four pillars, Hungary scored higher than the EU and Visegrád averages in the Environmental Sustainability pillar. (Chart 2.2). In the *Environmental Sustainability* (48.7) pillar, all three countries of the region ranked behind Hungary. In the *Sustainable Growth* pillar (43.9), the Czech Republic is the only Visegrád country to outperform Hungary, while Hungary’s performance (40.7) is better than of the V3 countries, but below the EU average (46.7). In the *Financial Sustainability* (55.9) and *Social Sustainability* (58.7) pillars, Hungary scored below the average of the European Union and the Visegrád countries. Compared to the Visegrád countries, the Czech Republic, Slovakia and Poland also ranked ahead of Hungary in the *Financial Sustainability* pillar, while the Czech Republic and Slovakia ranked higher in the *Social Sustainability* pillar.

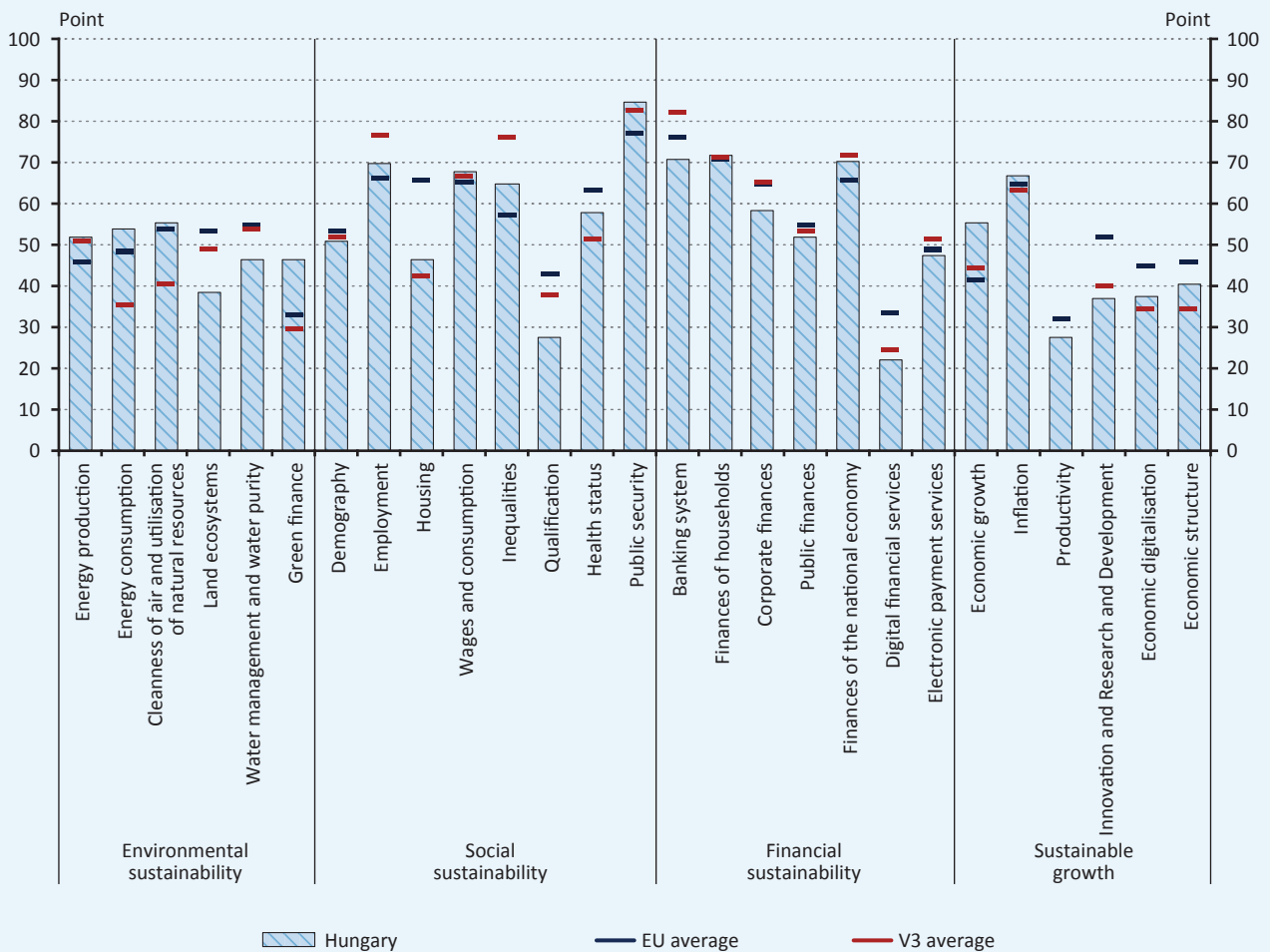
Chart 2.2
Results of the MNB Sustainability Index and its 4 pillars
 (2021)



Note: The scale range is 0-100 points, with 100 being the best value.
 Source: MNB.

Out of the 27 sub-pillars of the MNB Sustainability Index, Hungary’s performance in 9 sub-pillars was above the EU and V3 average, in 7 sub-pillars it was average, while in 11 sub-pillars it needs to improve to reach the average (Chart 2.3). In assessing relative performance in the sub-pillars, the MNB analysed at how a country’s score in the sub-pillar compares with the EU and V3 averages. Hungary finished ahead of Poland and Slovakia based on its relative performance, but was not able to outperform the Czech Republic. Of the 27 sub-pillars examined, the latter performed above average in 13, average in 9 and below average in 5. Sweden, with the highest score in the Sustainability Index, also ranked among the top performers in the EU in relative terms, with 19 out of 27 sub-pillars above average, 4 sub-pillars average and 4 sub-pillars below average.

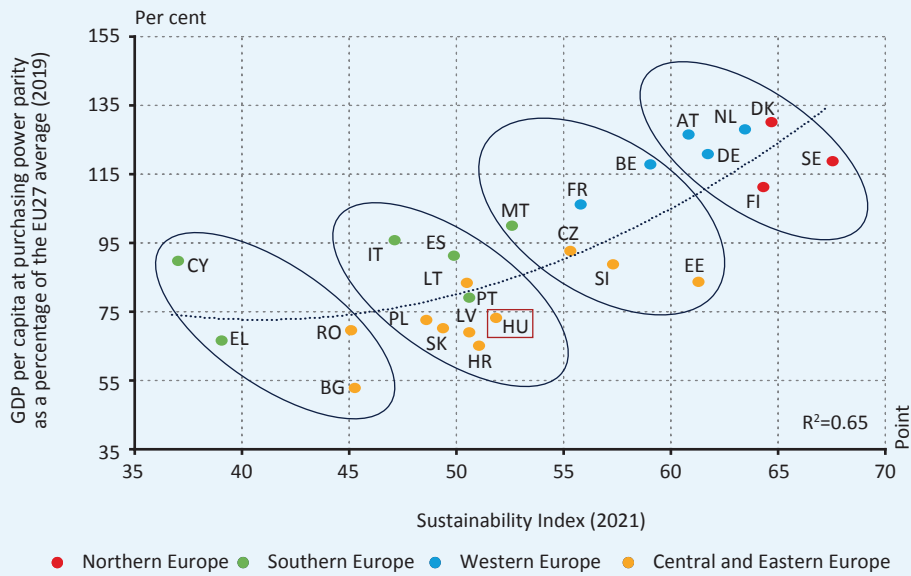
Chart 2.3
Results of the MNB Sustainability Index by sub-pillars
 (2021)



Note: The scale range is 0-100 points, with 100 being the best value.
 Source: MNB.

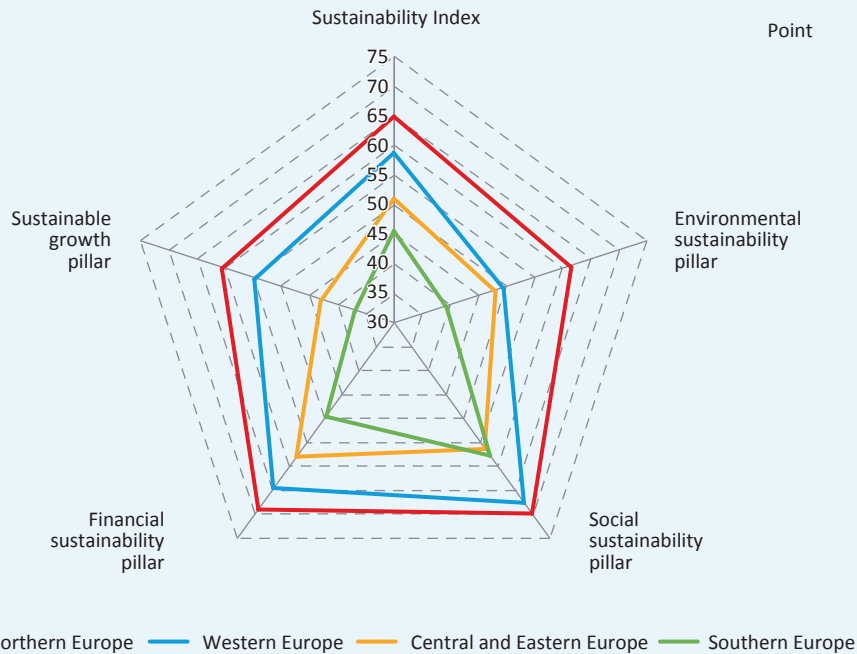
There is a relatively strong correlation between the relative development of countries and the values of the MNB Sustainability Index (Chart 2.4). Based on the correlation identified between the relative development indices compared to the EU27 and the MNB Sustainability Index there are four distinct groups. Leaders group include the developed countries (Sweden, Denmark, Finland, the Netherlands, Germany, Austria) that also outperform other countries in terms of development and sustainability score. In addition to the developed countries (Belgium, France, Malta), countries such as Estonia, Slovenia and regional competitor of Hungary, the Czech Republic, were also able to join the group of follower countries. The group of emerging countries is the largest in number, including Hungary, Slovakia and Poland from our region. Based on its score in the Sustainability Index, Hungary would be able to join the group of follower countries, had its relative development level been higher. To achieve this, it is necessary to implement as many as possible of the MNB’s recommendations to improve competitiveness. The group of countries lagging behind, comprising of Cyprus, Greece, Romania and Bulgaria, is significantly behind Europe both in terms of relative development and Sustainability Index scores.

Chart 2.4
The relationship between the MNB Sustainability Index and economic development
 (2021)



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

Chart 2.5
Main results of the MNB Sustainability Index by country groups
 (2021)

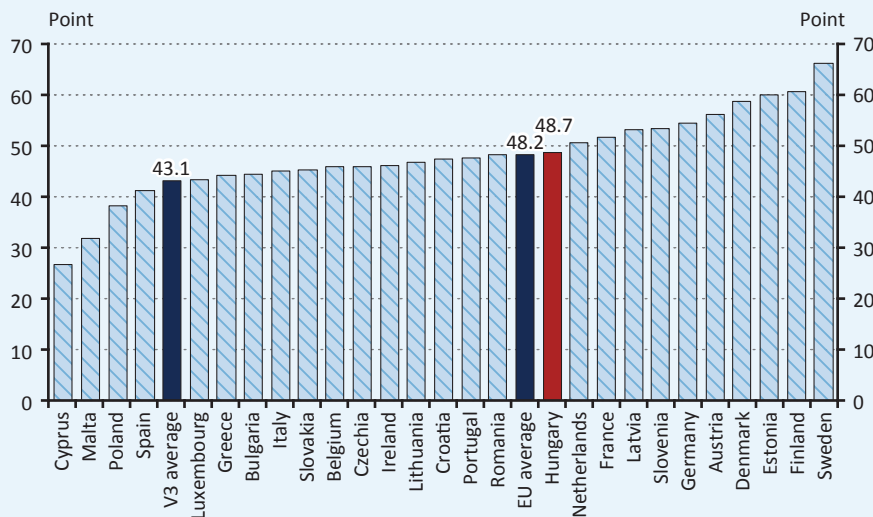


Note: The scale range is 0-100 points, with 100 being the best value.
 Source: MNB.

3 Environmental sustainability

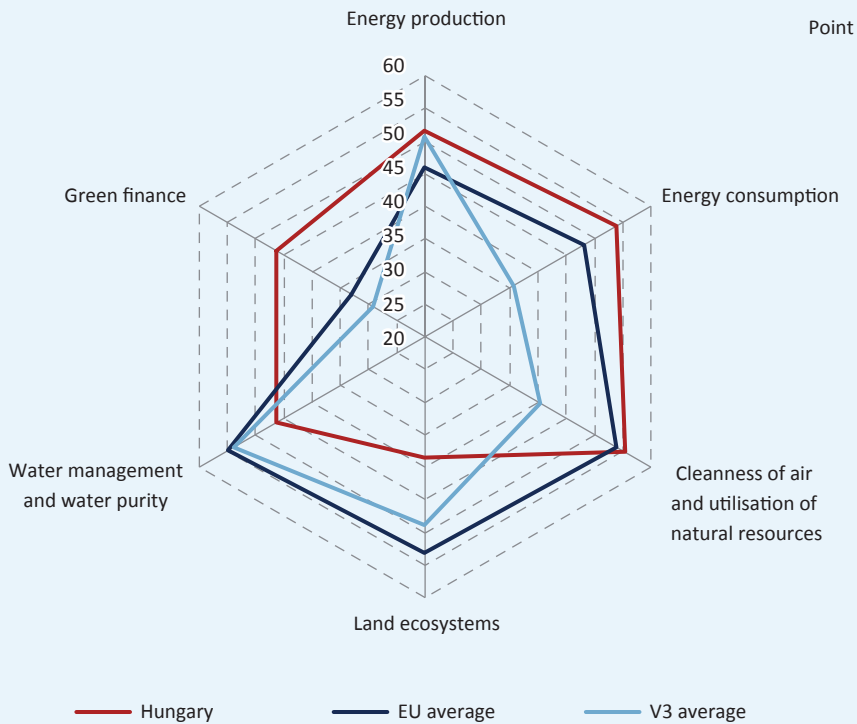
In the environmental sustainability pillar, Hungary scored 48.7 points, ranking 11th in the European Union. Hungary's score in this area was higher than the average of the EU countries (48.2) and the average of the Visegrád countries (43.1). Sweden, Finland and Estonia scored highest in this area, while Cyprus, Malta and Poland scored lowest. In the area of environmental sustainability, the largest difference between the countries observed was nearly 40 points. In eight of the sub-pillars of the Sustainability Index, Hungary scored above the regional and European averages, four of which were in the area of environmental sustainability. Hungary was also able to perform above average in the *Energy Production*, *Energy Use*, *Cleanness of air and utilisation of natural resources* and *Green Finance* sub-pillars. Of the four pillars, Hungary ranked highest in *Green Finance* (3rd).

Chart 3.1
Aggregated results of the environmental sustainability pillar
 (2021)



Note: The scale range is 0-100 points, with 100 being the best value.
 Source: MNB.

Chart 3.2
Results of the environmental sustainability pillar by sub-pillars
(2021)



Note: The scale range is 0-100 points, with 100 being the best value.
Source: MNB.

3.1 ENERGY PRODUCTION

The sustainability of energy production is determined by a country's energy mix, i.e. the structure of its energy supply. A country's energy mix is sustainable if at least half of its total energy use comes from environmentally friendly energy sources. Renewable and nuclear energy are considered environmentally friendly energy sources, as their production does not directly emit greenhouse gases.

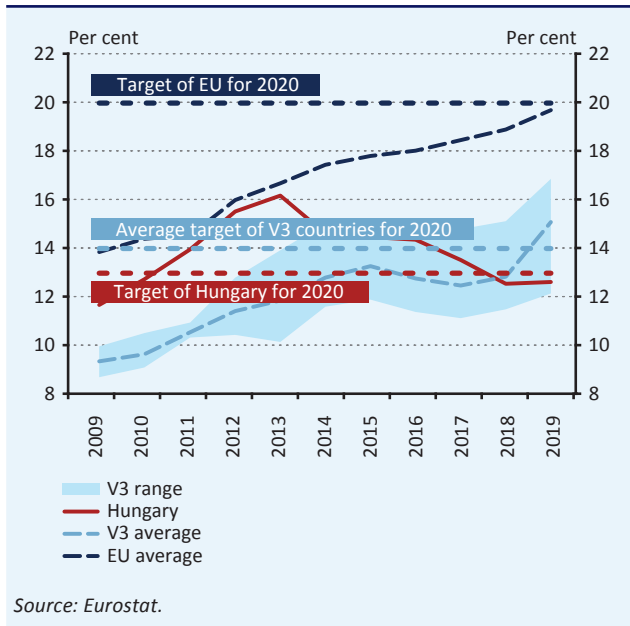
The share of renewables in total energy use in Hungary is lower than the EU and Visegrád averages. Between 2010 and 2017, Hungary has already met the target (13 per cent) set for 2020, but in 2018 the use of renewable energy sources fell below the target. From 2013, the price of natural gas for households fell below the average of the Visegrád competitors and then below the EU average, due to a series of regulated energy price cuts. This led to an increase in household use of natural gas for heating and a reduction in the use of firewood, which is regarded as renewable biomass but is highly polluting and of low-efficiency. In 2019, the multi-year decline in the share of renewables in the energy mix halted due to a steady increase in installed solar capacity. The installed solar capacity has increased from 35 MW in 2013 to 1,400 MW by 2019 and close to 2,000 MW in 2020. The National Energy and Climate Strategy announced in early 2020 and the Climate and Environmental Protection Action Plan aim to increase this to 6,000 MW by 2030. In addition to solar energy, Hungary's renewable energy policy is based on the use of non-firewood biomass and geothermal energy, and the increase in capacity could be reflected in the value of the indicator over time. The Hungarian energy policy would increase the share of renewable energy to 21 per cent by 2030, which is, however, the fourth lowest target in the EU.

Besides renewables, nuclear energy is another environmentally friendly energy source, which provides a high degree of energy independence. EU Member States can be divided into two groups: some countries do not use nuclear energy at all (e.g. Italy, Austria), while for others (e.g. France, Slovakia) nuclear energy serves as a cornerstone of their energy mix. Hungary belongs to the latter group, with the Paks Nuclear Power Plant accounting for about half of gross electricity generation. The Paks2 project aims to maintain and even expand the installed nuclear capacity of around 2,000 MW after 2035, when the current blocks will exhaust.

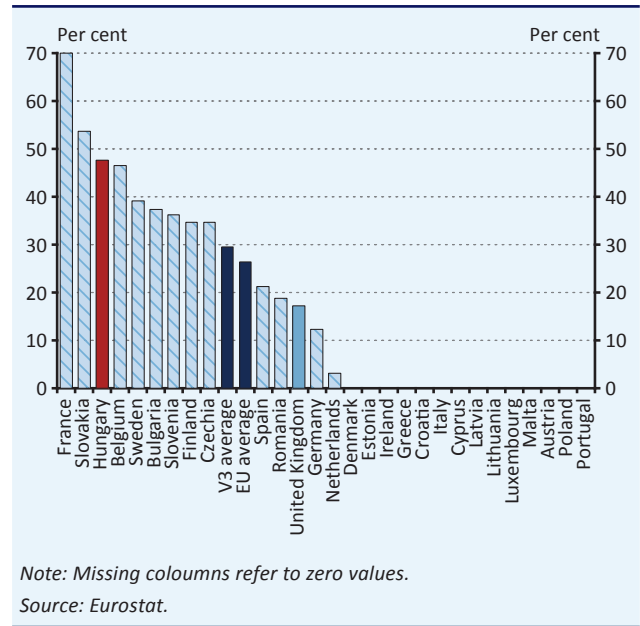
In 2019, the government spent around 0.2 per cent of Hungary's GDP on the financial funding of fossil fuels, either directly or through tax subsidies. This is lower than the EU average (0.29 per cent) and the V3 average (0.22 per cent). Lower levels of support provide greater incentives to reduce energy use and turn to less polluting energy sources.

Net energy imports measure energy dependence of a country as a proportion of total energy use. Hungarian energy import was around 60 per cent on average between 2009 and 2019, rising close to 70 per cent in 2019 as secondary gas reserves increased. The central bank's Competitiveness Programme aims to reduce Hungary's net energy import below 50 per cent by 2030, through reducing energy dependence and to strengthen domestic energy security, which is strongly supported by increasing renewable energy sources and the construction of Paks2.

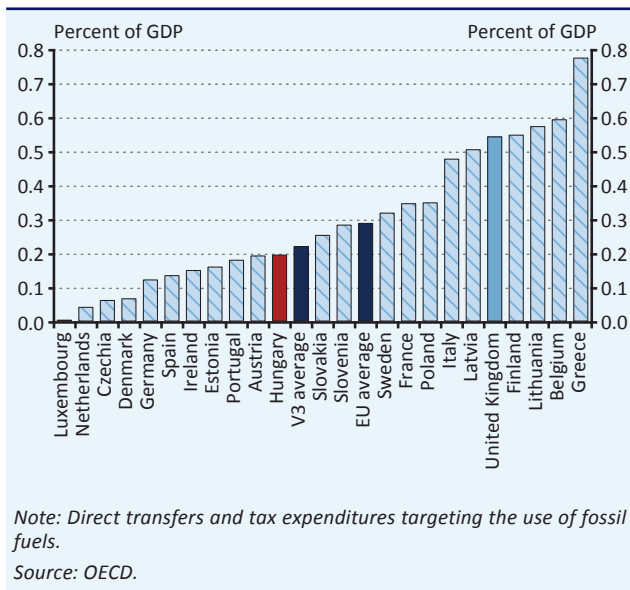
3.1.1 Share of renewable energy sources in total energy consumption



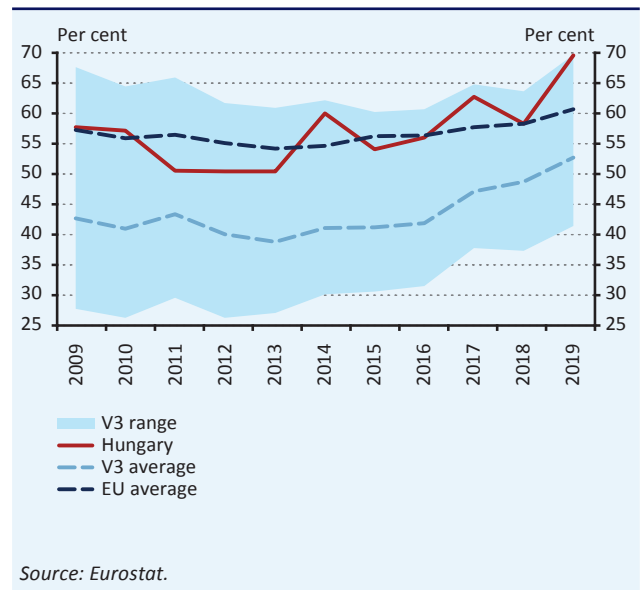
3.1.2 Share of nuclear energy in the gross electricity production (2019)



3.1.3 Financial support for fossil fuels (2019)



3.1.4 Net energy import as a share of total energy demand



3.2 ENERGY CONSUMPTION

In the long term, an economy can become sustainable if less energy is used per unit of output and if economic development and welfare are not linked to increasing energy demand. The cheapest energy is unused energy, while keeping the price of used energy low in international comparison supports the competitiveness of corporations and growth in disposable income of households.

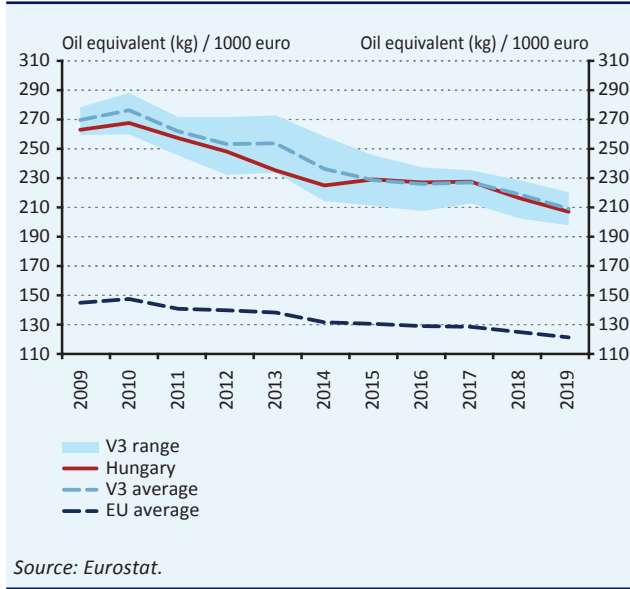
The energy intensity of an economy shows how much energy consumption per unit of economic output is required. This indicator can be used to characterise the energy efficiency of a country. Energy intensity in Hungary – which is similar to the Visegrád competitors – was 1.7 times higher than the EU average in 2019, although Hungarian energy intensity fell by more than 20 per cent compared to the beginning of the decade. Calculated at purchasing power parity, the energy efficiency gap between Hungary and the European Union is also smaller (12 per cent). Still, this indicator also shows that the domestic economy is more energy-intensive than the EU average. Modernisation of buildings and business operations in terms of energy efficiency and raising consumer awareness could reduce the volume of energy used to create value in Hungary. Lower energy intensity is cheaper for the operation of the economy and provides more environment-friendly conditions for successful convergence over the long term.

Besides energy demand per unit of value-added, we also examine the relationship between energy use of households and economic development in the EU Member States. Energy consumption per thousand people in Hungary is slightly high compared to its economic development. The Hungarian surplus is the 11th highest in the EU, which is lower than the V3 average but higher than the EU average.

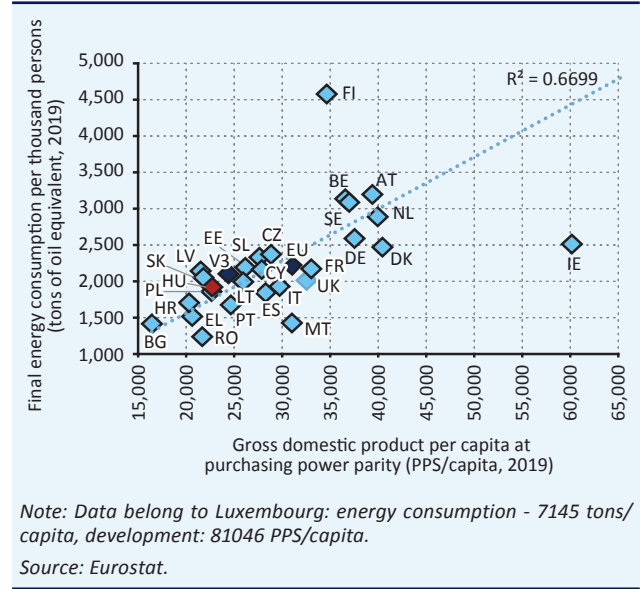
Retail electricity and natural gas prices in Hungary have become competitive compared to the EU countries, due to the administrative price cuts (utility tariff cuts) implemented in several steps between 2011 and 2014. As a result, in the first half of 2020, retail gas prices and retail electricity prices were the 4th and 7th lowest, respectively, in the EU, at purchasing power parity. A modelled household with two wage-earners in Hungary spent 3 per cent of its income on energy at the beginning of 2021, which is in the middle range of the EU.

Average electricity and gas prices charged to industrial consumers exceeded the EU average by 30 per cent and 37 per cent, respectively, in 2019. Low retail electricity prices increase the consumption of other goods or the level of savings, while moderate industrial electricity prices help to keep fixed costs of companies low, thereby strengthen the competitiveness of the economy. Keeping the price of natural gas low is important to ensure that the use of more polluting solid fossil fuels than gas, firewood and waste for energy purposes is permanently reduced during the transition to green energy. This would also make economic growth more environmentally sustainable as soon as possible.

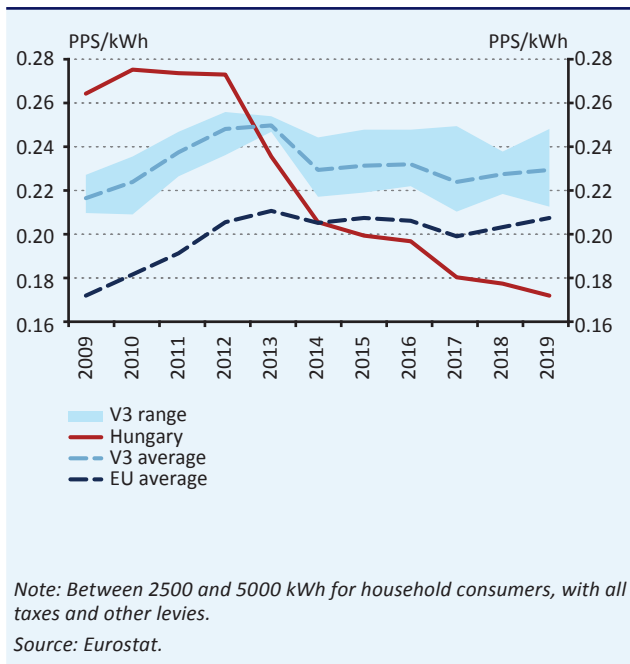
3.2.1 Energy intensity of the economy



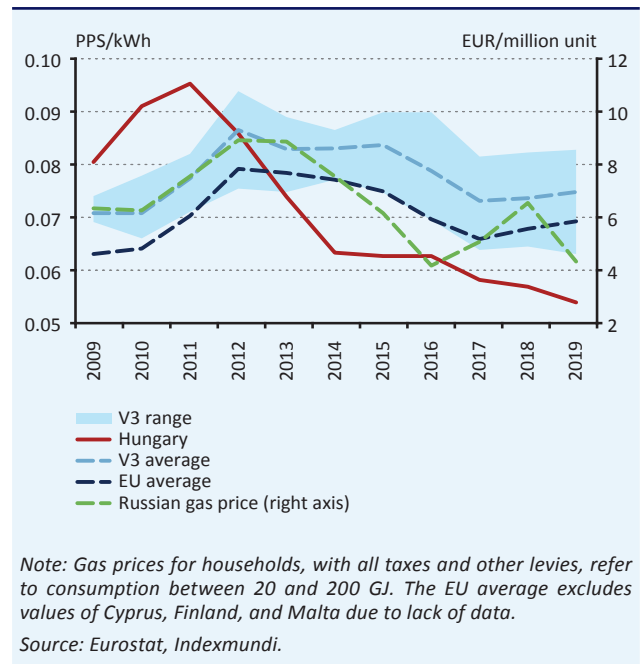
3.2.2 Final energy consumption per thousand people and the economic development per capita based on purchasing power standard (2019)



3.2.3 Electricity price for households



3.2.4 Gas price for households



3.3 CLEANNES OF AIR AND UTILISATION OF NATURAL RESOURCES

The ecological sustainability of our planet and the countries of the world can only be ensured if the protection of the available natural resources is treated as a priority; also the use and consumption of those is balanced. Ensuring that our natural resources are available for future generations is key to the sustainable convergence of our economy and society. In addition, protecting our environment also has many short-term benefits, such as reducing illnesses from air pollution, which in addition to the health dimension also affects the competitiveness of the Hungarian economy.

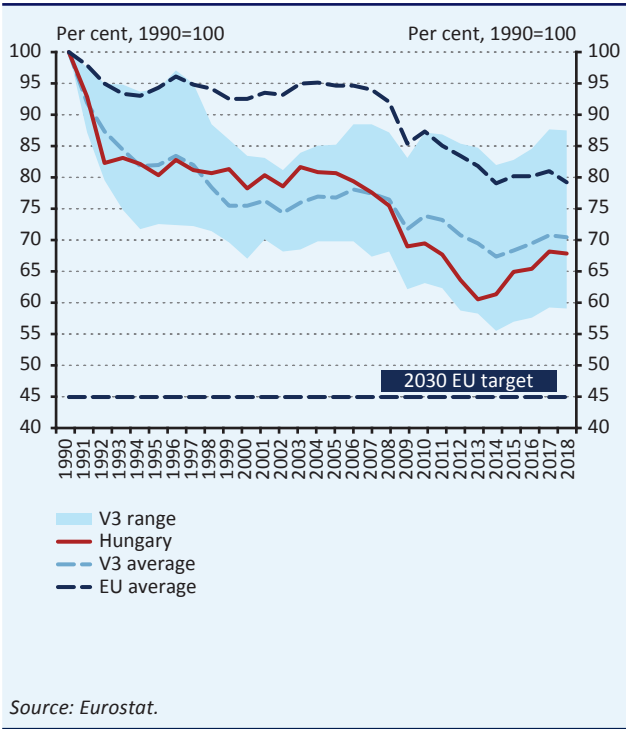
Reducing greenhouse gas (GHG) emissions is key to achieving environmental sustainability. Recognising this, Hungary, together with other EU Member States, has committed to reducing its GHG emissions by at least 55 per cent by 2030, compared to the 1990 base level. The European Green Deal (2019), also signed by Hungary, set a target of complete climate neutrality (zero emission) by 2050. In Hungary, GHG emission fell by more than 32 per cent since 1990, mainly due to the structural transformation of heavy industry, the modernisation of residential buildings and the declining use of fossil fuels. As a result, Hungary's emission is significantly lower than the EU average. However, to meet the 2030 climate targets and achieve total climate neutrality by 2050, the EU will need to accelerate the implementation of greening measures significantly.

Carbon dioxide emission per a unit of product produced is a good indicator of ecological efficiency. The lower this indicator is, the more efficiently a unit of GDP can be produced, i.e. accompanied by less carbon dioxide emission. Around the system change of 1989 and the millennium, the carbon-intensity of the Hungarian economy was above the EU average, but significantly lower than the average of the V3 countries. This may be explained by differences in economic structure, as in the former socialist countries the weight of industry with higher emission was greater than in the other EU countries. The current carbon-intensity of Hungary is already around the EU average and remains below the V3 level. Hungary is the 6th lowest emitter in the EU in terms of carbon dioxide emissions per capita.

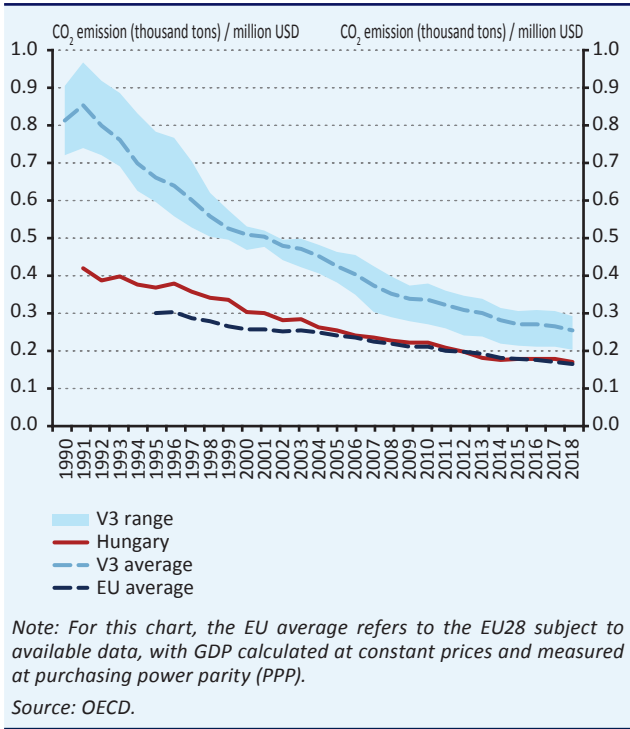
The ecological balance shows how much of the natural resources available in a country (biocapacity) is used (ecological footprint). Countries which consumption exceeds their biocapacity are in ecological deficit. Over the last 50 years, Hungary, like most countries on the planet, has constantly exceeded the capacities of the land at its disposal, i.e. the country suffers from an ecological deficit. According to the latest (2018) available data, only four countries in the EU have achieved ecological surplus. Hungary's ecological deficit is lower than the EU and V3 average.

Protecting our environment is also important for our own health. The exposure of the population to air pollution in Hungary is above the EU average but below the V3 average. Currently, Hungary has the 10th highest average concentration ratio of air pollutants, which are smaller than 2.5 microns, per cubic metre (16 micrograms / cubic metre). These small pollutants are no longer cleared from the lungs after inhalation, and thus long-term exposure to them poses a serious and persistent health risk.

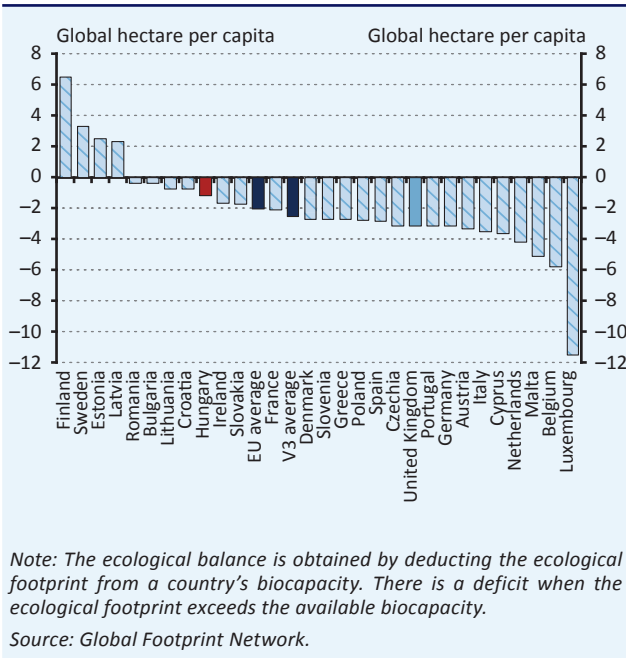
3.3.1 Greenhouse gas emissions compared to its level in 1990



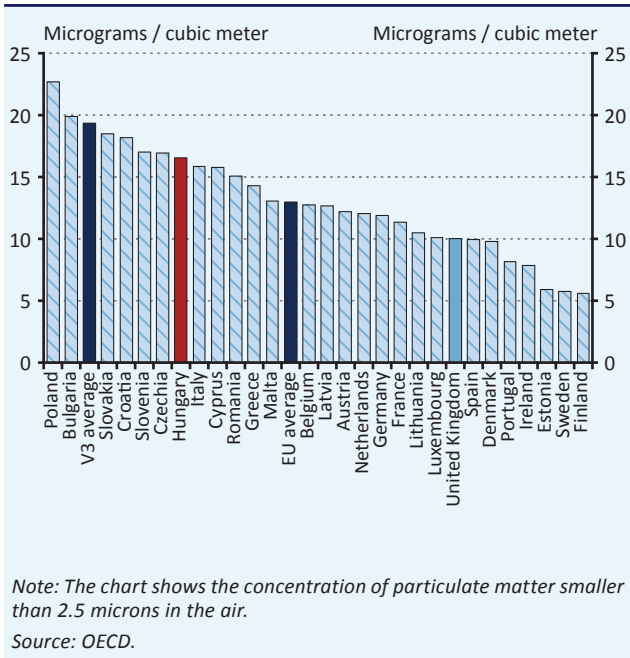
3.3.2 CO2 emission per unit of product produced



3.3.3 Ecological balance (2017)



3.3.4 Exposure of the population to air pollution (2019)



3.4 LAND ECOSYSTEMS

Protecting our land ecosystems is essential to ensure long-term access to sufficient and sustainable food, to preserve the planet's biodiversity and to tackle the challenges of climate change (e.g. global warming, desertification). This can be achieved through measures that reduce the amount of waste produced and dumped on the surface of soil, increase recycling rates and extend the proportion of land under organic farming and afforested areas.

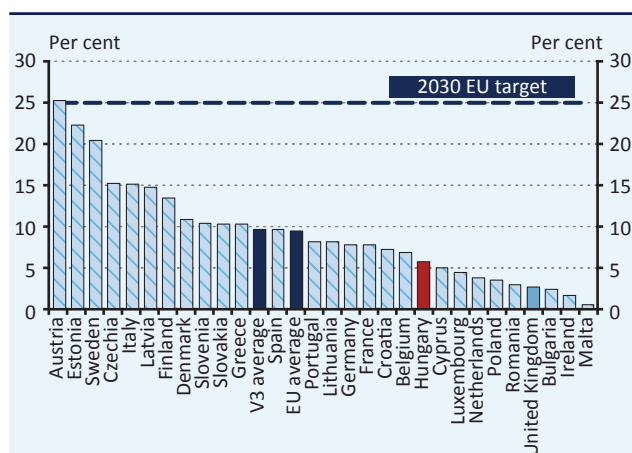
In 2019, there were around 160 million hectares of agricultural land in the EU, which is almost 40 per cent of the total territory of the EU. Of this, only 9.4 per cent is under organic farming. Organic farmers avoid the use of synthetic chemicals such as fertilisers and pesticides. Hungary has the 10th smallest organic area within its agricultural area (5.7 per cent) in the EU. Austria was the only country that reached the EU target of 25 per cent in 2019, set for 2030.

Forests play an essential role in mitigating climate change by absorbing and storing large volumes of carbon, 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 dregs that flows into rivers and lakes. The size of Hungary's forests and other wooded lands is 26 per cent of the country's total area, being the 6th smallest in the EU. The proportion of wooded land in the V3 roughly corresponds to the EU average of 40 per cent. Finland, Sweden and Slovenia have the largest wooded areas as percentage of their territory.

One of the most damaging ways to manage the volume of waste produced by individual economies is to dispose it on the surface or in the soil. Fortunately, the proportion of waste managed in this way shows a declining trend across the EU over the past 15 years. However, in Hungary and the V3 countries, on average, around half of all waste is still managed this way, while in the EU only one third of waste is managed in this form.

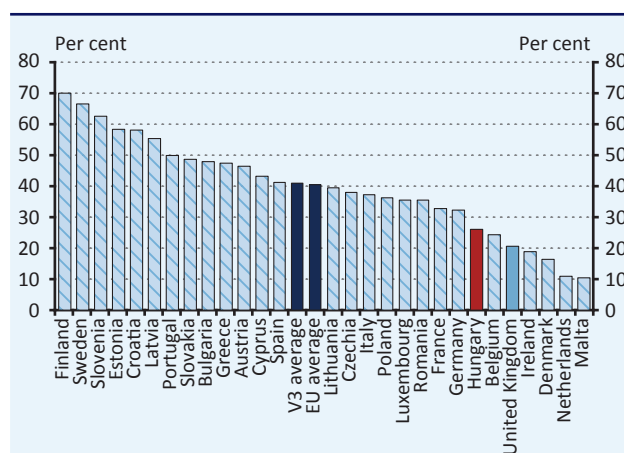
In addition to reducing the volume of waste generated, it is also necessary to increase the recycling rate in order to create a circular economy. Over the last 15 years, Hungary's recycling rate has continuously exceeded the V3 average, but it was below the EU average. In 2019, just over 35 per cent of the waste generated was recycled, similar to the V3 countries. Increasing the share of recycled waste and introducing a deposit and return system are also recommended in the central bank's Competitiveness Programme. Hungary's objectives – aligned with the EU – set a 90 per cent recycling rate for plastics by 2029, and by 2030 plastics should consist of 30 per cent recycled material. Waste management law of Hungary determined the basis for mandatory take-back of beverage packaging; under the government's Environmental Protection Action Plan, the take-back scheme will apply to glass and plastic bottles and metal cans from July 2023.

3.4.1 Proportion of areas involved in organic farming within the agricultural area (2019)



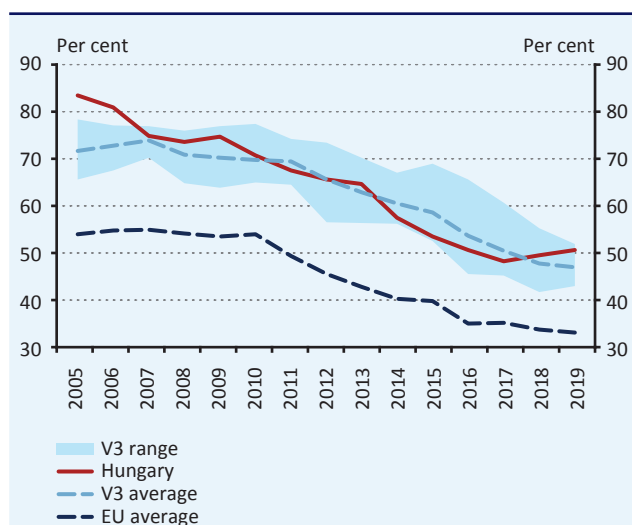
Source: Eurostat.

3.4.2 Proportion of forests and other wooded lands as a percentage of the territory of countries (2018)



Source: Eurostat.

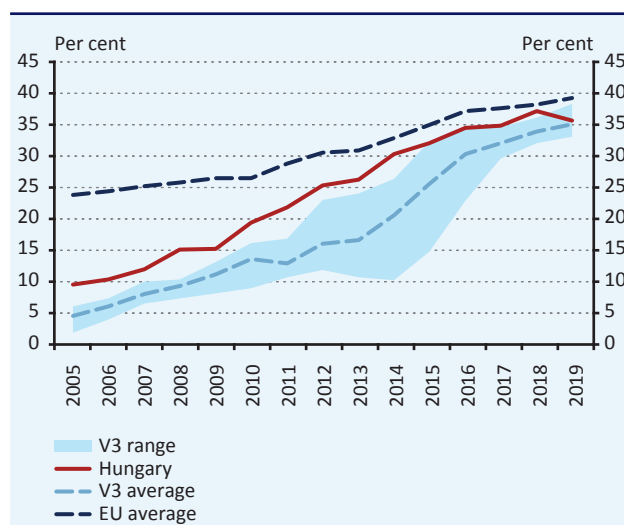
3.4.3 Proportion of waste deposited onto or into land



Note: The proportion of waste deposited onto or into soil is stated as percentage of all waste generated. When calculating the EU27 average for 2019, for Bulgaria and Ireland the 2018 values were used due to shortage of data. For the United Kingdom, data are also available only up to 2018.

Source: Eurostat.

3.4.4 Recycling rate of municipal waste



Note: When calculating the EU27 average for 2019, for Bulgaria and Ireland the 2018 values were used due to shortage of data. In 2005 Croatia is not included in the EU27 average due to lack of data. For the United Kingdom, data are also available only up to 2018.

Source: Eurostat.

3.5 WATER MANAGEMENT AND WATER PURITY

Like other environmental resources, our waters also need to be protected. On the one hand, it must be ensured that both households and agricultural areas have access to water of adequate quality. On the other hand, the volume of available renewable water resources must be continuously monitored and the flora and fauna of the freshwater ecosystems must be carefully protected.

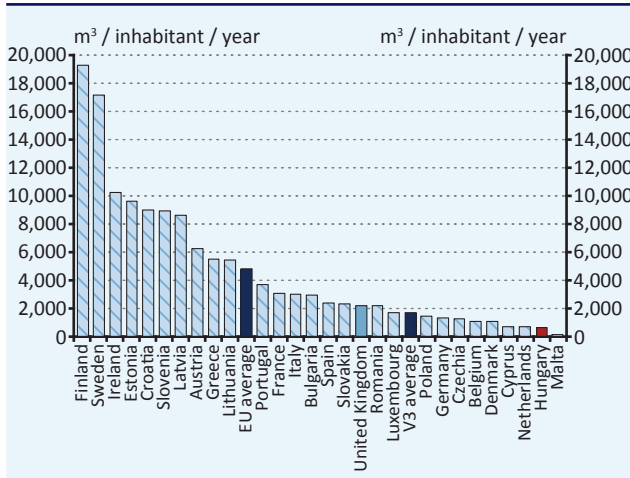
Hungary essentially has significant amount of groundwater reserves and its per capita water supply is also high in international comparison. Nevertheless, based on one of the most critical indicators, i.e. the internal renewable water resources per capita, Hungary is among the most vulnerable nations in the world. In this area Hungary ranks only 149th out of 182 countries in the UN database. The reason for the low ranking of Hungary is that 95 per cent of Hungarian water supplies come from abroad. Thus only the areas in the immediate vicinity of Hungary's large rivers are rich in water, while other parts of the country are short of water, and some areas already officially qualify as semi-desert (e.g. Homokhátság).

In Hungary, only about half of the irrigable area is under actual irrigation, which is around the average of the V3 (47 per cent) and the EU (58 per cent). In Hungary, the weight of crops directly exposed to extreme weather conditions (erosion, flooding, drought) is around 60 per cent; accordingly it would be necessary to increase the irrigated area (this increase should be based on water conservation, i.e. sustainable). In 2020, just under 2 per cent of domestic arable land, i.e. about 76 thousand hectares, was under irrigation. Therefore, the comprehensive package of measures to improve the water demand side, adopted in 2020, aims to double the irrigated area in Hungary by 2024 and increase it to at least 400 thousand hectares by 2030. Efficient use of available water resources would significantly increase the productivity of domestic agriculture and its ability to respond to the adverse effects of climate change. However, meanwhile the balance between the level of water use and the renewal capabilities of water resources should be maintained to preserve productivity also in the long term.

The conservation of waterside biodiversity should receive the same attention and resources as the land areas (organic farming, afforestation). Hungary has a higher proportion (85 per cent) of its biodiversity-critical freshwater areas under protection than the EU (80 per cent), but is slightly below the proportion of protected areas in the V3 countries (90 per cent).

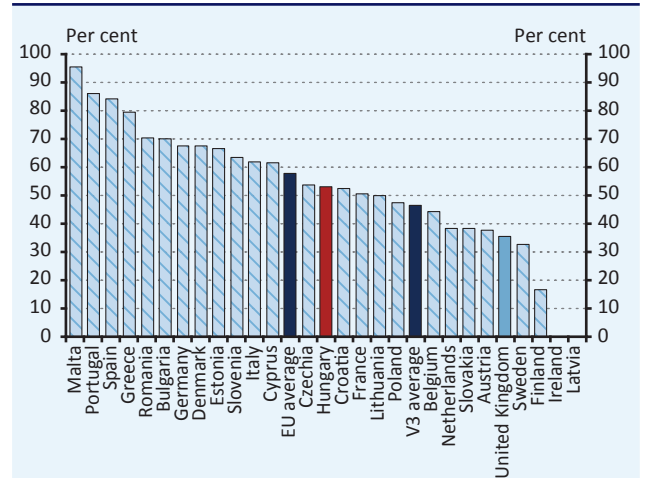
The percentage of the population connected to the sewerage network in Hungary rose from 70 per cent to 80 per cent since 2010, but it is still significantly lower than the average of around 90 per cent in the EU and in the other Visegrád countries. The development of sewage disposal is inadequate primarily in the settlements with fewer than 2,000 inhabitants. Of the countries observed by the OECD, in Austria, Latvia, Luxembourg and Germany 100 per cent of the population is connected to the sewerage, while in Ireland only 64 per cent.

3.5.1 Total internal renewable water resources per capita (2017)



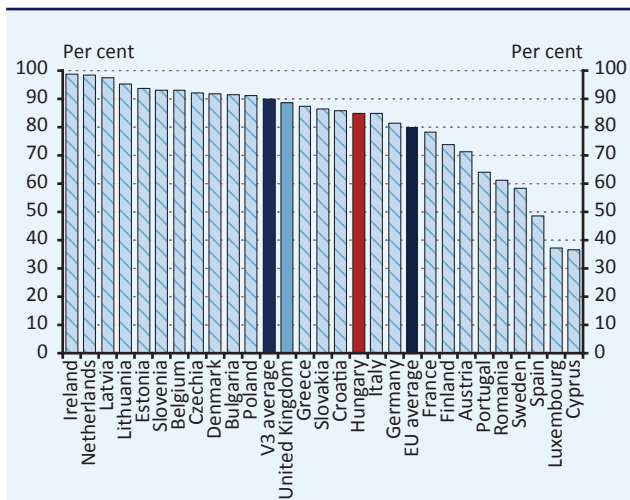
Note: UN estimate.
Source: UN Food and Agriculture Organization (FAO).

3.5.2 Share of irrigated area as a percentage of irrigable area (2016)



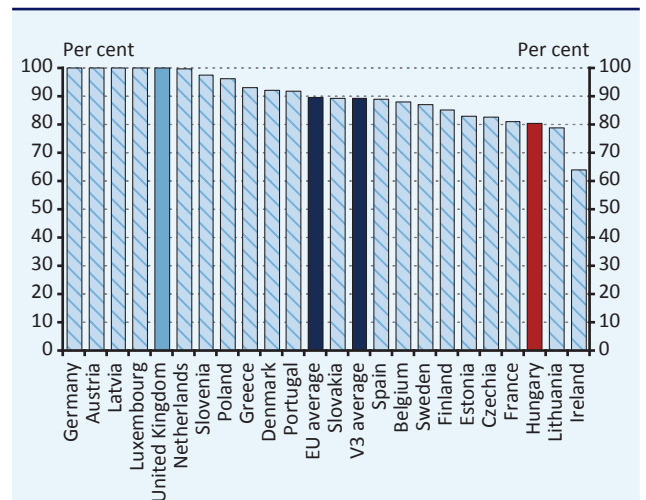
Note: Both the irrigated and the irrigable areas are shown on the Eurostat site as a percentage of utilised agricultural area. There is no data available for Luxembourg.
Source: Eurostat.

3.5.3 Average proportion of Freshwater Key Biodiversity Areas (KBAs) covered by protected areas (2019)



Note: The measure is expressed as a percentage of all critical areas of biodiversity importance. There is no data available for Malta.
Source: UN Sustainable Development Goals (SDGs) indicators database.

3.5.4 Ratio of population connected to sewerage network (2018)



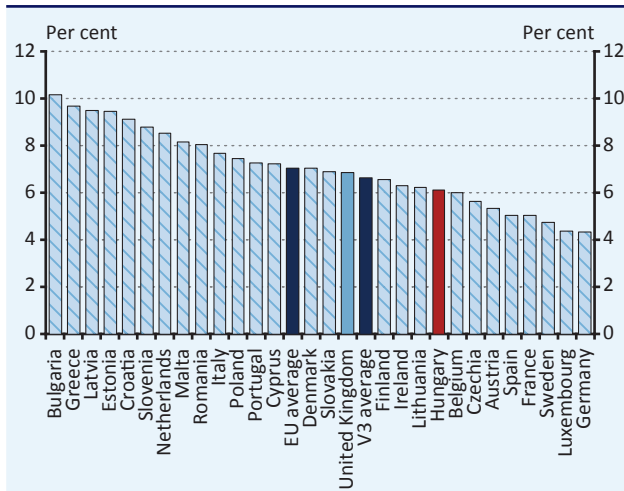
Note: No data available for Bulgaria, Cyprus, Croatia, Malta, Italy and Romania.
Source: OECD.

3.6 GREEN FINANCE

The green finance sub-pillar aims to present Hungary's financial position supporting environmental sustainability. Based on the data currently available, there are four indicators for comparing the result of Hungary with the EU and the V3 countries in terms of green finance. These characterise both fiscal policy and the financial markets' commitment to financing the greening of the economy. The share of environmental taxes in total tax revenue in Hungary was over 6 per cent in 2019. However, this is slightly lower than the EU and Visegrád averages. In terms of environmental spending, Hungary's expenditure is in line with the average of around 2 per cent in the region and the EU, but there is room for improvement in this indicator as well.

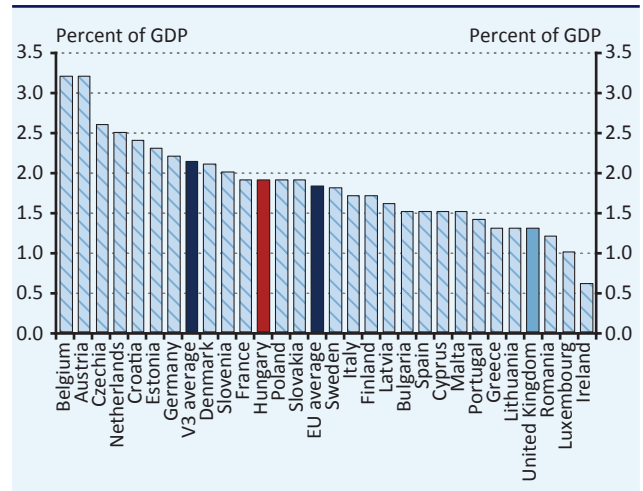
Regarding the financial markets, one of the best known and most widely used green financial instruments at the global level is the green bond. The proportion of such bonds issued compared to other bonds is, therefore, an important indicator. In Hungary, the first green bond was issued by the Hungarian state in 2020, followed by several corporate issues. Aggregated issuances show that Hungarian green government bonds had a high issuance rate in 2020, both regionally and in the EU. 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 here before 2020 is a big step forward for both the green government bond and the corporate green bond markets. The commitment of the government and the MNB to sustainability projects further growth in green bond issuance in the coming years.

3.6.1 Share of environmental taxes in total tax revenues (2019)



Source: Eurostat.

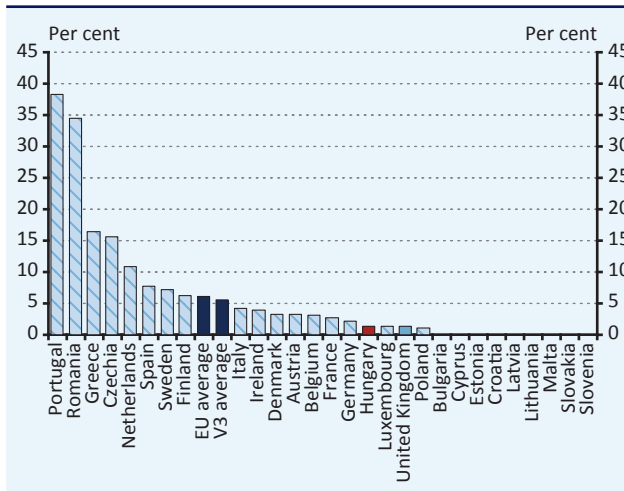
3.6.2 National expenditure on environmental protection (2017)



Note: Data for Romania and Ireland are available for 2016.

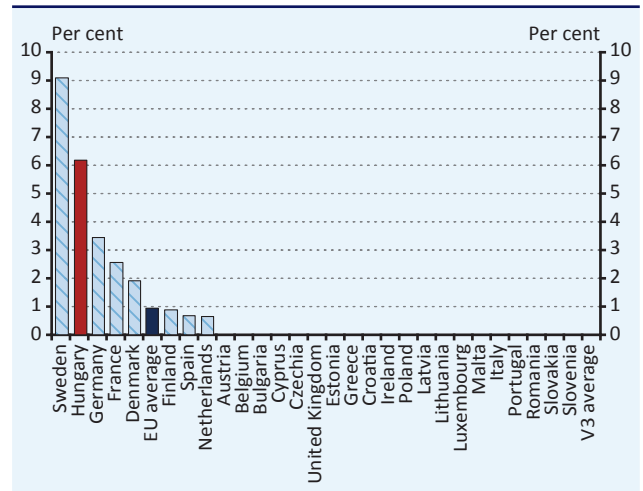
Source: Eurostat.

3.6.3 Share of green bonds (business and financial institutions, 2020)



Source: Bloomberg.

3.6.4 Share of green sovereign bonds (2020)

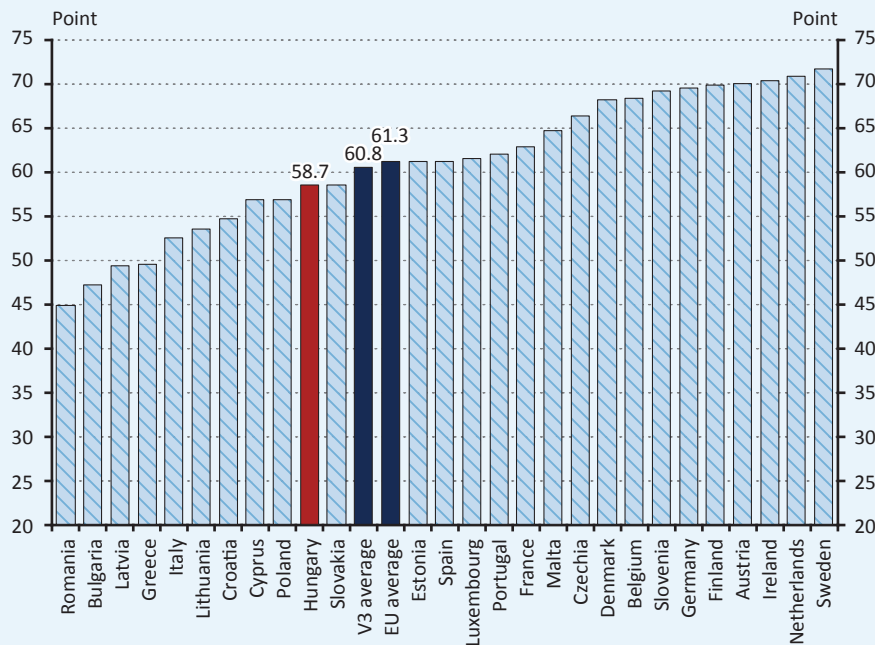


Source: Bloomberg.

4 Social sustainability

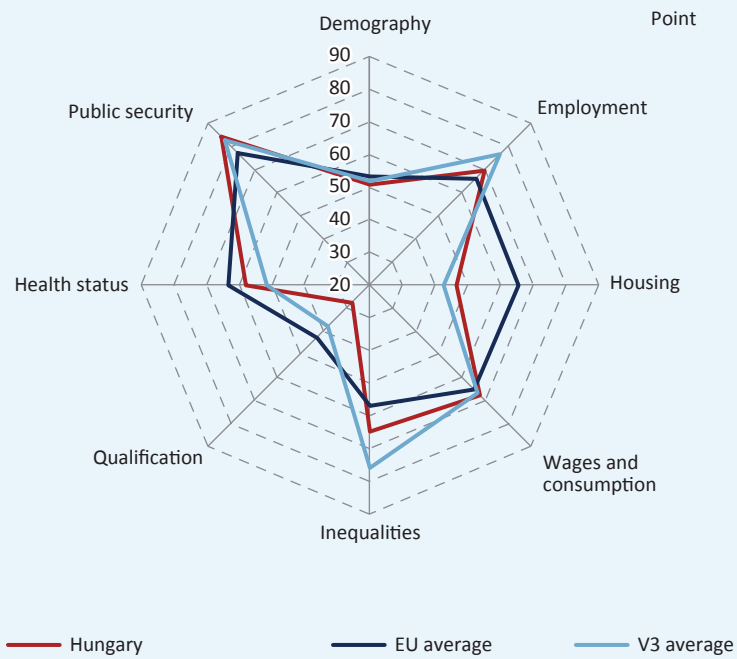
Hungary is ranked 18th in the European Union in the social sustainability pillar, according to the Sustainability Index. Hungary scored 58.7 in the pillar, slightly below both the EU average (61.3) and the V3 average (60.8). Sweden, the Netherlands and Ireland were in the vanguard in this area, with Romania, Bulgaria and Latvia being at the bottom of the ranking. Out of the eight sub-pillars in the area, Hungary scored the highest in the *Public Security* sub-pillar (84.4), which exceeded the average of both the V3 and EU countries. In parallel with this, in the pillar, Hungary ranked highest in the European ranking in *Inequalities* (7th) and in the *Public Security* (8th) sub-pillars.

Chart 4.1
Aggregated results of the social sustainability pillar
 (2021)



Note: The scale range is 0-100 points, with 100 being the best value.
 Source: MNB.

Chart 4.2
Results of the social sustainability pillar by sub-pillars
 (2021)



Note: The scale range is 0-100 points, with 100 being the best value.
 Source: MNB.

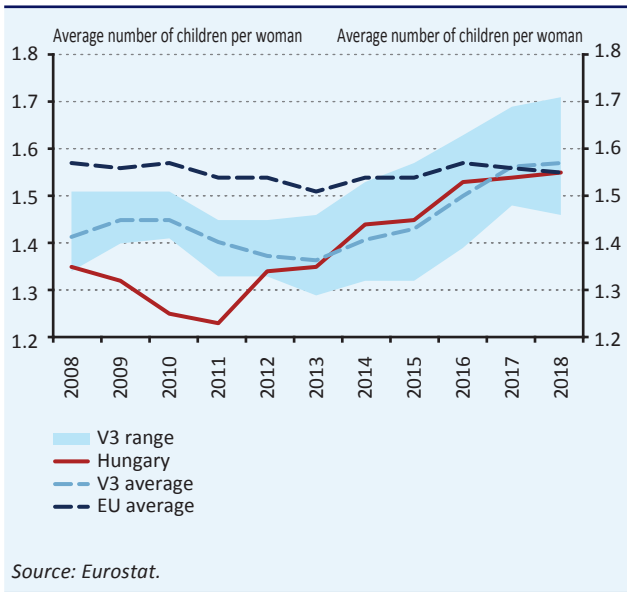
4.1 DEMOGRAPHY

One of the key factors of long-term economic growth is human capital, the quantitative characteristics of which are determined by demographic trends. In Hungary, similarly to other European countries, the population is declining and ageing. Based on the population projections, if the present demographic trends continue, in the next decades the Hungarian population will decline further and the size of the working age population will also decrease. However, economic convergence, also successful in the long run, is unfeasible under decreasing population. Rising fertility rate is a prerequisite for reversing the negative 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 States in the European Union, and the average of the EU countries has even declined slightly in recent years. Hungary has seen positive trends in recent years: the fertility rate rose significantly from its historic low of 1.23 in 2011 over 1.5 in 2018, according to Eurostat data. The Hungarian indicator caught up with average of both the EU and Visegrád countries in 2018. According to data published by the Hungarian Central Statistical Office based on a different methodology³, the fertility rate rose from 1.49 in 2018 to 1.54 in 2020, which is a positive trend in terms of sustainability. The observed value of the fertility rate is reduced by the gradual increase in the age of birth-giving, i.e. the postponement of having children to older age. In 2018, the average age of mothers in Hungary was 28.2 years at the birth of their first child, up by one year in ten years. Hungarian mothers give birth to their first child earlier than the EU average, but later than in the V3 countries.

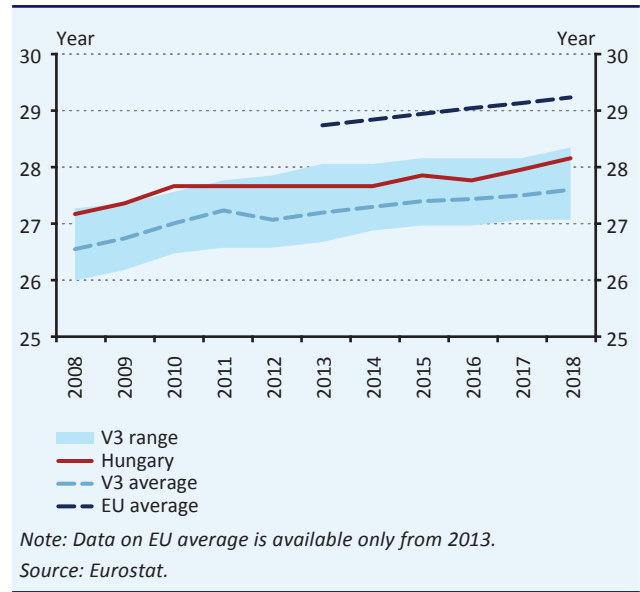
Life expectancy at birth has increased significantly in Hungary over the past decades, with important contribution by the continuous improvement in healthcare and health awareness. Life expectancy at birth shows how many years an individual born in the reference year can expect to live under the mortality conditions of the given year. Life expectancy at birth in Hungary was 76.2 years in 2018. The Hungarian figure has been below the average of the EU and Visegrád countries for decades. Lower birth rates and rising life expectancy compared to previous decades result in the ageing of the population. This trend, which has been observed over several decades, is also leading to a significant increase in the old-age dependency ratio. The indicator captures how the number of elderly people (aged 65 and over) compares to the working age population (aged 15-64). The old-age dependency ratio in Hungary may rise from 30.3 per cent of 2020 to 47.5 per cent by 2050. This means that while in Hungary in 2020 there were 30 elderly persons per 100 working-age individuals, by 2050 there may be nearly 48 elderly inhabitants per 100 people of working age. The 17 percentage points increase applicable to Hungary is lower than the EU average and the average of the Visegrád countries. Accordingly, Hungary is expected to be less affected by ageing than the countries in the region.

³ Eurostat counts children born to mothers resident in Hungary according to the definition of "habitual residence" used since 2013, and thus it also takes into account children born abroad but registered in Hungary.

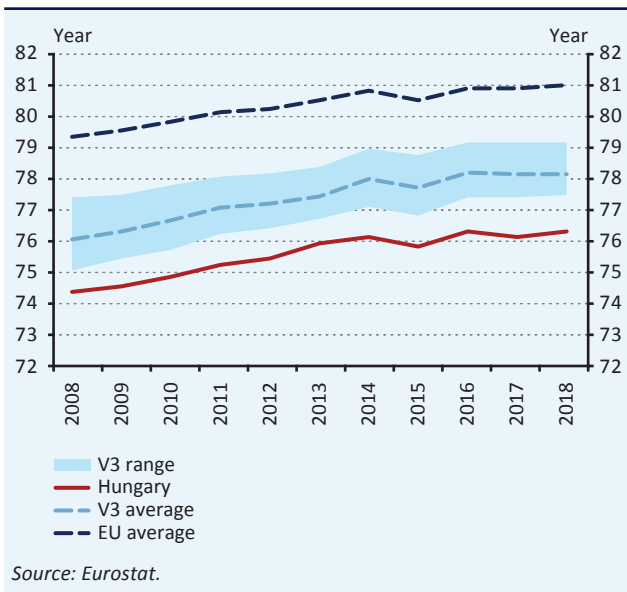
4.1.1 Total fertility rate



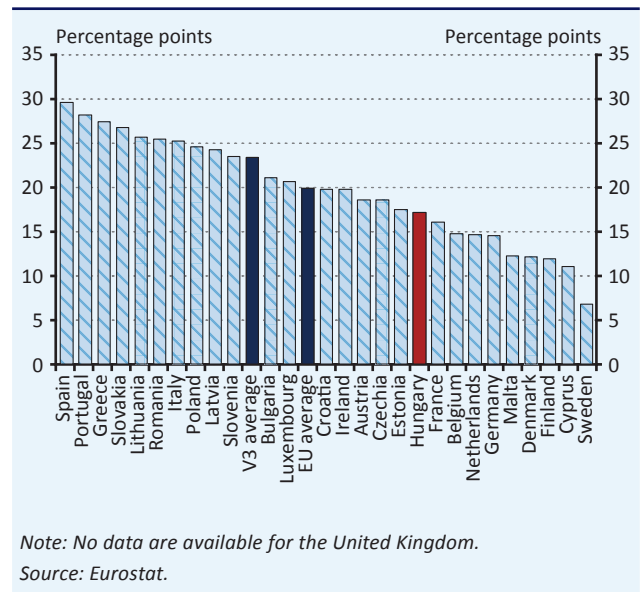
4.1.2 Mean age of women at birth of first child



4.1.3 Life expectancy at birth



4.1.4 Estimated change of old-age dependency ratio between 2020 and 2050



4.2 EMPLOYMENT

Human capital as a factor of production is an important part of economic growth. Through its quantitative and qualitative attributes, human capital impacts economic growth through several channels. One of these is the available labour force, measured by activity, employment and unemployment rates. The higher the volume of human capital, the better it can support economic growth. In addition, the skills and qualifications of the workforce are important qualities of human capital that contribute to the effectiveness of work. Thirdly, labour income accounts for between half and two-thirds of GDP and forms the basis for households' finances, consumption, savings and investment. With the emergence of sustainability megatrends, the labour market is also facing new challenges. The most important of these are skills and qualification attributes, the penetration of atypical forms of employment and labour market stability. In order to meet the challenges of the labour market and to maintain high employment rate in the long term, it is essential to ensure that the younger generation is adequately qualified and willing to work, i.e. to ensure a broad base of high-quality human capital. High youth unemployment or low skills have negative social and economic consequences and pose a threat to sustainable economic, labour market and social stability.

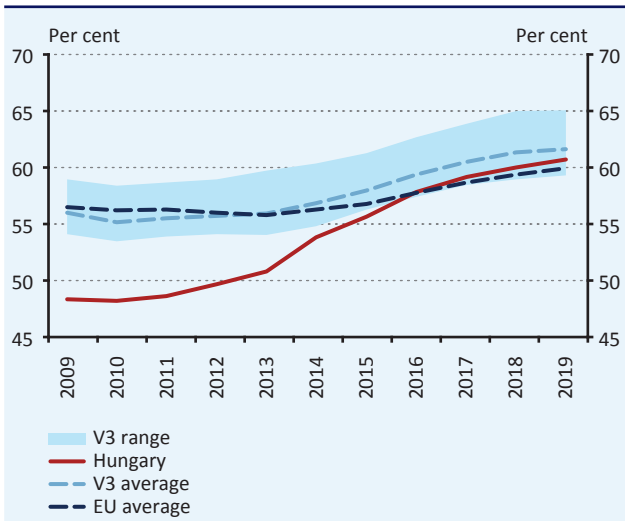
Between 2010 and 2019, the number of people in employment in Hungary increased substantially, resulting in an employment rate above the EU average. In parallel with the rise in employment, the unemployment rate fell rapidly after 2013, reaching historically low levels at the end of the decade. Thus, by 2019, Hungary was close to full employment. Hungary's unemployment rate of 3.4 per cent was one of the lowest in the EU, outstripping even the average of the countries in the region.

Young people not in employment, education or training (NEETs) represent temporarily lost opportunity for the training and the labour market, and inactive period of life has a negative impact on their future careers. In Hungary, the NEET rate declined by more than 4 percentage points in recent years, but it is still higher than the regional rate. On the other hand, youth unemployment in Hungary and in the Visegrád countries is lower than the EU indicator. In Hungary, however, the downward trend faltered in recent years and the value of the latter indicator stagnates at around 10 per cent.

There has been a slight labour market adjustment in 2020 due to the coronavirus pandemic. Sectors affected by the lockdown (catering, tourism), as well as the employment of workers in foreign establishments and vulnerable groups, were hit the hardest by the restrictions caused by the pandemic. By the end of 2020, employment almost reached its pre-crisis level, and unemployment is still one of the lowest in the EU, due to the continued strong credit markets, the moratorium on payments and job protection measures.

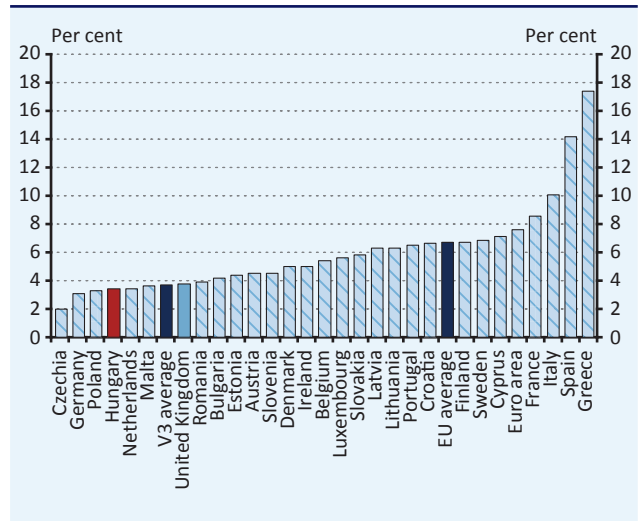
Overall, employment has been at a sustainable level in recent years and has contributed to dynamic economic growth.

4.2.1 Employment rate (aged 15-74)



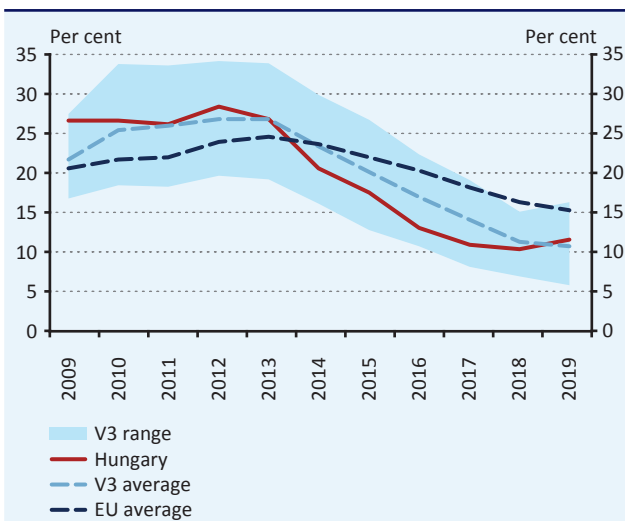
Source: Eurostat.

4.2.2 Unemployment rate (aged 15-74, 2019)



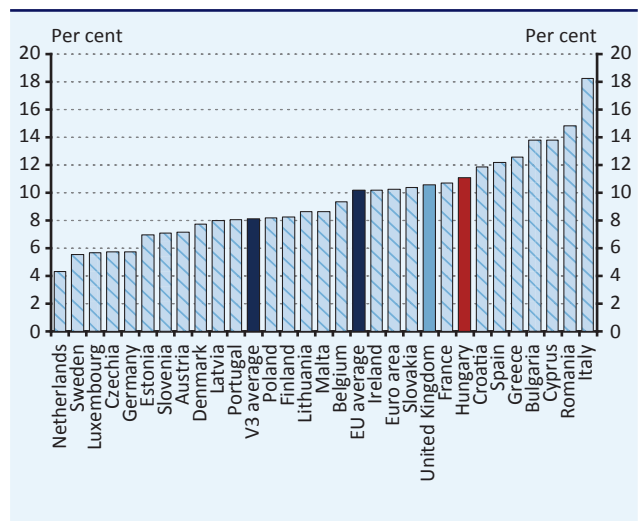
Source: Eurostat.

4.2.3 Youth unemployment rate (aged 15-24)



Source: Eurostat.

4.2.4 Proportion of young people neither in employment nor in education and training (NEET, 2019)



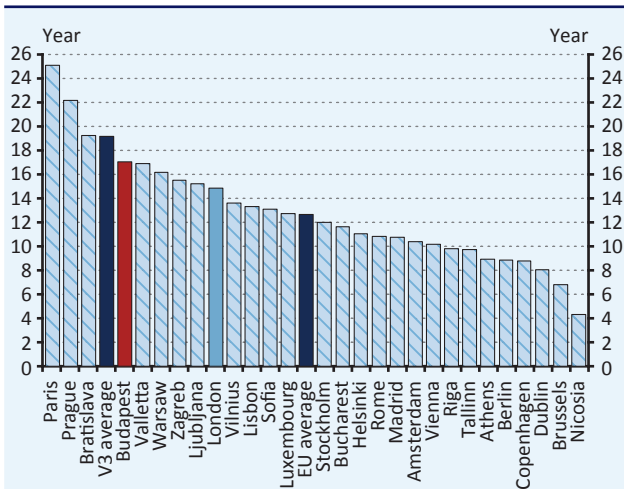
Forrás: Eurostat.

4.3 HOUSING

Sustainability of housing is primarily determined by its affordability and the quality of housing. The affordability of buying or renting a home for households is a key issue for a society, while the condition of residential properties and the living conditions of households are key determinants of the quality of housing. Following the significant price rise observed in recent years, Budapest has become the 4th least affordable capital in Europe in terms of the ratio of property price to average income. In Budapest a property of 75 square metres may be bought on the average income of 17 years. Buying a home is also difficult in the other Visegrád countries: In Prague, Bratislava and Warsaw a typical property may be bought on the average income of 22, 19 and 16 years, respectively. The problem of housing affordability can also be observed in the Budapest rental market. As a percentage of net income, rents in Budapest are currently the seventh highest among European capitals. In Budapest the average rent for a typical 3-bedroom home is 88 per cent of the average net wage in Hungary. The value of this indicator is even higher in the rest of the Visegrád countries: 104 per cent in Warsaw, 94 per cent in Bratislava and 93 per cent in Prague.

According to the Eurostat survey, 7.8 per cent of Hungarian households lived under severely inadequate housing conditions in 2019, which is the 5th highest value among European countries. Around 20 per cent of households in Hungary also live in overcrowded conditions, which is slightly above the EU27 average, but better than the 29 per cent average in the Visegrád countries.

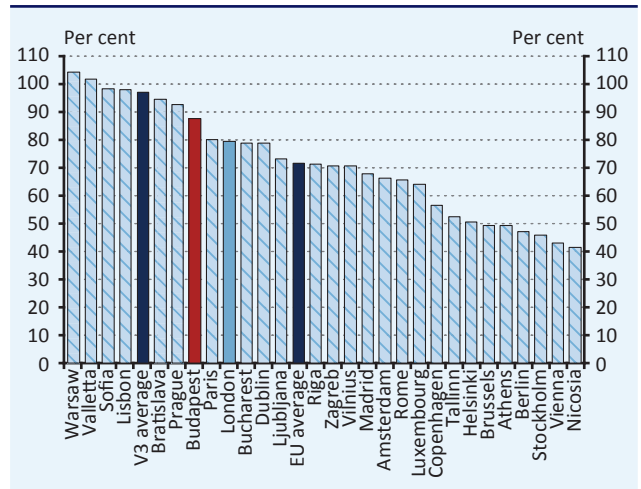
4.3.1 Price-to-income ratios in European capitals (2020)



Note: The price-to-income ratio is the ratio of the average house prices to the national average wage. Calculations based on 75 square metre homes.

Source: Eurostat, numbeo.com.

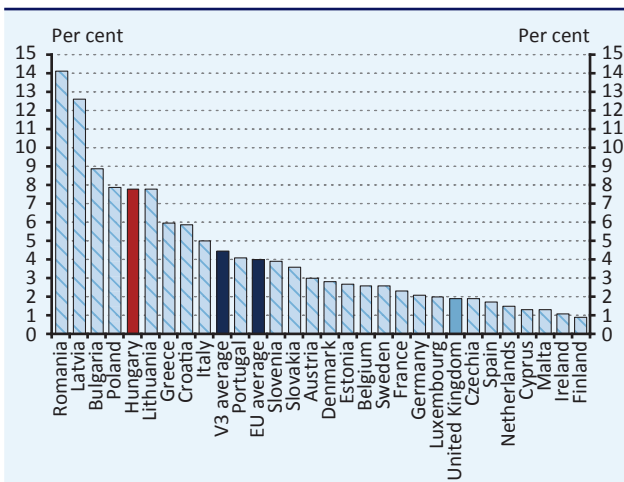
4.3.2 Rent-to-income ratio in European capitals (2020)



Note: 3-room sublease.

Source: Eurostat, numbeo.com.

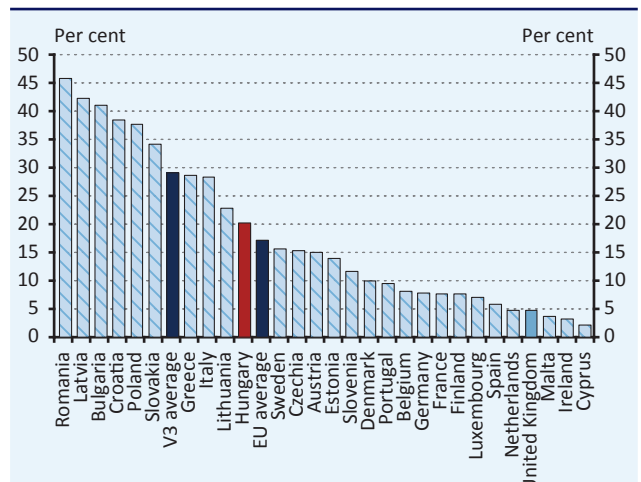
4.3.3 Percentage of people living under severely inadequate housing conditions (2019)



Note: Share of total population living in a dwelling with a leaking roof, where there is neither a bath, nor indoor flushing toilet, or the dwelling is too dark.

Source: Eurostat.

4.3.4 Overcrowding rate in total population (2019)



Source: Eurostat.

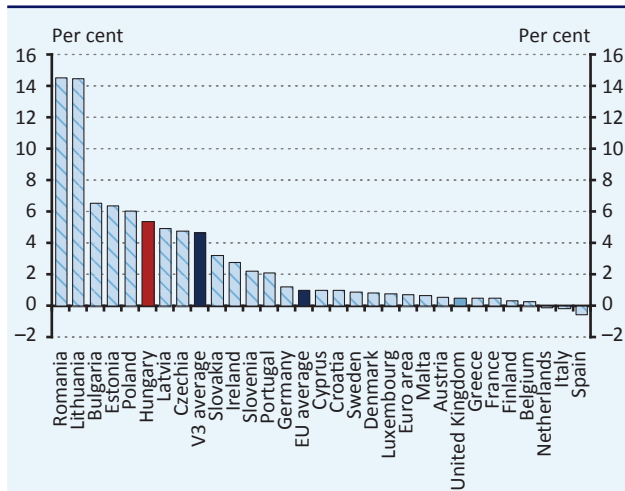
4.4 WAGES AND CONSUMPTION

The main drivers of sustaining economic growth include the increasing of capital intensity and productivity, maintenance of full employment and a significant rise in real wages. Wage trends decoupling from productivity growth may threaten the sustainability of economic growth, the external balance of the economy and cost competitiveness. Real wages in Hungary have grown significantly over the past period, with average growth in 2017-2019 exceeding the average dynamics of the V3 countries, standing significantly above the EU average. In terms of the international cost competitiveness of an economy's labour costs, the relevant indicator is the real unit labour cost (ULC) rather than real wages, which shows the labour cost of producing one unit of real output (GDP). The gradual and significant reduction of the social contribution tax between January 2017 and July 2020, from 27 to 15.5 per cent, has significantly reduced the dynamics of unit labour costs. Overall, unit labour costs in Hungary fell on average by 1.2 per cent over the past three years, while in the other countries of the Visegrád region they rose on average by 1.9 per cent between 2017 and 2019, making Hungary more competitive on a cost basis than the other countries in the region.

The significant real wage growth observed in the region has led to an increase in household consumption. Substantial growth in consumption, if financed by debt, could lead to indebtedness in the household sector, and a buoyant rise in consumption may also pose a risk to sustainable growth in terms of its impact on price stability. Hungary's consumption rate averaged below the EU and V3 averages in 2018-2019, and thus despite dynamic wage outflows and consumption growth, households spent more on savings and investment as a percentage of their income than in the region and the EU, which supports sustainable economic growth.

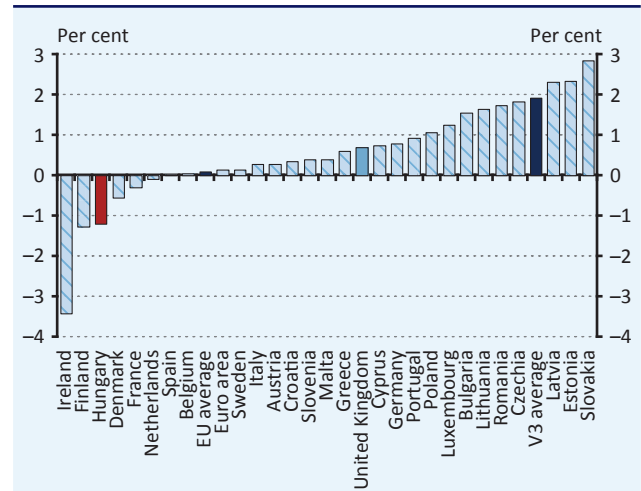
Overall, both real wages and household consumption grew along a sustainable path in recent years. Wage growth remained high also in 2020, while the coronavirus pandemic caused household sector's savings to rise. The moderate labour market adjustment triggered by the coronavirus pandemic should allow consumption to continue to rise from this year onwards.

4.4.1 Change in real wages in the economy (2017-2019, average)



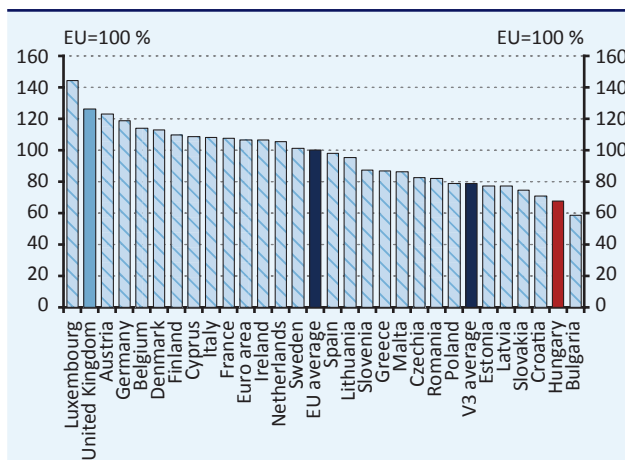
Source: Eurostat.

4.4.2 Change in real unit labour costs (2017-2019, average)



Source: Eurostat.

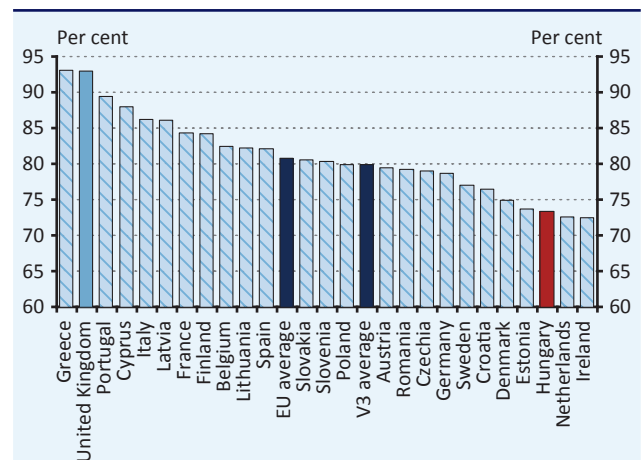
4.4.3 Consumption per capita on purchasing power standard compared to EU average (2019)



Note: Households and non-profit institutions' final consumption expenditure.

Source: Eurostat.

4.4.4 Actual consumption rate as a percentage of net disposable income (2018-2019, average)



Note: No data are available for Bulgaria, Luxembourg and Malta.

Source: Eurostat.

4.5 INEQUALITIES

Inequality is closely linked to the issue of economic growth and sustainability. Indeed, one of the keys to sustainable growth is to ensure that the benefits of economic growth are shared by broad classes of the society. Inequality is a natural feature of a market economy, but excessive levels of inequality can undermine social cohesion and mobility, productivity and have a negative impact on technological development, thereby jeopardising the sustainability and inclusiveness of economic growth and convergence. By contrast, relatively moderate inequalities are less likely to generate social conflicts and help to increase social mobility and labour productivity, which are fundamental pillars for long-term economic and social development and successful convergence.

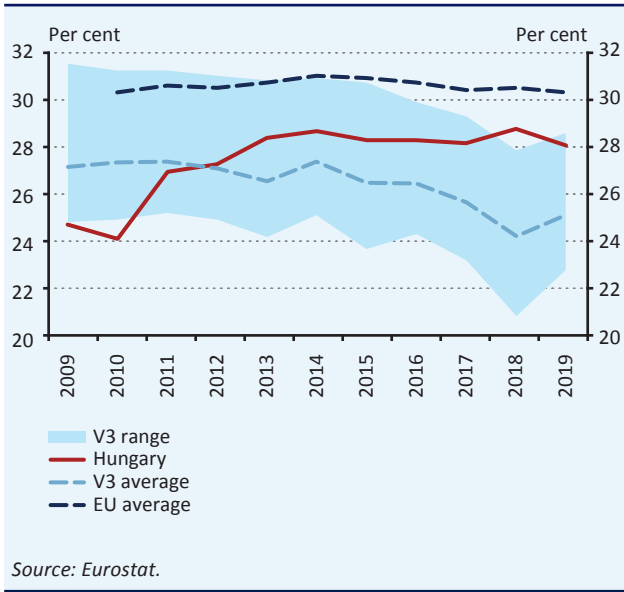
In terms of income, Hungary is among the least unequal countries in the European Union. The income Gini index rose gradually in the years following the 2008-2009 crisis until 2013, when it stopped rising as incomes stabilised and employment soared. In recent years, the index was steadily at around 28 per cent, which exceeds the average of Hungary's Visegrád competitors but is below the European Union average.

Wealth inequality in Hungary is moderate both in EU and global comparison. The high share of home ownership has a significant role in falling behind the EU average in the wealth Gini index. In Hungary, around 90 per cent of households are home-owners, which is one of the highest ratio in the European Union. Hungary's wealth Gini index exceeds the average of the Visegrád countries, the low value of which is attributable to Slovakia's having the lowest Gini index in the EU.

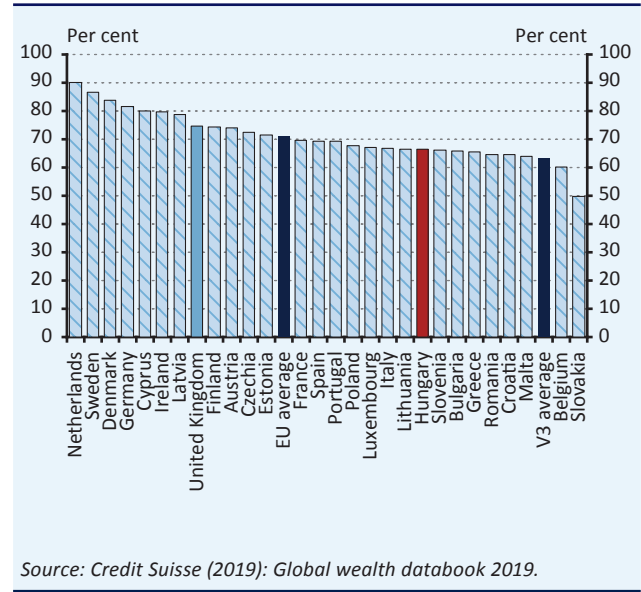
The AROPE (At risk of poverty or social exclusion) indicator, which measures the proportion of the population at risk of poverty or social exclusion, has shown one of the largest decreases in Hungary over the last decade compared to the EU. The indicator is currently at a historic low – below 20 per cent – which is lower than the EU average, but exceeds the average of the Visegrád region. All three sub-indicators of the AROPE – share of people at risk of poverty, share of people experiencing severe material deprivation, share of people living in a household with a very low work intensity – have declined over the past decade, due to the post-2010 tax, income, employment and family policy measures and coming near to full employment. The risk of poverty or social exclusion mainly affects the unemployed and those with basic education.

Despite the positive trends of recent years, significant regional disparities can still be identified in Hungary. In Hungary, the gap between the most developed and least developed NUTS3 regions is slightly higher than the average of both the European Union and the Visegrád countries. Based on the Hungarian indicator, the GDP per capita of Budapest – being the most developed – is 4.5 times higher than that of the least developed Nógrád county. As in Hungary, the dominance of the capital in terms of development can be also observed in the countries of the European Union.

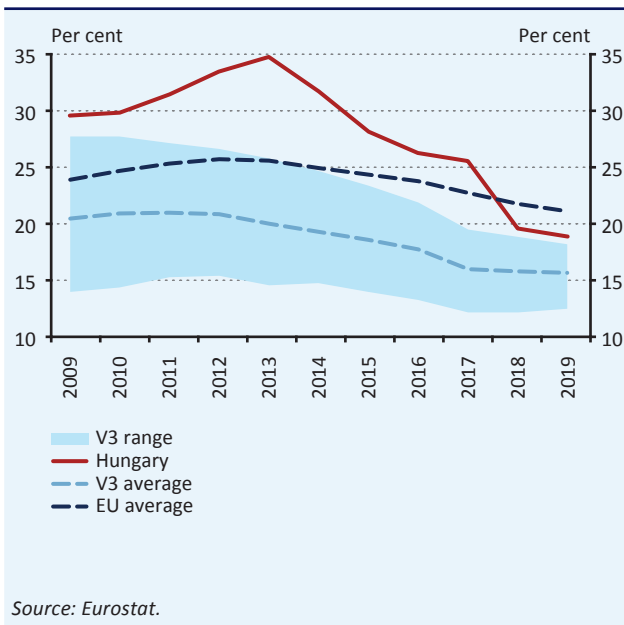
4.5.1 Income-based Gini index



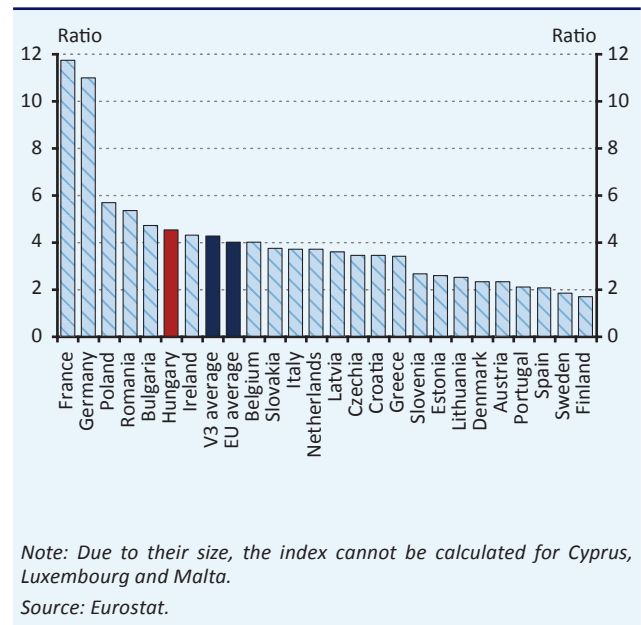
4.5.2 Wealth-based GINI index (2019)



4.5.3 Ratio of persons at risk of poverty or social exclusion (AROPE)



4.5.4 Quotient of the GDP per capita of the most and least developed NUTS3 regions (2018)



4.6 QUALIFICATION

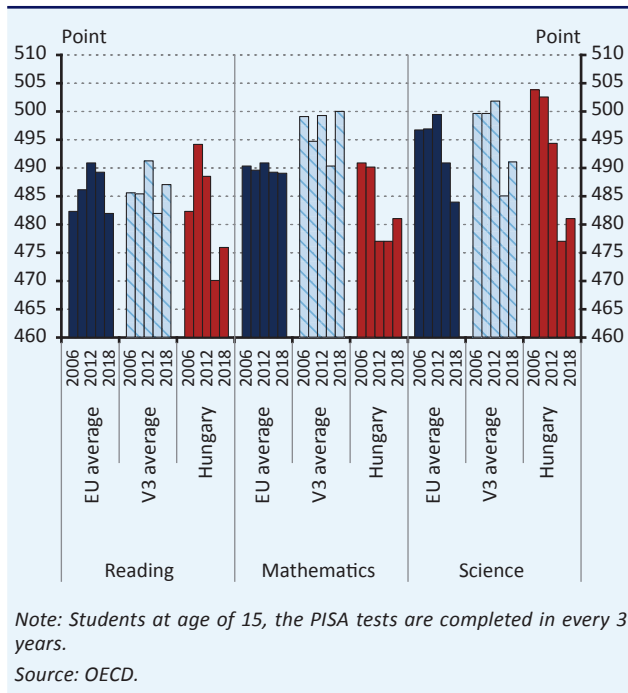
The presence of skilled workforce in the economy is a prerequisite for sustainable convergence and for achieving an innovation-driven growth model. International education surveys show that although Hungarian students adequately attain the required curriculum, they are unable to apply the knowledge sufficiently to real-life examples. This means that in addition to the necessary basic skills, the Hungarian public education system needs to place greater emphasis on developing modern (foreign language and digital) skills to enable students to meet later on the rapidly changing demands of the labour market.

Hungarian students scored higher in all three examined areas in the latest PISA tests measuring the skills of 15-year old students in 2018 than in the previous tests in 2015. However, the scores are still below the average of the other Visegrád countries and the EU countries. While it is encouraging that the proportion of underperforming students in all three areas has decreased significantly in Hungary, the socio-economic background of students still plays a very significant role in the results in Hungary, which the domestic education system is unable to compensate effectively enough.

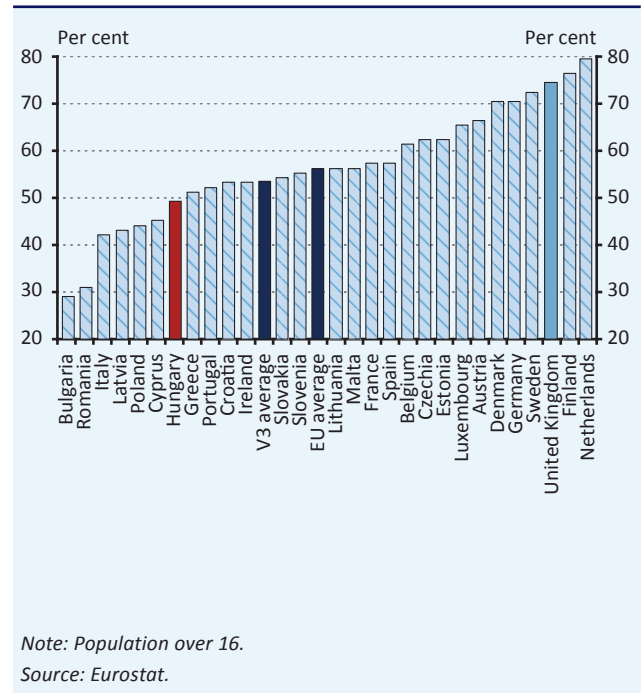
Digital tools are forecast to become more and more important in the labour market and in everyday life in the future, and thus preparing the population is a key issue for the education systems. However, more than half of the Hungarian population aged over 16 do not have basic digital skills, which is a significant competitive disadvantage. This is why increasing participation in lifelong learning would be of key importance: In Hungary, 6 per cent of the adult population participated in some kind of training in the 4 weeks before the survey in 2019, which corresponds to the regional level but only half of the EU average.

In order to meet the challenges of the 21st century as effectively as possible, the number of graduates in higher education, and in particular in STEM subjects, should be increased in Hungary. Currently, Hungary has one of the lowest rates of young people with STEM qualification in the European Union. Particular attention should be paid to increasing the number of graduates in IT, in order to accelerate the improving trend of recent years.

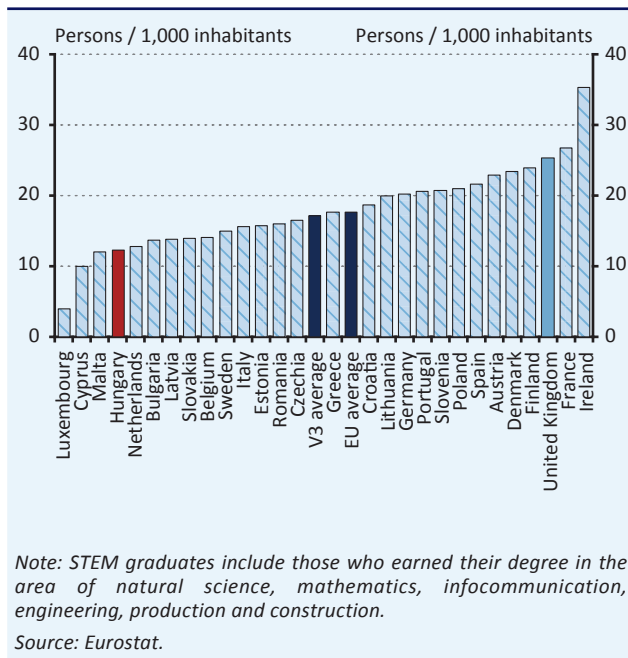
4.6.1 Results of PISA tests



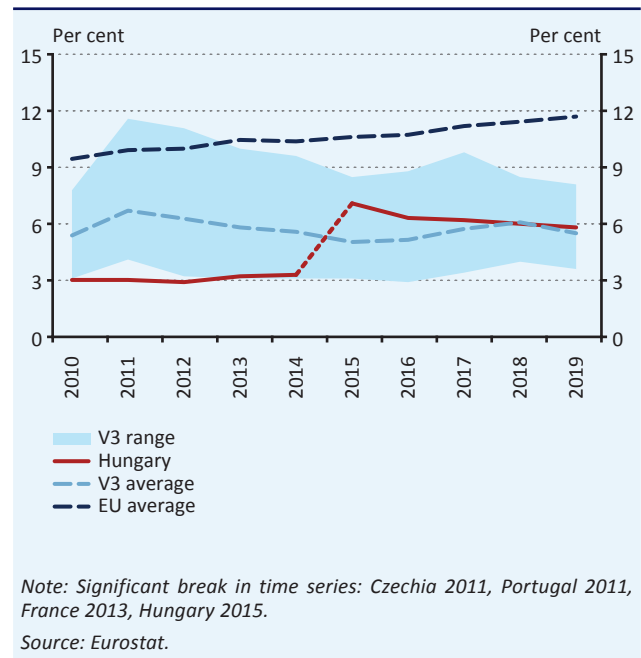
4.6.2 Ratio of individuals who have basic or above basic overall digital skills (2019)



4.6.3 Ratio of STEM graduates in the age group of 20-29 years (2018)



4.6.4 Participation in lifelong learning



4.7 HEALTH STATUS

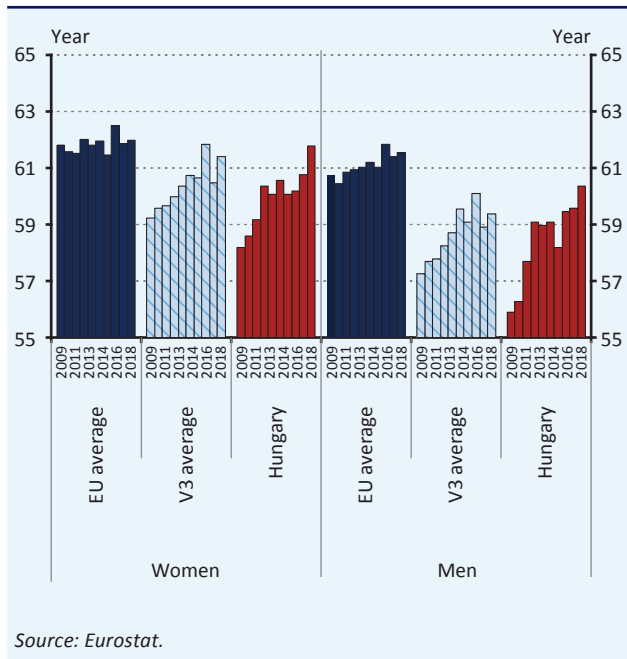
One of the key issues for achieving sustainable convergence is to raise the well-being of society in parallel with economic growth. Health status is both an input and an output indicator of convergence, as the health status of the population has a significant impact on the volume and quality of the labour force available in the economy, while improving health status, and thereby the quality of life, is an important objective of sustainable convergence. The healthy life expectancy of the Hungarian population has increased significantly over the past decade, and is now higher than the average of the other Visegrád countries for both sexes. However, reaching the EU average and the 64 healthy life years set in the MNB's Competitiveness Programme will require further efforts at both individual and community level.

Hungary is among the world leaders in child immunisation, with almost full immunisation against the major contagious diseases. The measles vaccine is a good example of how this cannot be deemed self-explanatory, as this disease – which has been almost completely eradicated – has in recent years caused epidemic in several EU countries (such as France and Romania) and also in the United States.

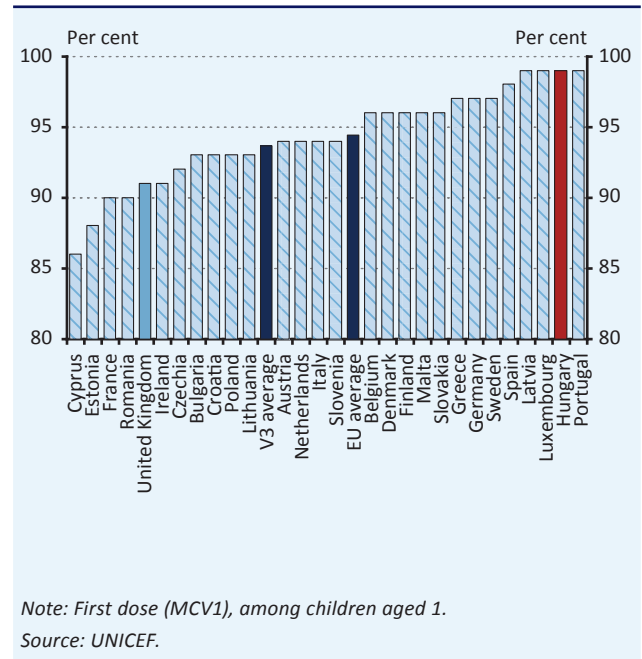
However, other areas of prevention need to be further strengthened in Hungary, as more than half of all deaths in Hungary were linked to some kind of behavioural risk. Hungary is particularly lagging behind in terms of dietary risks, while it is also one of the worst performing European countries in terms of tobacco and alcohol consumption.

Access to the health system is considered average in a regional comparison. 6.5 per cent of the Hungarian population reported having a health need in 2019 that they were unable to satisfy for some reason. While reasons influenced by the health care system (e.g. too expensive, waiting list) were lower than the EU average, reasons related to health awareness of the population (mainly that people tend to wait until the problem goes away) have clearly greater role in Hungary than in most EU countries. In order to achieve sustainable convergence successfully, it would be of key importance to strengthen the health awareness of the population and to improve the prevention system in Hungary.

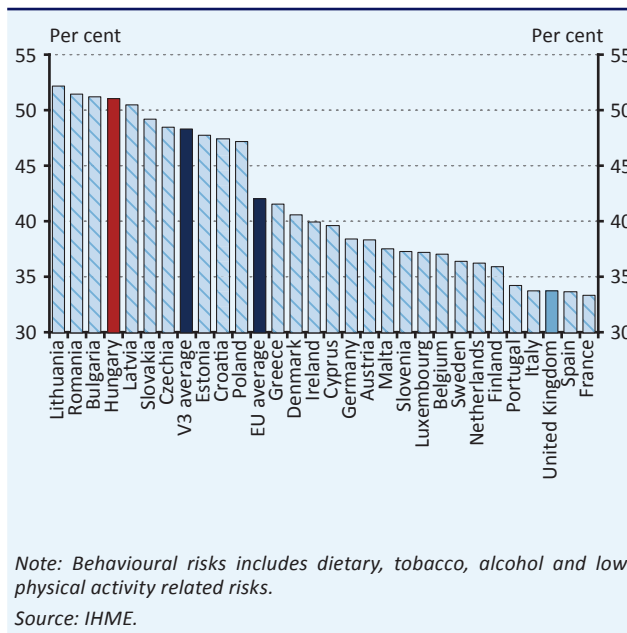
4.7.1 Healthy life years



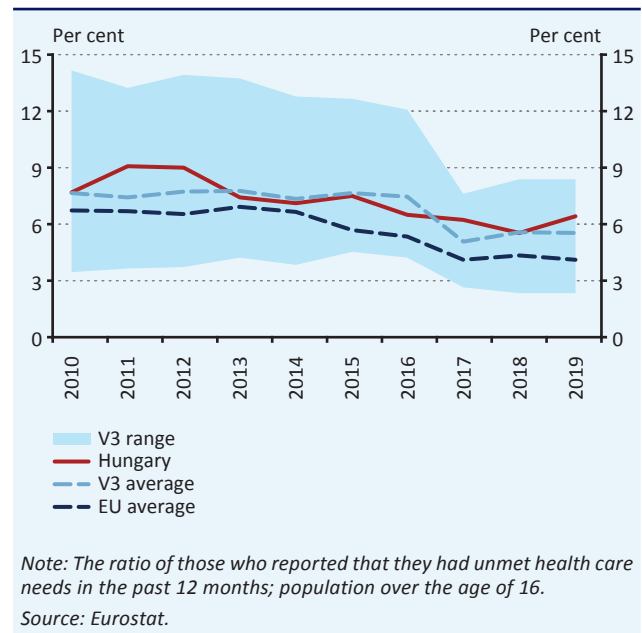
4.7.2 Immunisation rates for childhood vaccinations - measles (2019)



4.7.3 Share of mortality driven by behavioural risks (2017)



4.7.4 Unmet health care needs



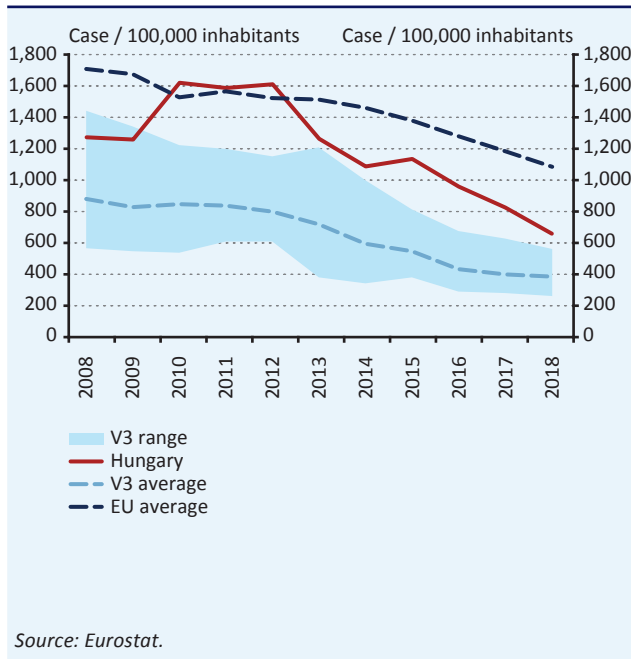
4.8 PUBLIC SECURITY

As a result of the global crises of recent years, public security has appreciated in the society, maintaining and guaranteeing which is a critical component of economic growth. Economic history experiences show that in a well-functioning economy on the path to sustainable development, public security and order are key issues. In a prosperous economy, social welfare depends on people's sense of security, where they feel that both they and their property are safe. Even in peacetime, the need for state guarantees of security is considered essential by the society of developed countries. However, the global crises of recent years (financial and economic crisis, migration crisis, pandemic crisis) have significantly appreciated the demand for security. The outbreak of the coronavirus pandemic has highlighted that guaranteeing public security is a precondition for preventing a major economic downturn and for the recovery of economies as quickly as possible after the crisis. Maintaining a sense of security for citizens and businesses helps to create a stable economic environment, which will be accompanied by increasing entrepreneurial and investment activity in the future. The increased emphasis on the public security sub-pillar is also reflected in the results of surveys on global risk perceptions. In the 2020 survey of the World Economic Forum, the existential threats to the world most frequently cited by respondents included the fear of weapons of mass destruction and the fear of the collapse of the state.

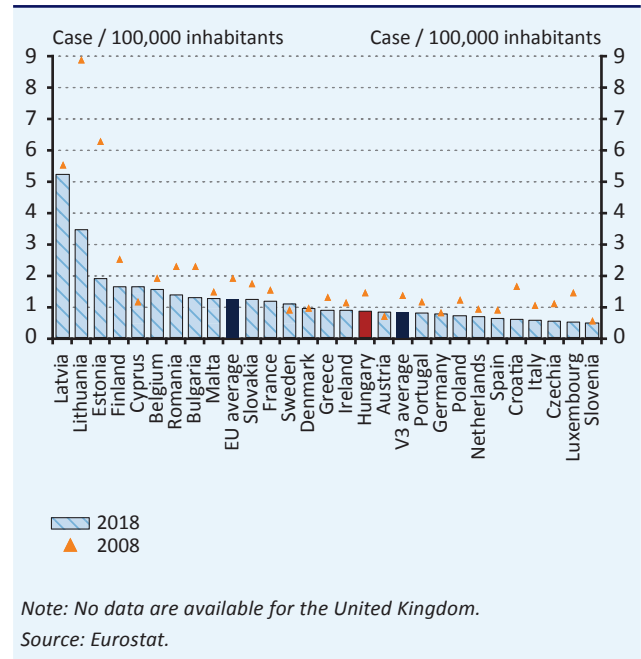
The number of thefts and voluntary manslaughters is an objective measure of the population's perception of security, and Hungary achieved significant progress in this area since the 2008 crisis. The number of thefts has fell by 60 per cent since 2010, and thus it is significantly lower than the EU average but higher than measured in the Visegrád countries. There has also been a significant decrease in the number of voluntary manslaughters over the last 10 years. In 2008, there were nearly 1.5 manslaughters per 100,000 people, compared to 0.9 in 2018. In the latter indicator, Hungary also performs well compared to the EU (1.2). Moreover, due to the positive trend, Hungary also came near to the average of the V3 countries (0.8).

Between 2008 and 2018, Hungary had the fourth largest increase in the headcount of police among European countries, with 403 policemen per 100,000 inhabitants, compared to the EU average of 352 and a V3 average of 347. Meanwhile, the number of detainees per 100,000 inhabitants stagnated at around 170 during the period, with minor fluctuations, reflecting the preventive force of the larger police presence. In an EU comparison, the number of detainees vary broadly: the EU average was 118 detainees per 100,000 inhabitants, while the V3 average was almost twice as high, at 195 persons.

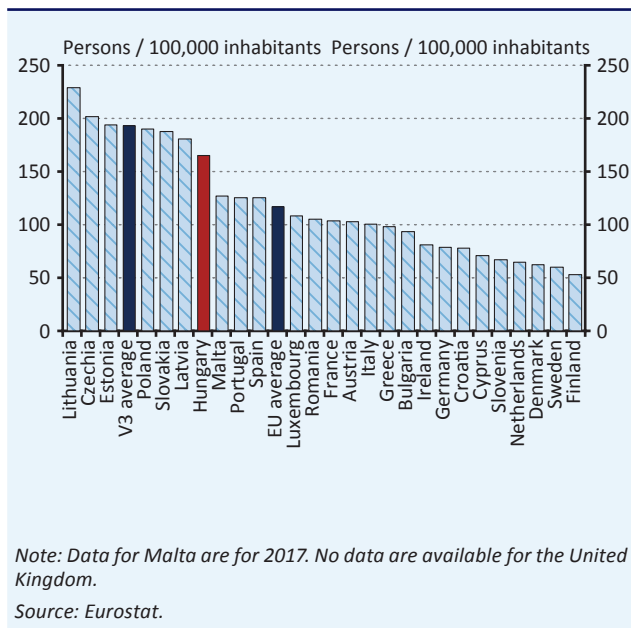
4.8.1 Number of thefts



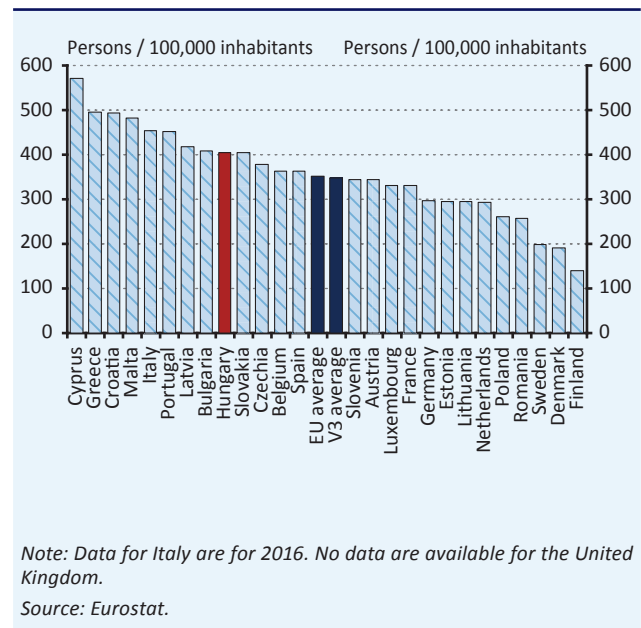
4.8.2 Number of voluntary manslaughter (2018)



4.8.3 Number of detainees (2018)



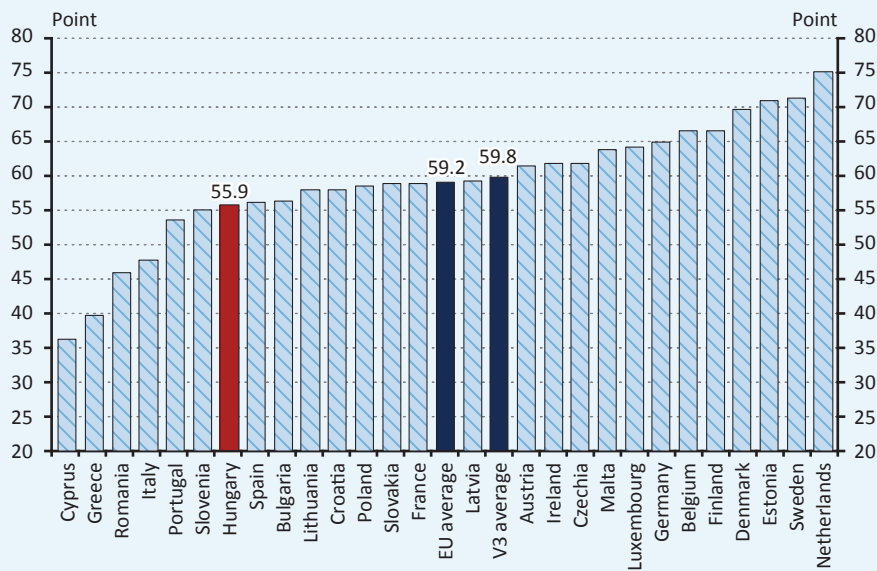
4.8.4 Number of policemen (2018)



5 Financial sustainability

Hungary ranked 21st among the EU countries in the financial sustainability pillar with a score of 55.9. Hungary's performance was below the average of the V3 countries (59.8) and the average of the EU27 countries (59.2). In the financial sustainability pillar, the Netherlands, Sweden and Estonia ranked highest, while Cyprus, Greece and Romania finished at the end of the ranking. The best performing countries scored over 70 points, while the worst performing countries typically scored below 40 points. Among the seven sub-pillars of the pillar, Hungary performed best in the *Sustainability of the finances of households* sub-pillar with 71.6 points, and in parallel with this Hungary also achieved the highest ranking (12th) in this sub-pillar. Apart from *Sustainability of the finances of households* sub-pillar, Hungary scored lower than the EU and Visegrád averages, with one exception. However, in the *Sustainability of the finances of national economy* sub-pillar, Hungary's performance (70.1) exceeded the EU average (65.7).

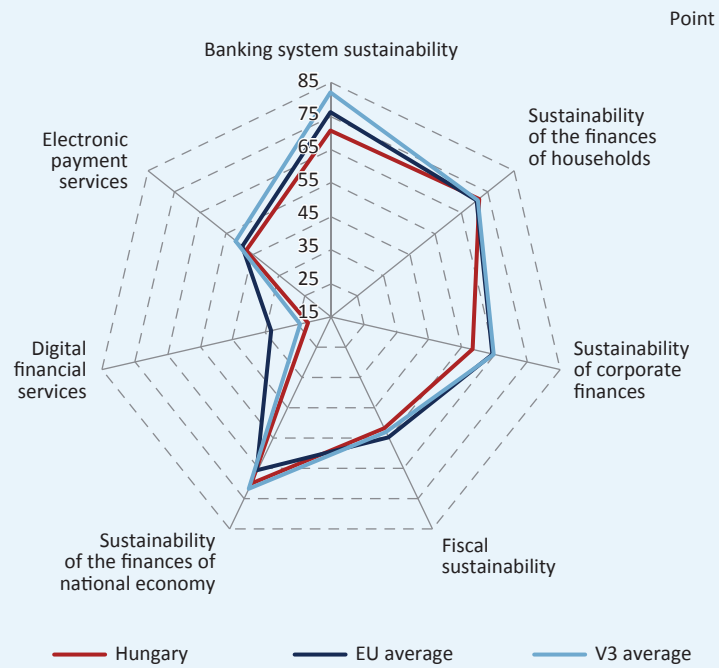
Chart 5.1
Aggregated results of the financial sustainability pillar
 (2021)



Note: The scale range is 0-100 points, with 100 being the best value.

Source: MNB.

Chart 5.2
Results of the financial sustainability pillar by sub-pillars
 (2021)



Note: The scale range is 0-100 points, with 100 being the best value.
 Source: MNB.

5.1 BANKING SYSTEM

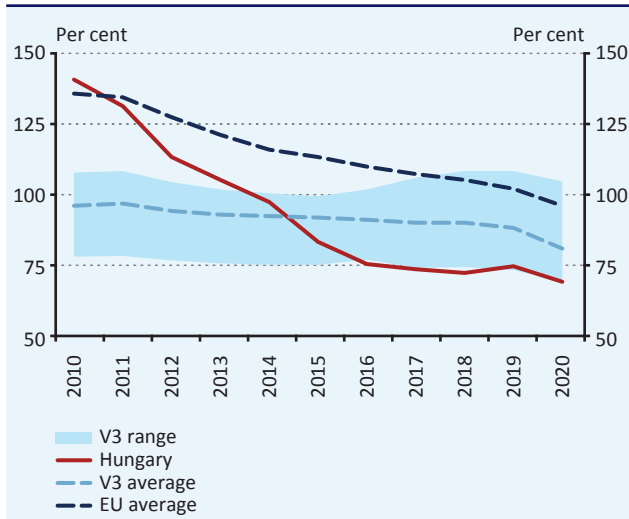
In both developed and developing economies in continental Europe, the banking sector is the main intermediary of financial resources and assets, and its sustainable functioning is key to the balanced development of the economy. The loan-to-deposit ratio shows the extent to which lending demand in a country can be financed by bank deposits. A persistent and high ratio above 100 per cent reflects either special financing features (mortgage bond financing, high share of central bank refinancing) or a high weight of interbank and external liabilities. A high ratio of these liabilities may entail rollover risks, increasing the vulnerability of the banking sector. At the time of the escalation of the 2008 financial crisis, the loan-to-deposit ratio of the domestic banking sector was close to 150 percent, which was high even by regional standards. The ratio fell to close to 75 per cent by the end of 2016 in the post-crisis period, mainly due to a contraction in outstanding loans, and has remained around this level since then, indicating significant unutilised lending potential.

Adequate capitalisation of the banking sector contributes to its lending capacity and also increases its shock-absorbing capacity. However, the assessment of capital adequacy also depends on the portfolio quality, as a high share of non-performing loans increases the risk of future capital erosion. These two factors can be taken into account simultaneously by the Texas ratio, which expresses net non-performing loans as a percentage of capital. The Texas ratio of the Hungarian banking sector was around 60 per cent in 2011, well exceeding both the regional and European averages. In the following years, the indicator improved significantly: in 2019, it was just over 2 per cent – which is much more favourable than the EU average of 18.6 percent, also indicating the protracted NPL problem in some European countries – and the average of 8.5 per cent in the countries of the region.

The ability of the banking sector to generate sufficient profit in excess of the cost of capital is a precondition for adequate capitalisation. If profits are too low, banks will not be able to build up sufficient capital and their shock-absorbing capacity will be poor. However, high profitability is not necessarily an advantage either, as high profits may also result from banks having a dominant position in certain sub-markets or taking excessive risks. The long-term sustainable return on equity (ROE) may therefore be considered to be the average of the Visegrád countries, which is around 10 per cent. The profitability of the domestic banking sector exceeded this level by more than 5 percentage points in the three-year period ending in 2019, partly due to one-off factors, and represented the highest profit margin among EU countries.

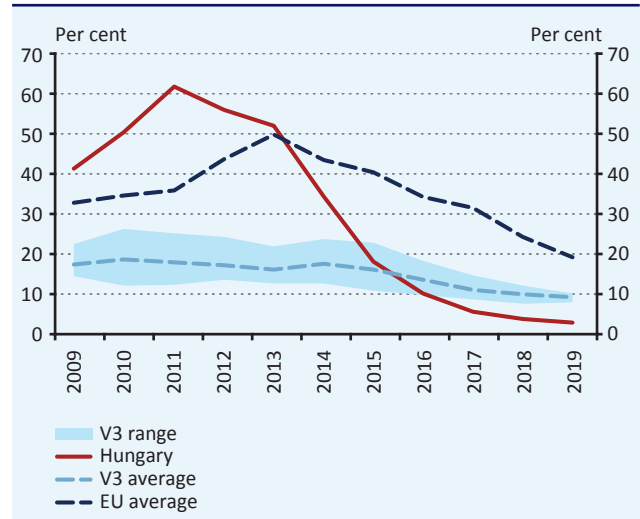
The sustainable growth of the banking sector also depends on the efficiency of its operations. In an international comparison, the domestic operating cost to asset ratio of 2.4 per cent (net of the figure of the foreign subsidiaries and the impact of transaction levy) is significantly higher than the European average of 1.6 per cent and around 1.7 per cent observed in the Visegrád countries. The domestic banking sector's cost-to-income ratio of almost 60 per cent is slightly more favourable, which is much closer to the European average of 59 per cent. The low cost-efficiency of the Hungarian banking sector can be addressed by increasing the institutions' economies of scale and the widespread use of digital solutions.

5.1.1 Loan to deposit ratio



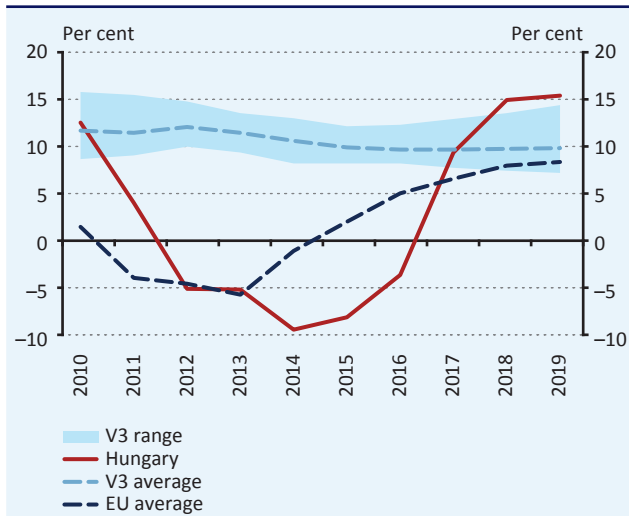
Source: ECB.

5.1.2 Non-performing Loans Net of Provisions to Capital (Texas Ratio)



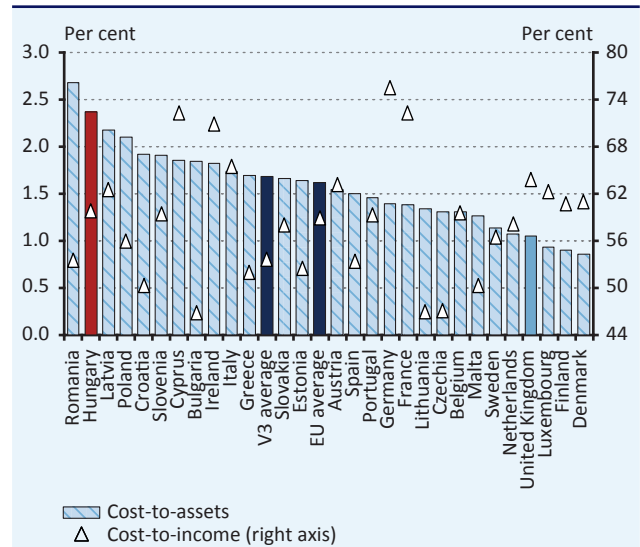
Source: IMF FSI.

5.1.3 Three-year average return on equity (ROE)



Source: ECB CBD.

5.1.4 Cost-to-assets and cost-to-income ratios (2019)



Note: In the case of Hungary, the data have been filtered from foreign subsidiaries and the bank and transaction levy included in operating expenses.

Source: MNB, ECB CBD.

5.2 FINANCES OF HOUSEHOLDS

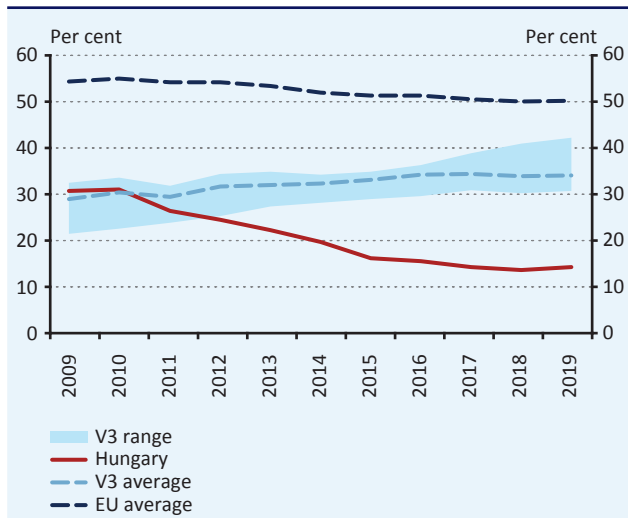
There is mutual relationship between higher economic development and financial intermediation: higher economic development deepens financial intermediation, but without lending, higher development cannot be achieved in the long run. In terms of outstanding borrowing of households to GDP, Hungary is significantly below the levels in the region, where all countries exceeded 30 per cent in 2019. By contrast, the domestic banking sector's outstanding lending to households fell to 15 per cent of GDP, as a result of the steady decline since 2011.

A similar trend can be observed in the debt-to-income ratio, which fell from around 70 per cent in 2010 close to 30 per cent in 2019, and is thus it is significantly below the Visegrád countries' average of around 60 per cent.

The method of calculating the interest on loans is also important for households' financial sustainability, as the disbursement of variable-rate loans increase households' interest rate risk, which can lead to a rise in the debt-to-income ratio when interest rates increase. In this respect, Hungary is a leader among EU Member States, with 99 per cent of housing loans disbursed in 2020 already having an initial interest rate fixed for at least one year. In addition to the MNB's Certified Consumer-friendly Housing Loan (CCHL) certification framework, the popularity of state-subsidised housing loan schemes has also contributed to the rise in loans with longer interest period.

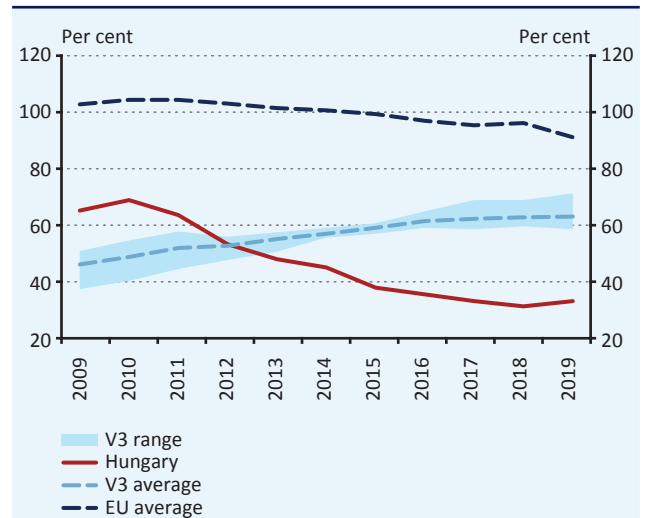
However, in addition to debts, it is also important to consider net financial wealth when assessing the financial sustainability of households, as it is an indicator of the extent to which households' financial assets exceed loans, as a high value of net financial wealth indicates the sound and sustainable financial position of households. The growth in Hungarian households' net financial wealth accelerated in the second half of the previous decade and slowly came closer to the EU average. As a result, in 2019 the Hungarian indicator was high by international standards, especially compared to regional competitors. The increase in net financial wealth was due to a lesser extent to the decline in outstanding borrowing and to a greater extent to an increase in financial assets: the financial buffer thus accumulated is likely to provide considerable support for the sustainability of the sector.

5.2.1 Household loans to GDP



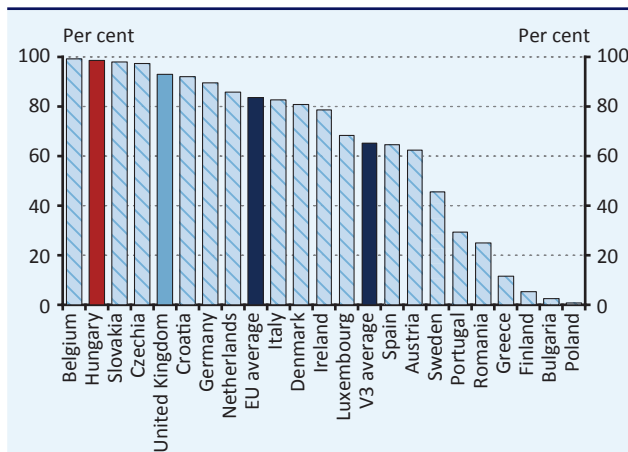
Source: ECB.

5.2.2 Debt-to-income ratio of the household segment



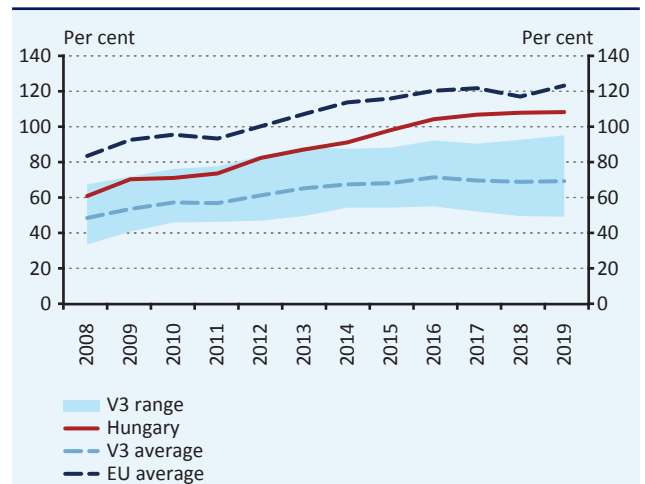
Source: ECB QSA.

5.2.3 Proportion of loans with initial rate fixation within new housing loans (2020)



Source: ECB, European Mortgage Federation, National Central Banks.

5.2.4 Net financial assets to GDP ratio of households



Source: Eurostat.

5.3 CORPORATE FINANCES

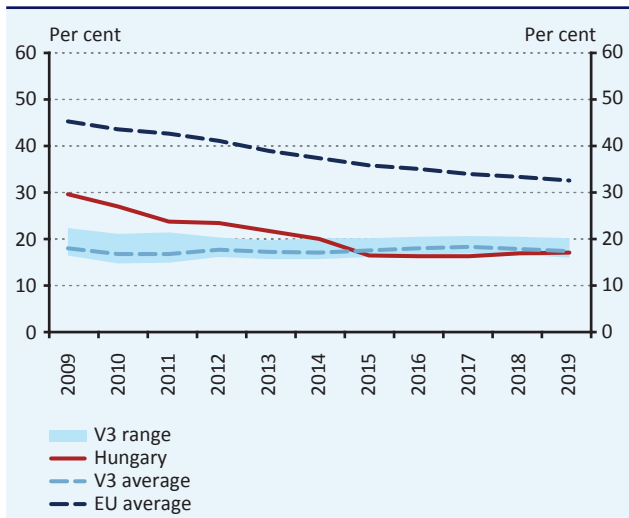
In Hungary, credit institutions' outstanding lending to corporations reached 17 per cent of GDP at the end of 2019, which cannot be deemed high by international standards. Of the Visegrád countries, the average debt-to-GDP ratio is around 20 per cent in Slovakia and in the Czech Republic, and it is much higher in the EU, at over 30 per cent. The credit penetration rate practically followed a steady downward trend, due to the deleveraging of the corporate and banking sector after the 2008 financial crisis. The credit to GDP ratio fell by almost 13 percentage points in 2009 from its high of over 30 per cent.

In Hungary, the leverage ratio of companies (the proportion of debt to shareholders' equity) steadily declined from 80 per cent registered during the crisis close to 40 per cent by 2019. This was mainly driven by the forced deleveraging of companies after the crisis and a decline in parent company loans to foreign-owned companies, but also by a further increase in the high small business shares of the population (e.g. the value of limited liability companies and limited partnership in household ownership) compared to other countries. Since 2013, the recovery of corporate borrowing, as a result of the central bank's stimulus programmes to support the SME sector, decelerated deleveraging. A decline similar to that observed in Hungary also took place in the euro area in the decade following the crisis, but the dynamics are different for the countries of the region, as the indicator slightly increased from 2010. By 2019, the Hungarian indicator is thus below the regional and EU average: high corporate capital values compared to the relatively low indebtedness indicate only minor risk to stability and sustainability.

The return on equity of corporations shows companies' income generating capacity, and it can be a measure of the ability of a corporation to raise capital, and of its undervaluation or overvaluation. The return on equity (ROE) of companies in Hungary was close to 10 per cent during the 2009 crisis, well below the average of other Visegrád and EU countries. Following the crisis, the profitability of companies operating in Hungary also increased in line with the recovery in economic growth, and exceeded 15 per cent of equity. This level is still below the EU and Visegrád average of 20 per cent, but the gap has narrowed considerably compared to previous years.

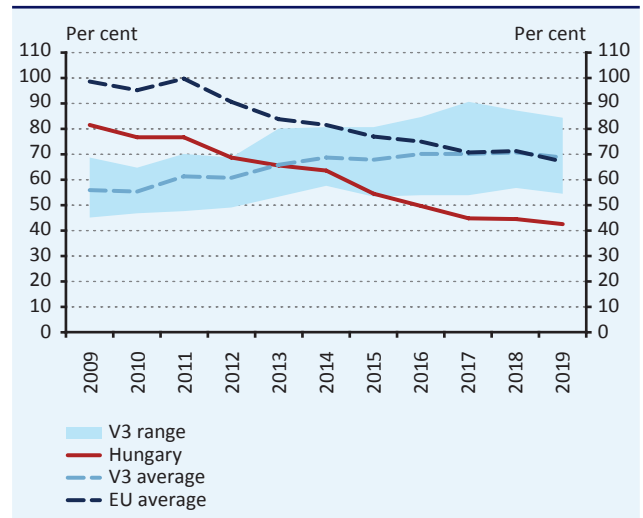
Small and medium-sized enterprises play a significant economic role in the Hungarian economy, especially in the labour market. Within the corporate segment, sustainable financing for small and medium-sized enterprises (SMEs) is therefore of key importance. According to the European Commission's 2020 questionnaire-based survey, just over 8 per cent of domestic respondent SMEs believe that access to funding is the most important problem for their business, which is better than the European average of 10 per cent and broadly in line with the regional average. This is a significant improvement compared to 22 per cent in 2011, with major contribution by the Funding for Growth Scheme (FGS) being a key driver of lending to SMEs since the introduction of its first phase in 2013. The FGS Go!, introduced to mitigate the economic impact of the coronavirus, has significantly improved domestic SMEs' access to finance in 2020, also during the pandemic.

5.3.1 Corporate loans to GDP



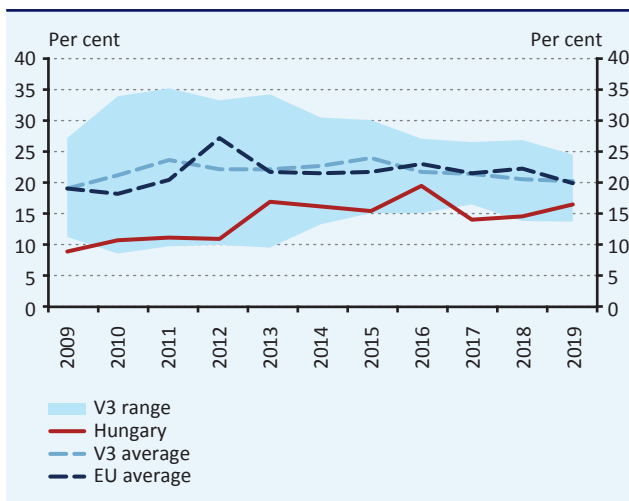
Source: ECB.

5.3.2 Credit debt stock of the corporate sector as a share of equity liabilities



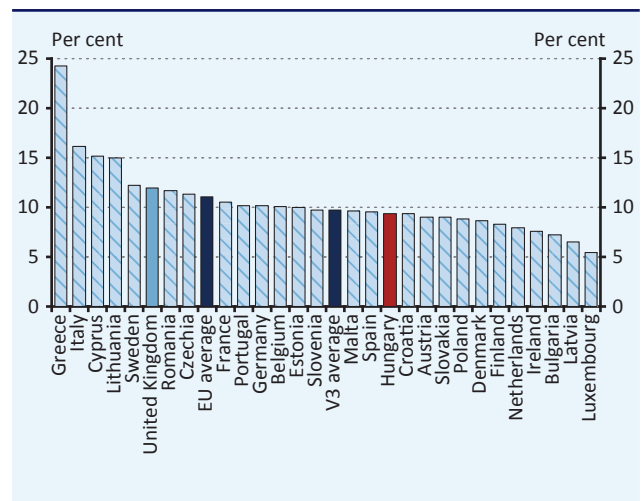
Source: Eurostat.

5.3.3 ROE of the corporate sector



Source: Eurostat.

5.3.4 Proportion of SMEs for which access to finance is the most important problem (2020)



Source: European Commission.

5.4 PUBLIC FINANCES

Fiscal sustainability is the ability of governments to maintain their current spending, tax and other policies over the long term without compromising solvency and the ability to meet their commitments. The sustainability of fiscal policy should be assessed in the short, medium and long term and is most often characterised by public debt-to-GDP ratio and by indicators describing its change and structure. The public debt ratio incorporates the impact of, among other things, the primary balance, government interest expenditure, inflation, the exchange rate and real economic growth, and is therefore an important measure of the effectiveness of economic policy measures. However, the level of indebtedness alone is not sufficient to assess solvency. It is also essential to examine the direction and extent to which the indicator has changed recently. There is no professional consensus on the optimal level of or change in the public debt ratio, with some studies linking the optimal level to the maturity of countries, while more recent economic trends argue that there is no limit to the amount of domestic debt.

After 8 years of continuous decline, Hungary's public debt as a percentage of GDP decreased to 65.5 per cent by 2019. This is lower than the EU average (77.6 per cent), but exceeds the regional average (41.5 per cent). In 2020, all Member States of the European Union saw their public debt ratios rise as a result of the soar in budget deficits caused by the management of the coronavirus pandemic. Public debt in Hungary rose to 81 per cent of GDP, which is still below the EU average but exceeds the regional levels.

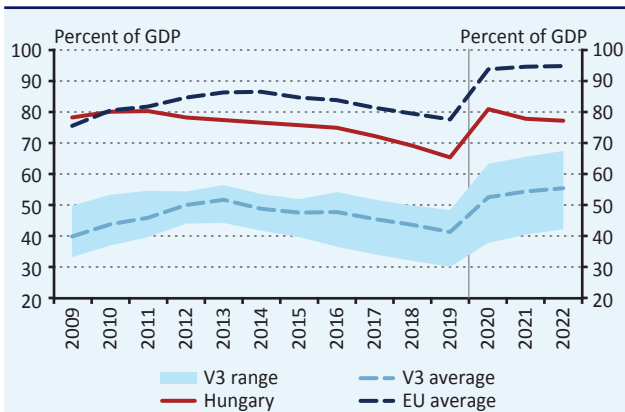
The S1 index, assessing the medium-term sustainability of the public finances, estimates the fiscal adjustment needed over the next 5 years for a Member State to reach the Maastricht public debt criterion of 60 per cent within 15 years. Taking this into account, the composite index indicates low fiscal risk when it is below 0, medium between 0 and 2.5 and high above 2.5. By 2019, Hungary has significantly improved its medium-term sustainability measured by the S1 indicator, reducing it to below 0. As a result, it achieved a risk position that is more favourable than the regional and the EU average, and maintained it also in 2020, during the crisis.

Besides the level of public debt, its structure also affects macro-financial vulnerability or stability. An important indicator for the structure of public debt, and thus also for the sustainability of debt, is the average residual maturity, which reflects the public debt's rollover risk. The average residual maturity of Hungarian public debt is 5.2 years, which is the third lowest in the EU. In the leading developed EU countries, the residual maturity of public debt is almost the double of the Hungarian level. The average in the countries of the Visegrád region is 6.2 years. On the other hand, the average residual maturity of Hungarian public debt increased by more than 1 year in 2020, due to the increase in the stock of longer-term bonds and Hungarian Government Bond Plus (MÁP Plus), while the average residual maturity decreased in other countries of the region over the past year.

The ownership structure of public debt is also a key indicator for debt sustainability and one that is closely monitored by the market. For example, a strong domestic investor base within the public debt and a low foreign ownership share greatly contribute to fiscal sustainability. Indeed, domestic holders of public debt tend to hold domestic securities in their portfolios longer in times of market turbulence (home-bias), while foreign investors tend to withdraw their capital earlier. In addition, foreign investors typically prefer foreign currency denominated debt, and while the cost of borrowing for foreign currency debt may be lower than for securities denominated in local currency, the risk of exchange rate movements can make debt management more difficult and ultimately increase the cost of foreign currency debt. Increasing the share of domestic ownership, on the other hand, reduces the country's external vulnerability and is therefore a key objective of the Hungarian debt strategy. In Hungary, foreign-owned public debt has been steadily declining since 2013, which resulted in Hungary having the highest share of government securities held by households within the debt in 2019. The share of foreign ownership in Hungary was 33.9 per cent in 2019, lower than the average of the EU and the Visegrád of 45 per cent and 46.6 per cent, respectively.

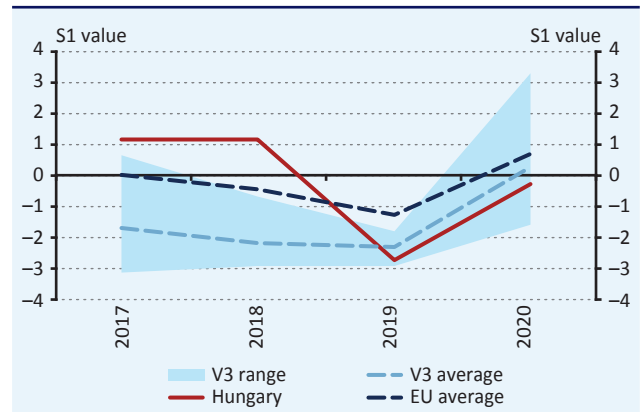
The long-term sustainability of the public finances will be challenged by the ageing of the population, which will also have an impact on social security systems. According to the European Commission's forecast, public pension expenditure as a percentage of GDP in Hungary could rise from 9.7 percent in 2016 to 10.6 percent by 2050. The estimated increase in expenditure is similar to that of the Visegrád countries, but higher than the EU average, which may be explained by structural differences in pension schemes and different pension rules.

5.4.1 Public debt-to-GDP ratio



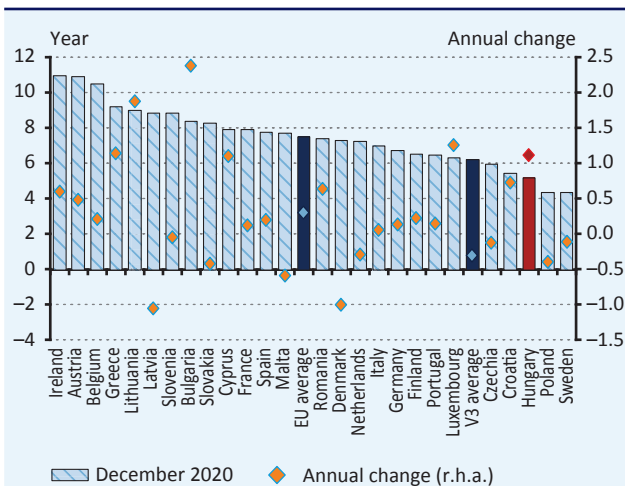
Source: Eurostat, European Commission.

5.4.2 S1 index indicating the risk of medium-term fiscal risks



Source: European Commission.

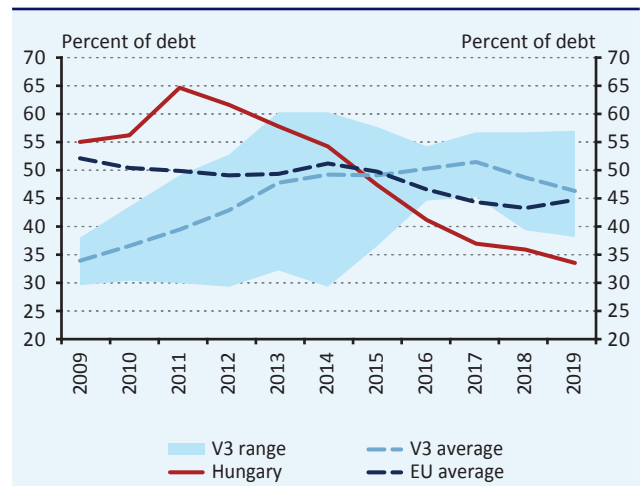
5.4.3 Public debt average residual maturity and annual change



Note: No data available for United Kingdom.

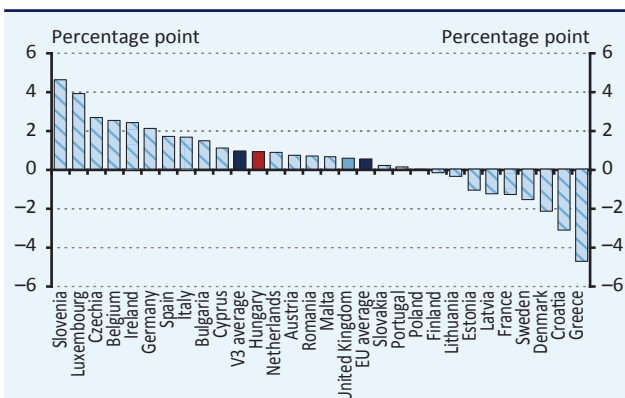
Source: ECB.

5.4.4 Non-residents ownership of the public debt



Source: ECB.

5.4.5 Expected change in pension expenditures as a percentage of GDP (2016-2050)



Note: Positive sign denotes the increase of expenditures, negative sign denotes the decrease of expenditures.

Source: Eurostat.

5.5 FINANCES OF THE NATIONAL ECONOMY

The financial sustainability of the national economy can be assessed by examining the macroeconomic and financial market balance, for which the availability and stability of the resources that finance economic growth (resource availability), creditworthiness and resilience to external shocks are important aspects. The current account balance shows the extent to which the economy's external current expenditure is covered by foreign income, thereby providing a picture of the economy's external balance and its dependence on external resources. Hungary's current account balance has improved significantly over the past decade compared to the pre-crisis imbalances, due to the adjustment of sectors and it not only rose to an outstanding level in a regional comparison, but also substantially exceeded the EU average. In recent years, the investment rate rose to an outstanding level compared to the EU, and the import component of investments was reflected in a decline in the current account surplus. However, this does not indicate a sustainability problem, as the indicator is in line with regional trends and, unlike the pre-crisis imbalances, this time it reflects the impact of growth supporting investments and its decline has not been accompanied by the indebtedness of sectors.

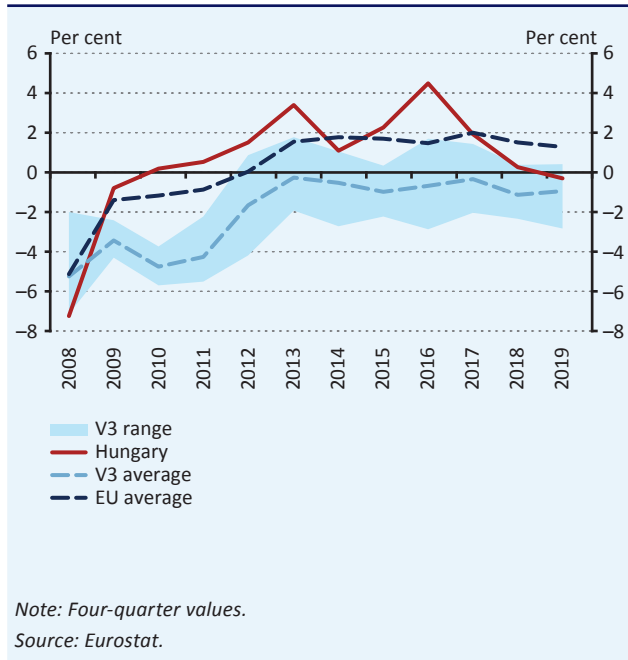
In assessing the long-term sustainability of balance of payments trends, in addition to flow indicators, stock indicators also deserve special attention. As the 2008-2009 crisis has shown also in the case of Hungary, excessive indebtedness to foreign actors carries external vulnerability problems, financing and rollover risks. An important indicator of the country's external indebtedness is the net external debt⁴ excluding intercompany loans, which shows how much the country owes to foreign actors after deducting outstanding receivables from the non-resident sector. Hungary's net external debt at the time of the crisis was several times the level characterising the region, which represented a serious financial sustainability problem. However, due to the high net lending in the past decade and the reduction of external liabilities, the Hungarian economy managed to overcome its significant disadvantage in this indicator. The indicator has improved steadily (and to an outstanding extent in the EU), falling to a level corresponding to the regional average by 2020 – but given that eight countries in the EU have even larger net lender positions – there is room for further decline.

External vulnerability, i.e. the sufficiency of foreign exchange reserves, is also a key factor for credit rating agencies to assess the debt servicing and solvency of the economy. The ability to roll over maturing debt and the reliance on external liabilities can be captured as the ratio of gross borrowing requirement to the assets that finance them (current account income and available reserves), according to the S&P methodology. Hungary, together with the region, compares favourably internationally in this indicator, as its reserves and foreign incomes roughly cover its gross borrowing requirement. It is also important to note that for many euro area countries, the TARGET liability is also an external debt, which however entails low risk.

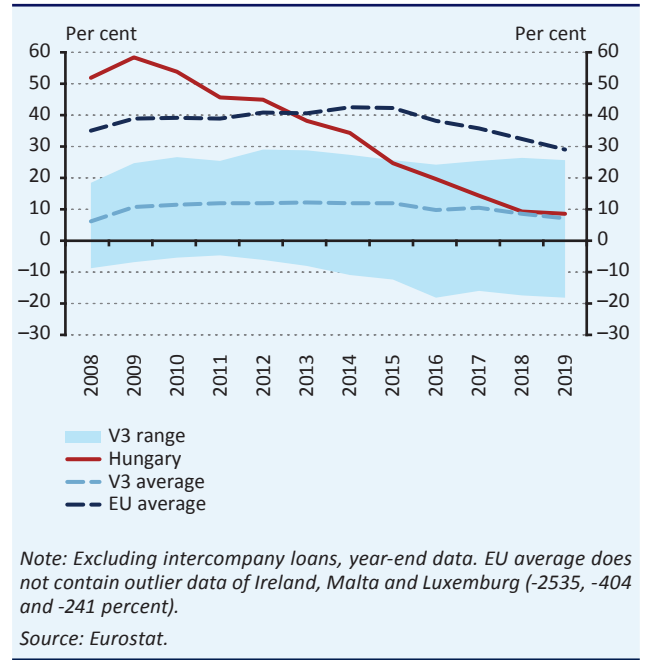
The sustainability of the financing of the country, and particularly of the state, is also reflected in the 5-year CDS spread, which shows the government's default risk. While the default risk of domestic and many CEE sovereigns was the highest in the EU during the 2008-2009 crisis, the Hungarian value has been declining dynamically since 2012. Thus, by 2020, the Hungarian 5-year CDS spread fell to a level below that of many regional and Western European EU countries.

⁴ The rationale for the classification of intercompany loans as non-debt credits is explained in Box 3 of the April 2014 Report on the Balance of Payments.

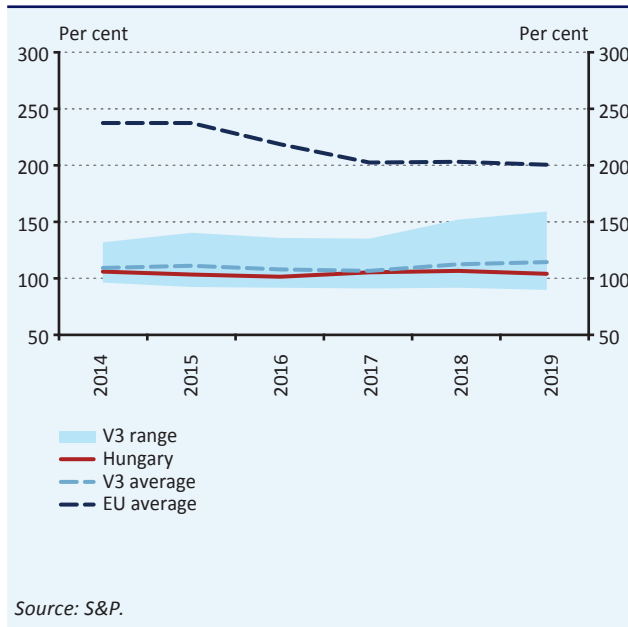
5.5.1 Current account balance as a percentage of GDP



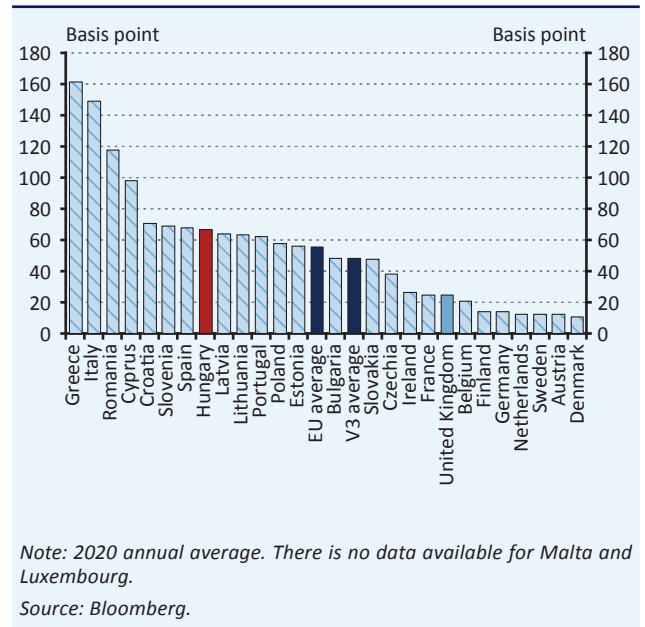
5.5.2 Net external debt-to-GDP ratio (excluding shareholder loans)



5.5.3 Gross financing need as a share of current account receipts plus useable reserves



5.5.4 5-year sovereign CDS spreads (2020, annual average)

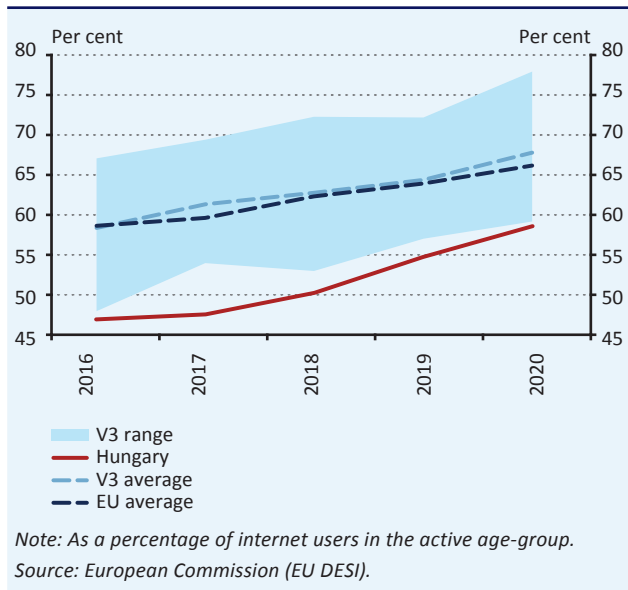


5.6 DIGITAL FINANCIAL SERVICES

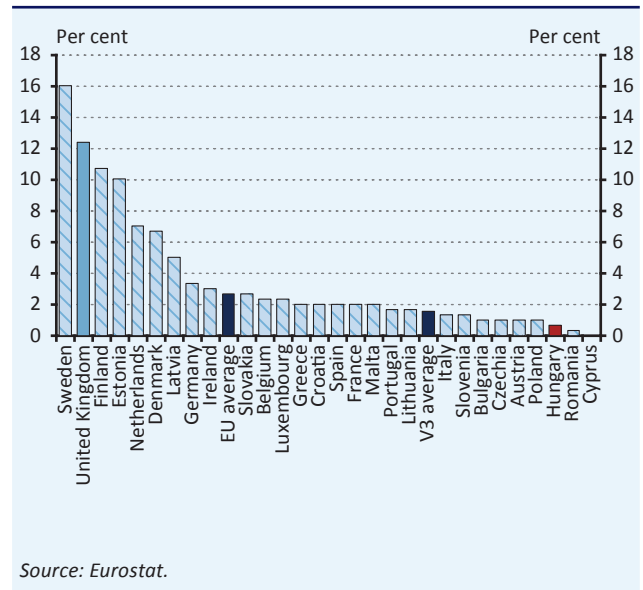
Around the world, we are witnessing rapid technological development in all industries and in everyday life. This development entails major penetration of digital innovations and business models based on modern, advanced technologies, which is expected to make the demand for services via digital devices, mainly online, relevant also in the longer term. The sustainability of financial services therefore also requires support for the penetration of online product and service delivery, as well as the development of institutional operations and supporting infrastructure, driven by the rise of innovative FinTech firms. On the one hand, the improvements will allow for more efficient and flexible operations in the longer term – possibly in a crisis situation – and on the other hand, they may also have an impact on other sustainability pillars (e.g. reducing environmental load).

In the context of the digital development of financial services, the online opportunities should be examined in terms of the different types of services and access channels, on the one hand, and the penetration of digital transaction methods, on the other. In terms of online banking, Hungary is in the lower third of the EU, lagging far behind the leading Scandinavian countries. However, there are encouraging signs that a convergence phase has started in recent years, bringing Hungary closer to the EU and V3 averages. The use of online channels for new financial products or services is currently less widespread in Hungary than in most EU countries. In terms of taking out online insurance products, Hungary is at a similar level to the EU and the V3 averages, but there is still significant room for improvement compared to the best performing European countries. There is a robust lag in online borrowing and online use of investment services compared to the EU average, but for the latter indicator the Hungarian data exceeds the V3 average.

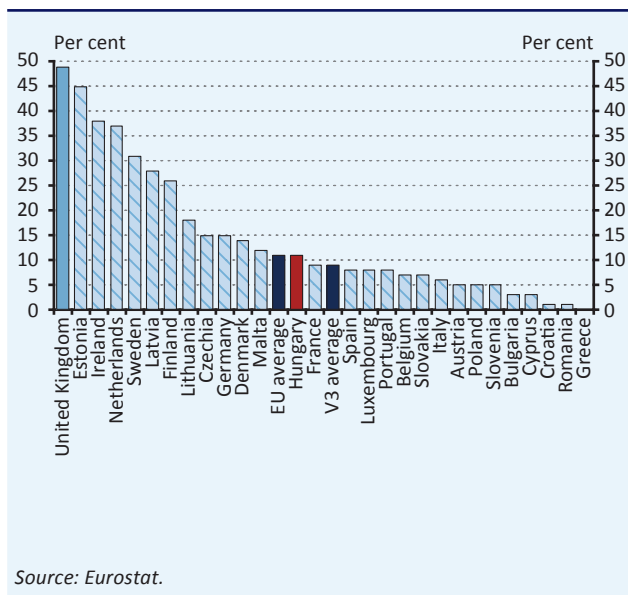
5.6.1 Changes in the ratio of online banking users



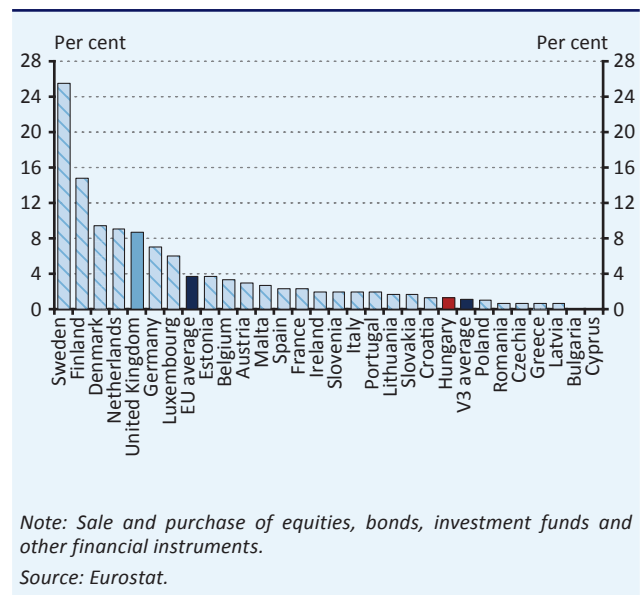
5.6.2 Ratio of customers taking a loan through online channel (2017-2019, average)



5.6.3 Ratio of customers taking out insurance products through online channel (2019)



5.6.4 Ratio of customers using investment services through online channel (2017-2019, average)



5.7 ELECTRONIC PAYMENT SERVICES

In many ways, electronic payment services that meet the needs of consumers in the 21st century are of public utility nature and essential to everyday life. Just think of the impact of the technological and communication revolution on the role of space and time, which makes it inconceivable to carry out certain economic processes without the continuous availability of electronic payment services offering remote and real-time settlement. In addition, modern payment infrastructures have a significant impact on the shaping of economic processes. They play a positive role in the reduction of the shadow economy and the associated tax evasion and high social costs associated with cash use. Moreover, the development and usage rates of electronic payment services are clearly correlated with the rate of economic growth, which is a key factor for sustainable convergence in Hungary in the long term.

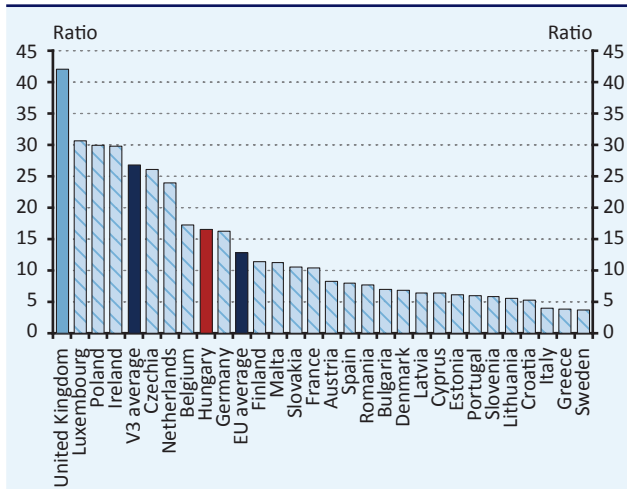
Recognising the potential of electronic payment services, and taking advantage of the opportunities created by the often less flexible innovation and willingness of traditional players in the payments market, many FinTech and BigTech players are trying to carve out a slice of the payments market, often resulting in the emergence of closed solutions operating in parallel. In addition, in many cases consumers are using payment solutions that are partly or entirely outside the existing regulatory and supervisory framework. All of these factors lead to the fragmentation of the payments market and leave the full potential of electronic payment services unutilised. It is therefore key to ensure the penetration of interoperable electronic payment solutions that are designed to drive long-term innovation and thus continuously improve competitiveness. This is supported by efficient and stable financial infrastructures that can automate transactions and communicate information to all market participants. This helps avoid the need for economic agents and financial institutions to have individually concluded agreements or parallel registers to carry out payment transactions. This in turn contributes significantly to the efficient and sustainable functioning of the economy.

Taking all this into account, the central elements of the MNB's payments development strategy also focus on ensuring that easy and simple-to-use electronic payment alternatives are created and used as widely as possible in as many payment situations as possible. The MNB has developed a number of indicators to monitor sustainable development.

The change in the ratio of credit transfers to GDP has been on a downward trend in previous years, but this was mainly due to the higher GDP growth rate. Even so, the indicator is still at a very high level, even by international standards, due to the outstanding volume of corporate credit transfers. Moreover the successful introduction of the instant payment system on 2 March 2020 could provide a new impetus for further growth.

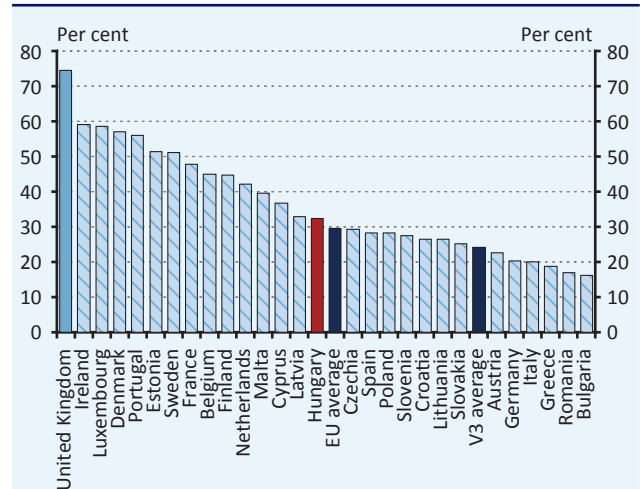
Due to the development and high level of security of the domestic payment card infrastructure, the spread of contactless technology and the significant increase in card purchases – the indicator of the efficiency of retail payments, which represents the electronic payment of purchases – has been steadily improving. This improvement is also reflected in the number of card purchases per capita and in the number of purchases per POS terminal. Although there is still considerable room for improvement in these areas, the change in legislation for those who are obliged to use an online cash register, which requires them to provide customers with the option of electronic payment from 1 January 2021, could lead to further progress in these areas.

5.7.1 The ratio of the total value of credit transfers to GDP (2019)



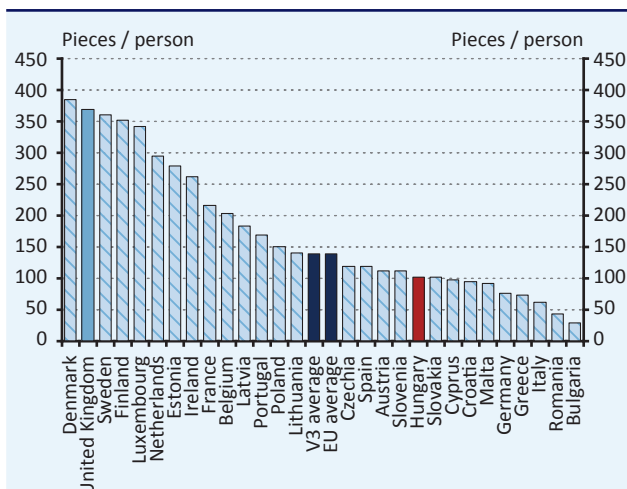
Source: Eurostat, ECB.

5.7.2 Purchase transactions conducted with payment cards (2019)



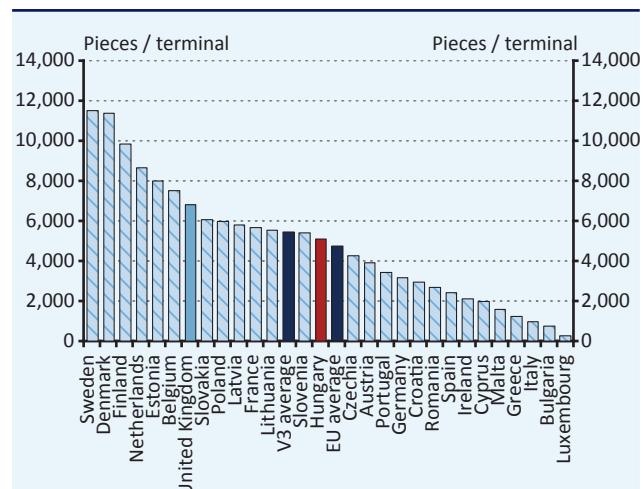
Source: Eurostat, ECB.

5.7.3 Number of payment card purchase transactions per capita (2019)



Source: Eurostat, ECB.

5.7.4 Domestically issued payment card purchase transactions per POS terminals (2019)

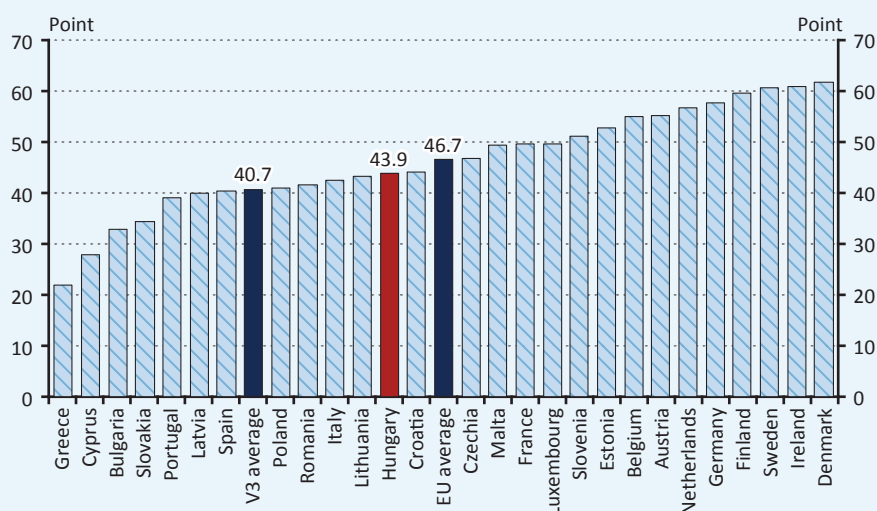


Source: ECB.

6 Sustainable growth

Hungary ranked 16th in the sustainable growth pillar with 43.9 points. Based on the average performance of the six sub-pillars in the pillar, Hungary scored higher than the average of the V3 countries (40.7) but lower than the EU average (46.7). Denmark, Ireland and Sweden are among the best performing countries in the sustainable growth pillar, while Greece, Cyprus and Bulgaria are the worst performing. This area has the highest standard deviation of the four pillars among the countries surveyed. Hungary scored the highest in the *Inflation* and *Economic Growth* sub-pillars (66.7 and 55.1 respectively), the latter being the sub-pillar in which Hungary ranked the highest (6th). Hungary came top in the *Economic Growth* sub-pillar, because the investment ratio in Hungary was outstanding in an international comparison among the indicators of the sub-pillar.

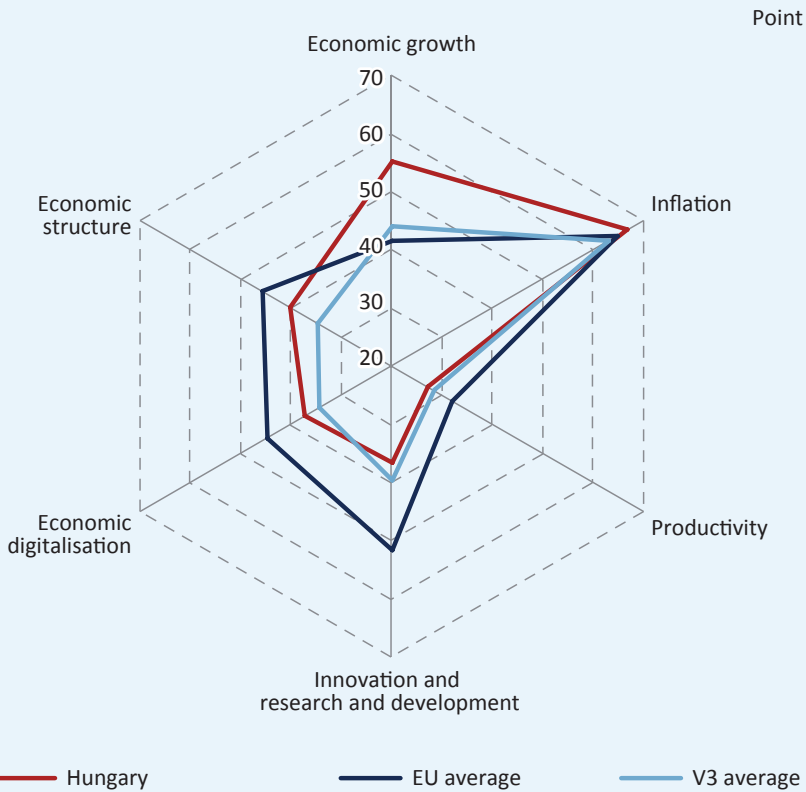
Chart 6.1
Aggregated results of the sustainable growth pillar
 (2021)



Note: The scale range is 0-100 points, with 100 being the best value.

Source: MNB.

Chart 6.2
Results of the sustainable growth pillar by sub-pillars
(2021)



Note: The scale range is 0-100 points, with 100 being the best value.
Source: MNB.

6.1 ECONOMIC GROWTH

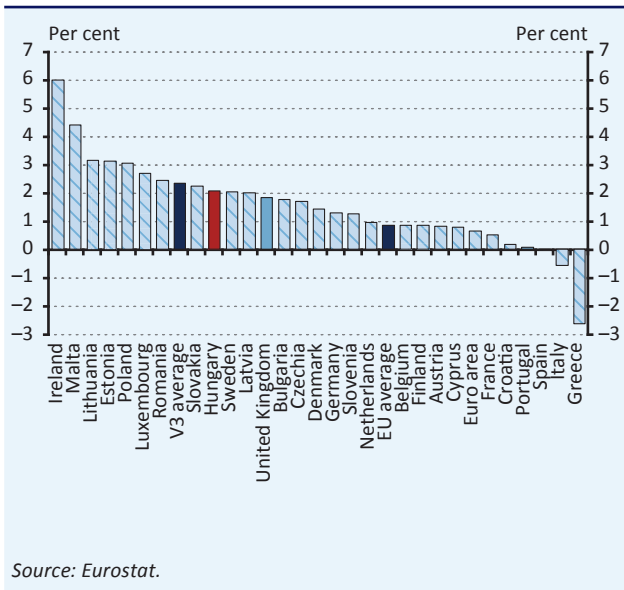
Achieving development and as high social welfare as possible a central issue in economics. One element of ensuring broad social welfare is higher economic growth. One of the most commonly used indicators of economic development is gross domestic product (GDP), and GDP per capita. Hungary has had a successful decade in terms of economic growth, as from 2013 the Hungarian economy has been on a balanced growth path. In recent years, Hungary's economy has grown well above the growth rate of the European Union, thereby achieving significant economic convergence.

Investment growth has played a particularly important role in this convergence period. Higher investments substantially contribute to increasing the longer-term growth potential of the economy. Hungary's investment ratio in 2019 was the second highest in the EU, reflecting the steady expansion of production capacity. The renewal and expansion of production capacities is particularly dependent on the development of business investments. International examples show that achieving a macro-economic sustainable convergence requires an investment rate of at least 25 per cent per year.

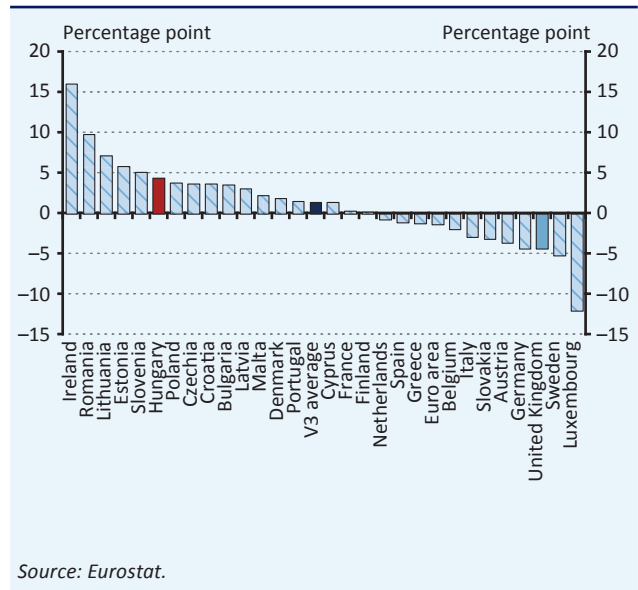
From the early 2000s onwards, the Hungarian economy went through a period of growth with unsustainable household and public sector indebtedness, which, not uniquely in the region, resulted in a persistent negative trade balance. The global financial and economic crisis of 2008-2009 led to an improvement in the trade balance through a significant fall in domestic demand items (consumption, investment), which remained in the positive range throughout the convergence period following the financial crisis. In 2019, net exports of Hungary as a percentage of GDP remained around the V3 average.

Overall, Hungary has been on a path to converge to the European Union over the past decade, supported by the sustainability of the external balance and high investment rates. Although the impact of the coronavirus pandemic reduced GDP in 2020, during the second wave of the pandemic showed performance was significantly better than the first wave. The positive year-end figures also provide a good basis for the rapid recovery of the economy. Despite the negative economic impact of the pandemic, trade surplus of Hungary may be maintained in 2020. Although the investment rate may have declined slightly last year, it remained above 25 per cent, still one of the highest in the EU.

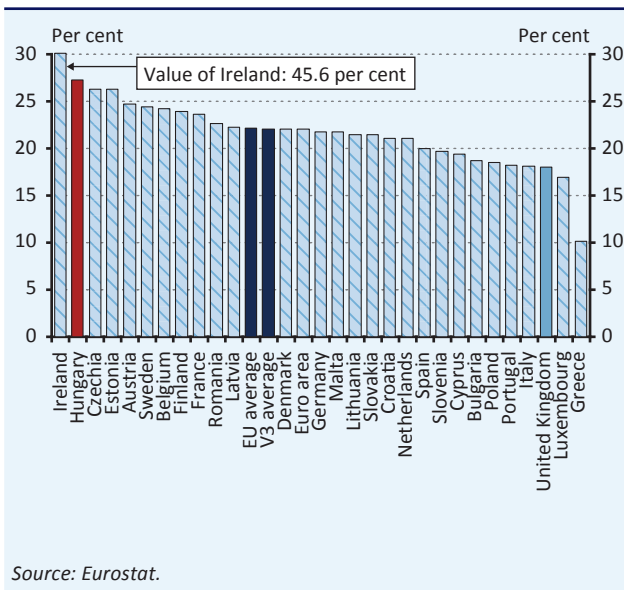
6.1.1 Average economic growth (2010-2020)



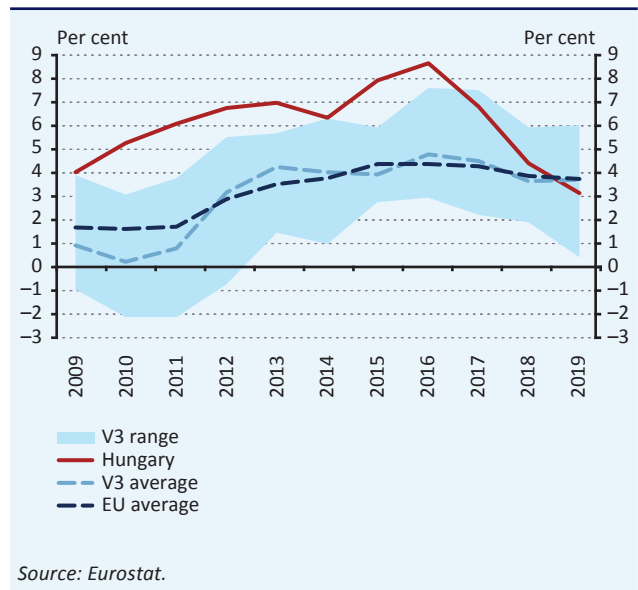
6.1.2 Change in GDP per capita compared to the EU average at purchasing power parity (2016-2019)



6.1.3 Investment rate (2019)



6.1.4 Net export as a percentage of GDP



6.2 INFLATION

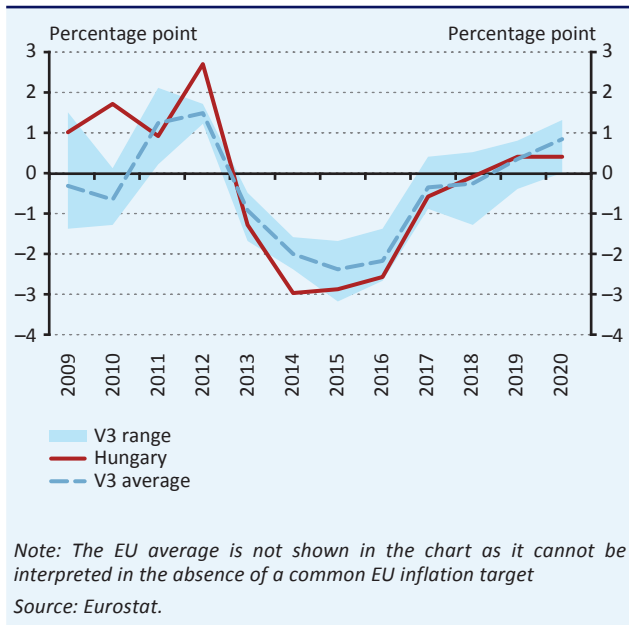
An important pillar of sustainable growth is stable and moderate inflation of low volatility. Persistently high or low inflation can have undesirable costs or adverse effects for economic agents. No economy can thrive in the face of macroeconomic uncertainty, and thus if there are significant fluctuations in the level of prices, this is detrimental to the decisions of economic agents (consumption, investment, etc.) and ultimately to growth.

In recent years, the MNB has been outstandingly successful in meeting its inflation target, as inflation rate of Hungary has been steadily close to the target level since 2017 except a few cases. No other sovereign European central bank could achieve this positive performance, except Austria, which is part of the euro area. The phenomenon of inflation remaining at globally low levels also makes it difficult to achieve inflation targets in the EU countries, as most countries, with a few exceptions, have been significantly below target for years. For countries in the region, the point target is accompanied by a tolerance band of +/- 1 percentage point. During 2020, average annual inflation in the Czech Republic and Poland also exceeded the upper edge of the tolerance band, while in Romania price growth was within the inflation band and slightly below target.

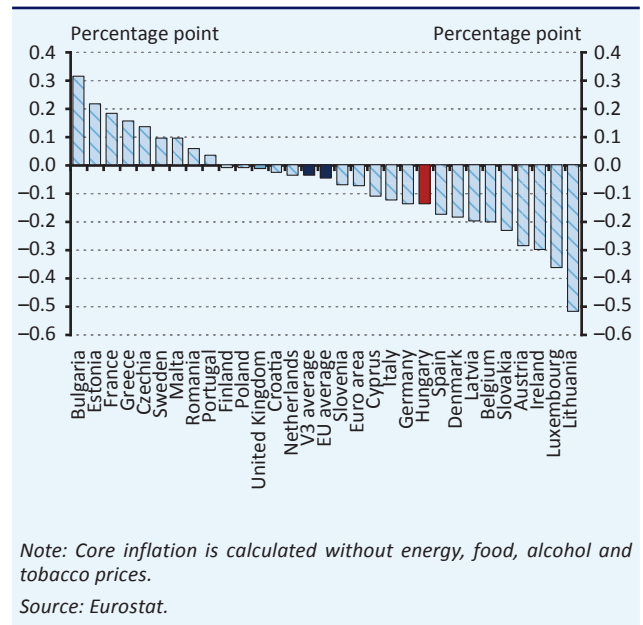
The sustainability of inflation is also affected by the structure and volatility of inflation. In the former case, it is the relationship between inflation and core inflation, and in the latter case, the relative standard deviation of core inflation compared to the inflation target, which is more closely tracking underlying processes, is worth examining.⁵ On average, inflation in the EU countries has typically been lower than core inflation in recent years, mainly explained by the declining price dynamics of fuel prices among the non-core inflation items. Between 2013 and 2016, world oil prices fell from USD 120 / barrel below USD 30/barrel, the downward effect of which was only slightly offset by the correction that lasted until the outbreak of the coronavirus. In 2020, food prices, along with fuel prices, have already shown an overall downward trend. In terms of the relative standard deviation of core inflation over the past 10 years, Hungary is in the top third of the ranking, with the core inflation indicator – which better reflects underlying processes – fluctuating on average in a relatively narrow range around the target.

⁵ For inflation, the Harmonised Indices of Consumer Prices (HICP) published by Eurostat are used instead of national inflation rates to ensure international comparability. For core inflation, we used the Eurostat definition of core inflation, being the HICP inflation excluding energy, food, alcohol and tobacco.

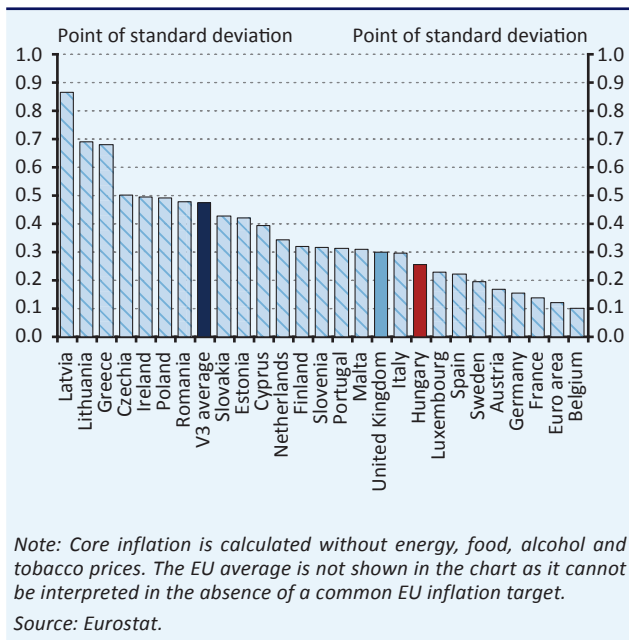
6.2.1 Deviation of the harmonised consumer price index from the target



6.2.2 Difference between the harmonized indices of consumer prices and core inflation (2013–2020, average)



6.2.3 Comparison of variance in core inflation (between 2010 and 2020) and inflation target



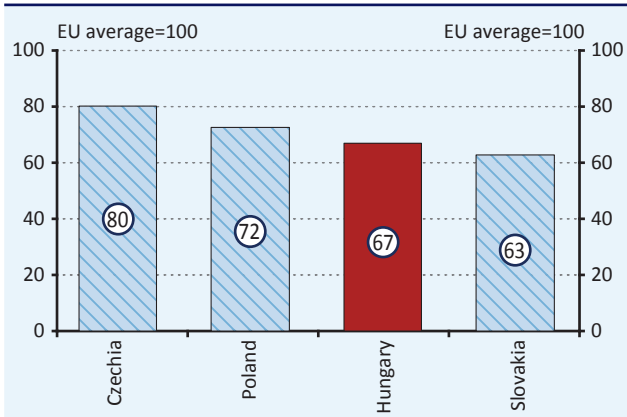
6.3 PRODUCTIVITY

Increasing productivity is an essential prerequisite for sustainable convergence. This is particularly true for converging economies such as Hungary, which lag behind advanced economies in productivity. In addition, the importance of productivity is underlined by the fact that in recent years the newly available labour force has declined significantly as Hungary has approached full employment. The pandemic crisis has only slightly increased the unemployment rate in 2020, due to the economic policy measures and the resilience of the labour market. Looking ahead, as the economy recovers, attraction of labour force will once again become constrained and sustained economic growth will only be achieved by improving productivity. A lasting breakthrough will happen if the domestic growth model shifts more from increasing limited quantitative factors to improving qualitative factors, such as knowledge and technology.

Domestic GDP per hour worked was around two-thirds of the EU average and exceeded only Slovakia's productivity in the Visegrád region. Accordingly, there is still plenty of room for growth. However, the change in domestic labour productivity showed a positive trend: Productivity growth was 3.5 per cent on average annually between 2017 and 2019, with productivity growth in the SME sector playing a key role. By comparison, annual labour productivity growth was only 0.8 per cent of the EU average in this period. Productivity growth in the domestic SME sector has been very dynamic compared to both the EU and regional averages since 2013, driven by both central bank and government programmes. Owing to the positive developments of recent years, productivity per employee has increased in all size categories of the SME sector, but there has been no significant change in labour productivity in large companies over this period. Despite the narrowing of the labour productivity gap by size, the degree of duality is still significant, and thus the convergence of productivity in the SME sector remains an important growth reserve.

Overall, productivity has become more dynamic in recent years, which is positive from a sustainability perspective. The economy contracted by more than 5 per cent in the wake of the crisis caused by the coronavirus pandemic, while the impact on the labour market remained moderate. This labour market reservation has led to a fall in productivity, but this may be regarded as a cyclical phenomenon rather than a structural decline in productivity.

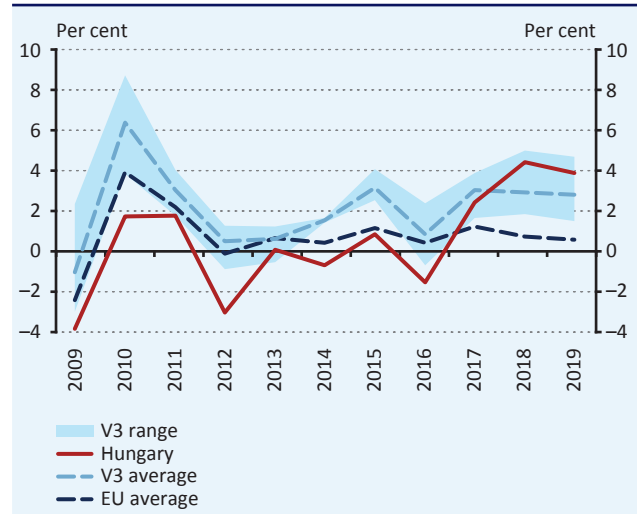
6.3.1 GDP per hour worked as a percentage of the EU average, in euro based purchasing power parity (2019)



Note: The indicator was calculated on the basis of full-time equivalents, i.e. the indicator takes into account the proportion of part-time workers.

Source: MNB calculations based on Eurostat data.

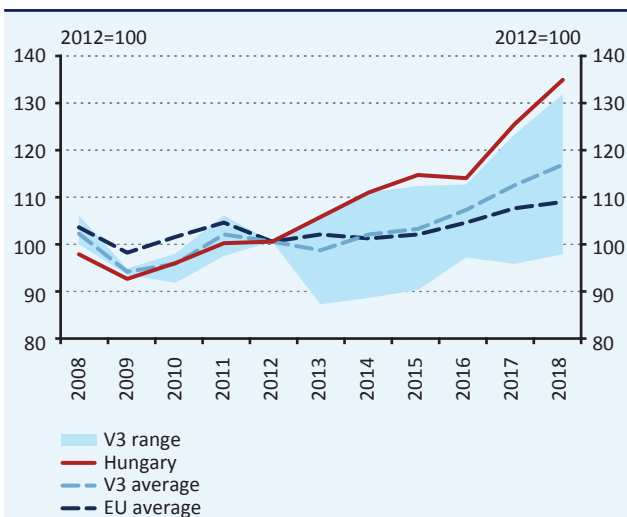
6.3.2 Change in real GDP per hours worked (2009–2019)



Note: The indicator was calculated on the basis of full-time equivalents, i.e. the indicator takes into account the proportion of part-time workers.

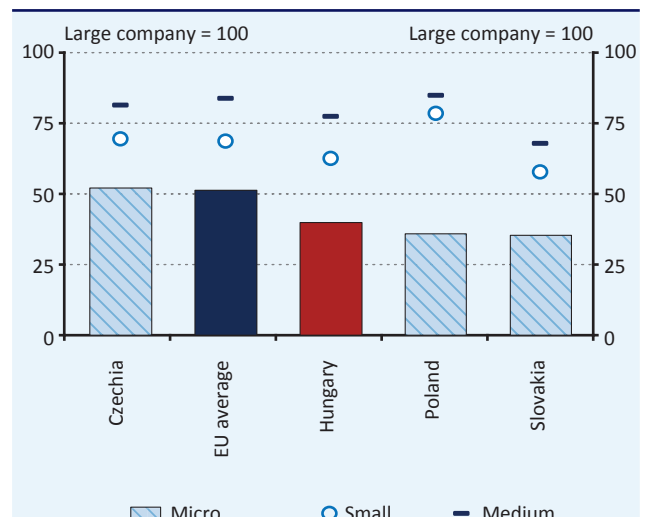
Source: MNB calculations based on Eurostat data.

6.3.3 Changes in real labour productivity of SMEs (2012=100)



Source: MNB calculations based on DIW data.

6.3.4 Labour productivity of SMEs compared to labour productivity of large companies (2018)



Source: MNB calculations based on DIW data.

6.4 INNOVATION AND RESEARCH AND DEVELOPMENT

Competitive research and development (R&D) and innovation are preconditions for an economy that converges in a technologically sustainable way. This is why the Hungarian economy needs to shift from an investment-driven to an innovation-driven model, which requires not only increasing R&D spending and the number of researchers, but also expanding and increasing the innovation capacity of businesses, and closer cooperation between the public, higher education and business sectors.

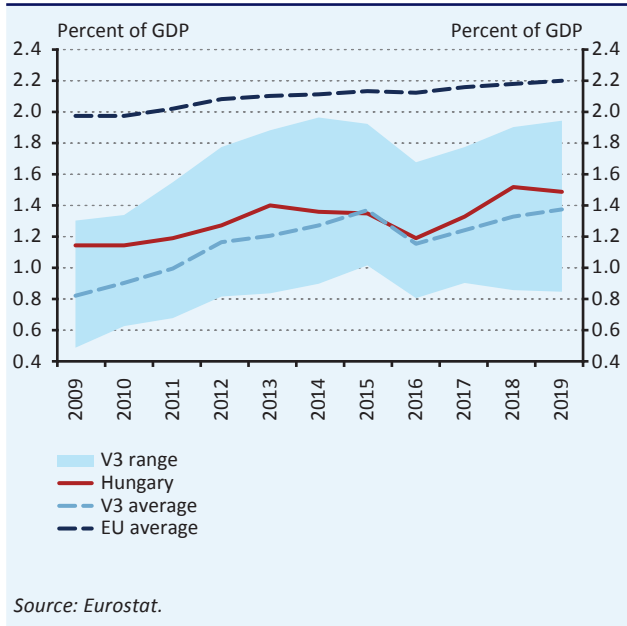
Innovation performance of Hungary is below the EU average, but corresponds to the regional average. R&D spending as a percentage of GDP increased from 1.1 per cent in 2009 to 1.5 per cent in 2019, which exceeds the V3 average by more than 0.1 percentage point, but is well below the EU average of 2.2 per cent. Looking at the structure of R&D spending, business R&D spending is relatively high, but in higher education, Hungary uses the third lowest amount of R&D funds (0.21 per cent of GDP) after Romania and Bulgaria, together with Slovakia. The R&D workforce accounts for 1.3 per cent of total Hungarian employment, higher than the Visegrád average of 1.1 per cent but lower than the EU average of 1.5 per cent.

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 inefficient utilisation of resources. The decline in new intellectual property right registrations can be attributed to several reasons. On the one hand, multinational companies register their new inventions and technological achievements in the country of their registered office, even if they were not developed there. On the other hand, the bulk of knowledge-intensive business research is carried out in the EU's core countries. Thirdly, the number of patents filed with the European Patent Office has increased steadily in recent years, which has led to a decline in the number of patents filed with national patent offices in some countries. In addition, high domestic maintenance fees and the lack of favourable accounting for patent revenues also curb domestic patent registration activity.

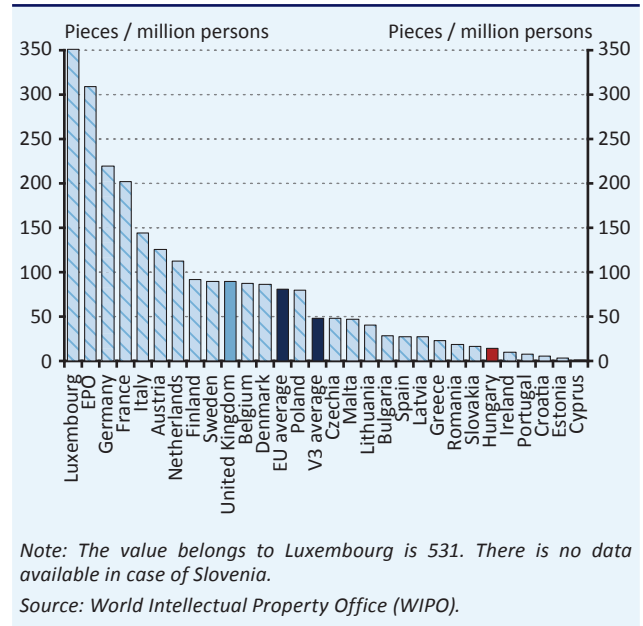
The innovation capacity of the Hungarian SME sector ranks in the bottom quarter of EU Member States, significantly below the EU average and slightly below the Visegrád average. The ratio of SMEs performing product and process innovation (18 per cent) is on the rise since 2009, but it is still below the EU average (34 per cent). The improvement in the product and process innovation indicators indicates the gradual adaptation of new technologies, robotisation and digital solutions. There is also some progress in the field of organisational and marketing innovation, which facilitates convergence in corporate governance and management competences, but there is still considerable room for improvement in both indicators.

The innovation capacity of advanced economies is also commonly characterised by composite innovation indicators. The Bloomberg Innovation Index puts Hungary in the mid-range, with a score above the V3 average but below the EU average. In the Bloomberg Innovation Index, Hungary ranks better than the EU (28th, 29th) and Visegrád (32nd, 39th) averages in the areas of R&D intensity (23rd) and the presence of high-tech companies (24th), while in the areas of higher education efficiency (53rd) and patent activity (48th), Hungary is significantly behind the EU (26th, 33rd) and Visegrád (37th, 36th) averages.

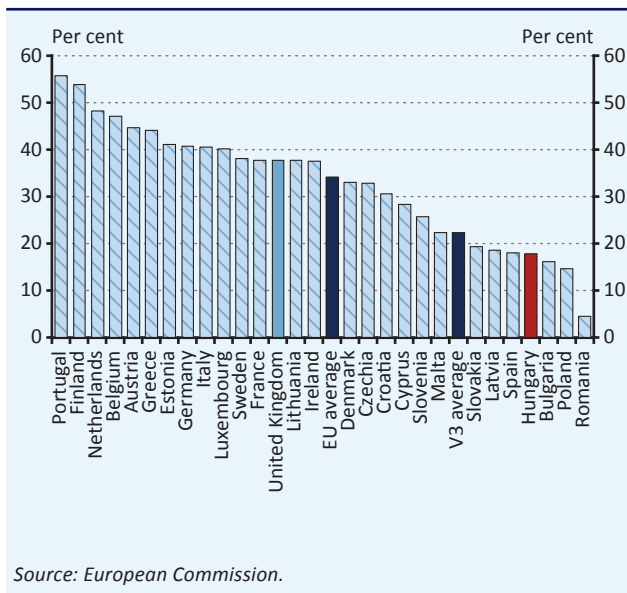
6.4.1 R&D expenditures



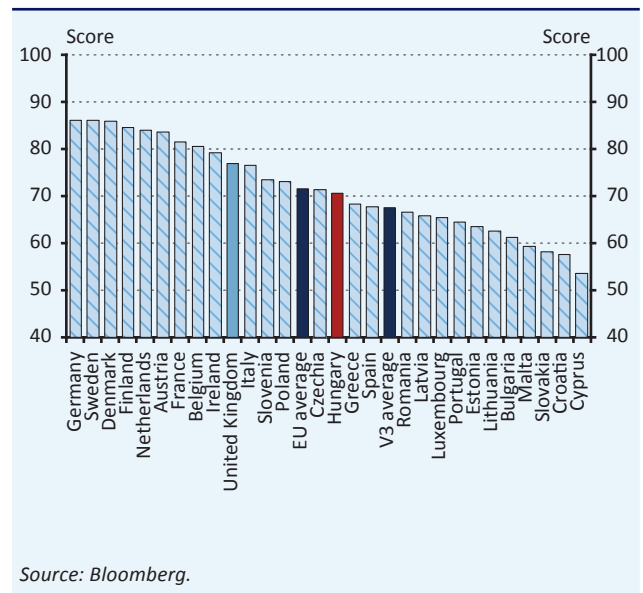
6.4.2 Total new patent grants (2019)



6.4.3 SMEs pursuing product or process innovations (2017)



6.4.4 Bloomberg Innovation Index (2021)



6.5 ECONOMIC DIGITALISATION

One source of productivity growth that is essential for sustainable convergence is the digitalisation of the economy. The penetration and use of digital solutions requires fast, modern, reliable and affordable internet access, as well as the readiness and willingness of businesses to adapt and the capital to implement them.

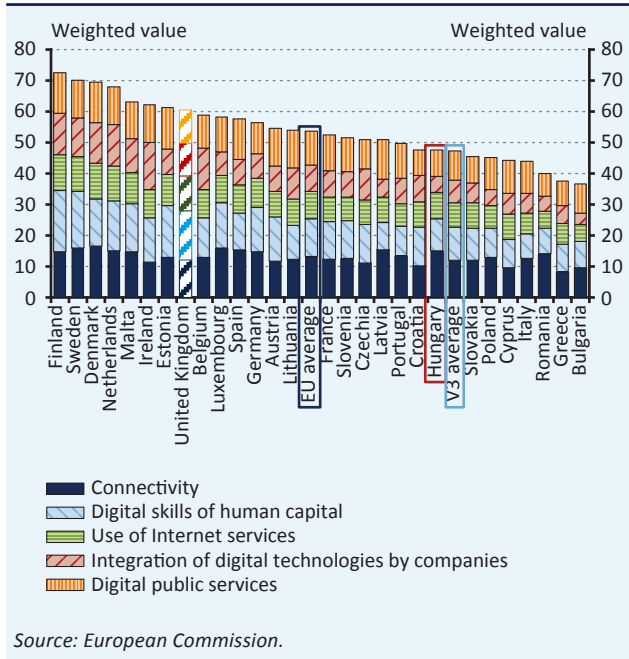
The Digital Economy and Society Index, produced by the European Union, measures the digital development of EU Member States. Hungary's development is below the EU average, but slightly above the average position of its Visegrád competitors. Hungary ranks seventh among EU Member States in the connectivity pillar of the indicator, which measures the development level of digital infrastructure. The biggest growth potential in Hungary's digitalisation is in the digital technology and e-commerce solutions for businesses, digital public services and digital skills of the population.

The readiness of the 5G mobile internet shows the ratio of a country's 5G-capable frequencies licensed and taken into use by the service providers. Hungary is ranked third in this indicator among EU Member States, with 60 per cent of the total 5G-capable frequencies already supporting the technology, which exceeds the EU average by 40 percentage points. 5G technology fosters the penetration of Industry 4.0 solutions, and thus it is essential that Hungary can maintain its advantage in the development of the technology.

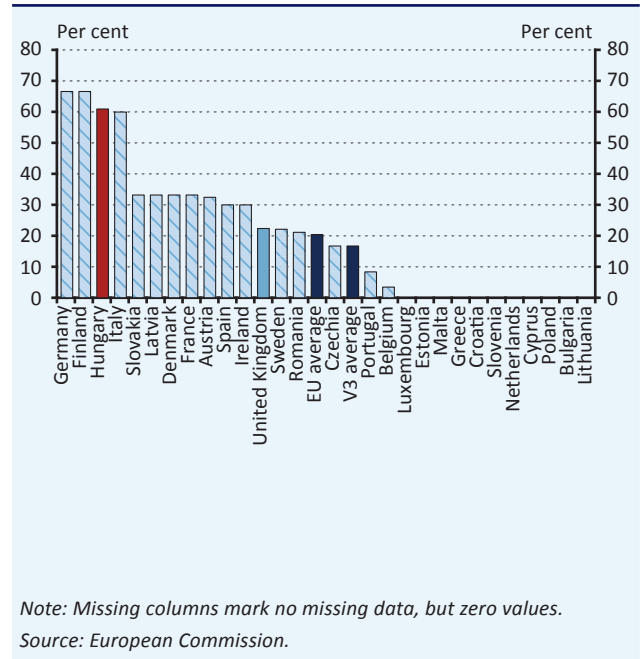
The spread of digital solutions in the SME segment is a priority, because Hungarian SMEs continue to lag behind large enterprises in terms of labour productivity, despite the convergence of recent years. The lack of adoption of digital solutions is one of the main reasons for the productivity gap between different sizes of companies. Hungarian SMEs have significant growth potential, especially in the use of enterprise resource planning (ERP) and customer management (CRM) software. Hungary ranks last in the EU in both factors. To reach the EU average, the ratio of SMEs using such solutions should be almost trebled. The penetration of the use of digital technologies could also be facilitated by mandatory requirements such as the introduction of online invoicing from January 2021, as digital invoicing systems are capable of automated processing. This could provide an incentive for companies to use more software solutions in the future.

Digital solutions are also an obvious way to expand sales channels. Hungarian companies are not exploiting the potential of online sales. Hungarian SMEs are at the bottom of the EU ranking in terms of adoption of e-commerce solutions (data from before the coronavirus outbreak). Digital marketing solutions are affordable, and therefore it is assumed that cost is not the main reason for rejecting such solutions. It is questionable to what extent the experience of companies, which in many cases have been forced to sell online as a result of the pandemic, will allow the use of these solutions on a permanent basis after the pandemic.

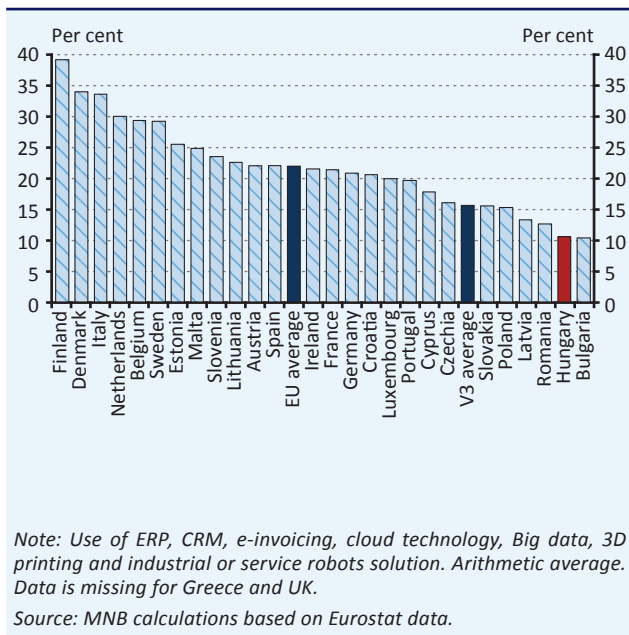
6.5.1 EU Digital Economy and Society Index (2020)



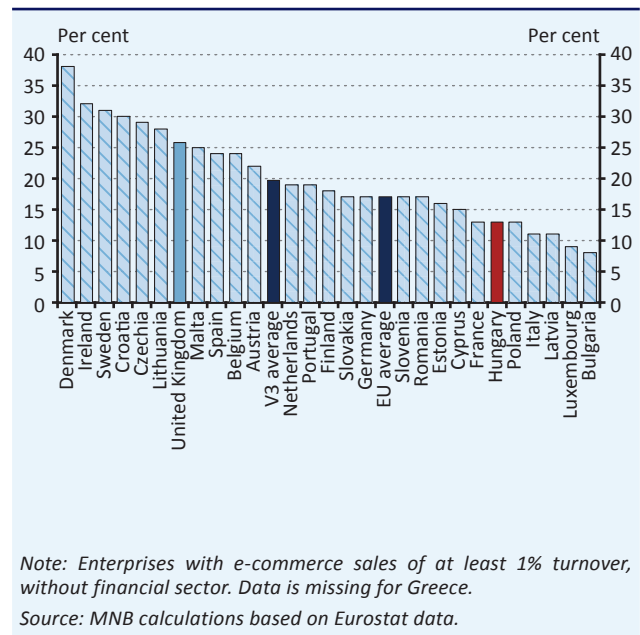
6.5.2 5G mobile internet readiness (2020)



6.5.3 Use of advanced digital business technologies of SMEs (2019)



6.5.4 SMEs selling on e-commerce channels (2020)



6.6 ECONOMIC STRUCTURE

The domestic value added in production shows the value added per unit of gross output. A higher figure indicates that a large part of domestic production and output is own value added, while in the case of a low value a significant part of the value added is generated outside Hungary. The value of the indicator in Hungary is significantly below the EU average, but it is a positive sign that it has been steadily improving since 2011 and is higher than its regional competitors. On the one hand, this is due to the increasing weight of the services sector in the economy, which has a higher domestic value added content, and on the other hand, efficiency gains have been made in some sectors, especially in the professional, technical, scientific and administrative branches of the national economy. Among the productive sectors, the value adding capacity of the vehicle manufacturing sector in particular should be improved by increasing the share of domestic suppliers.

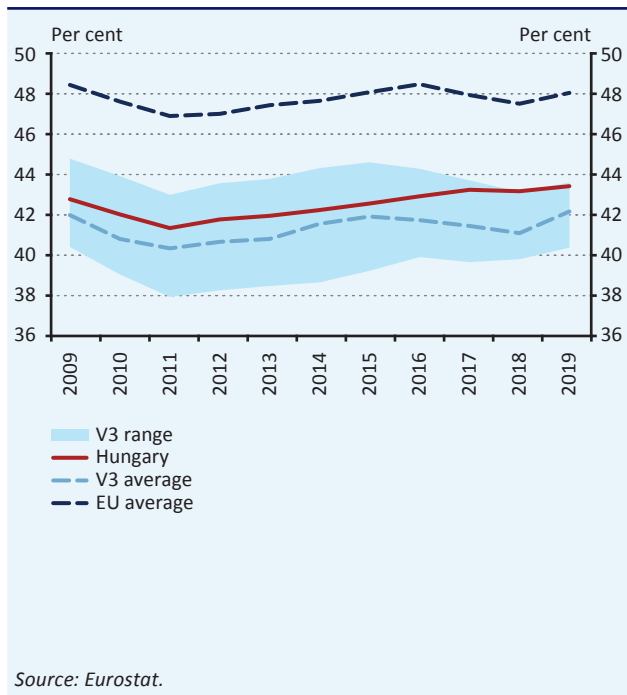
The value added content of the economy rose while the share of knowledge-intensive employment fell, due to several factors. On the one hand, employment growth in non-knowledge-intensive jobs was faster than in knowledge-intensive jobs over the period, and sectors with higher value-added density also expanded non-knowledge-intensive jobs significantly (e.g. public administration). The ratio of knowledge-intensive employment rises again from 2018, but Hungary would need nearly 180,000 more highly qualified workers to reach the EU average, while employment rates would remain unchanged.

The economic complexity index shows the degree to which a country is diversified in terms of its external trade structure. Both Hungary and the Visegrád region are more complex than the EU average, due to the strong presence of manufacturing along with the continuously developing service sectors.

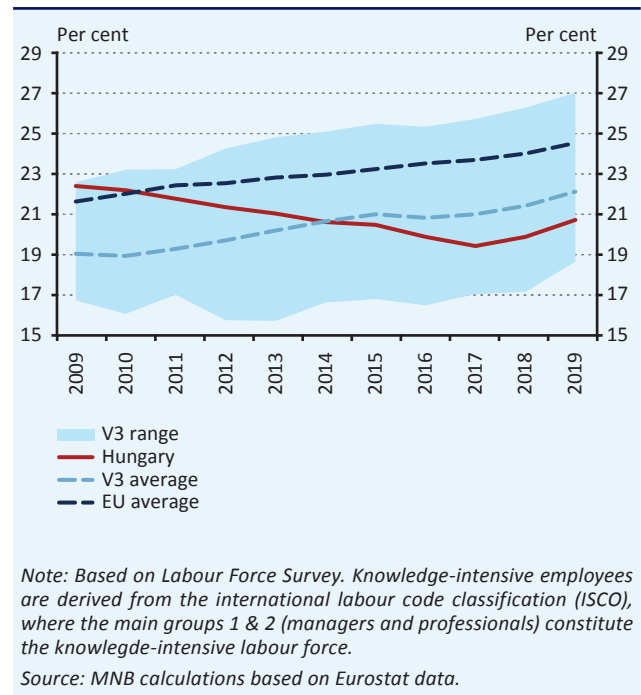
The development of the SME segment is of key importance, as it is the largest employer and has a significant role to play in improving the country's income-generating capacity. Hungarian companies, and particularly SMEs, tend to export at a lower rate than the EU average, but ahead of the regional average. A worrying trend is that since 2012, around 5,000 exporting SMEs have disappeared (or in a few cases changed its size category), of which almost 4,600 companies ceased their export activities in the micro-enterprise segment.

Overall, the trends in recent years do not show a consistent picture from an economic structure point of view: the share of value added has increased, but the share of knowledge-intensive employment has declined due to the extensive expansion of the labour market. In the latter factor, approaching full employment resulted in a positive change from 2017. Hungary's economy is sufficiently complex, but there is still significant room for growth in the SME sector and in low value-added sectors.

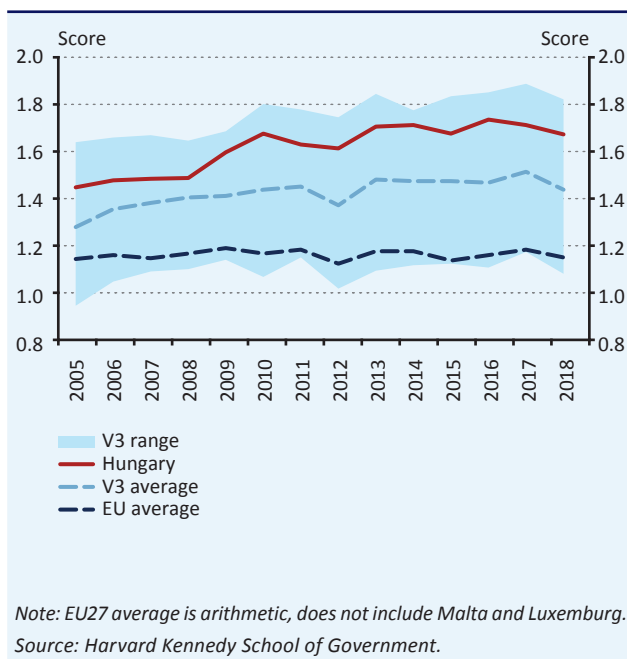
6.6.1 Domestic value added in production



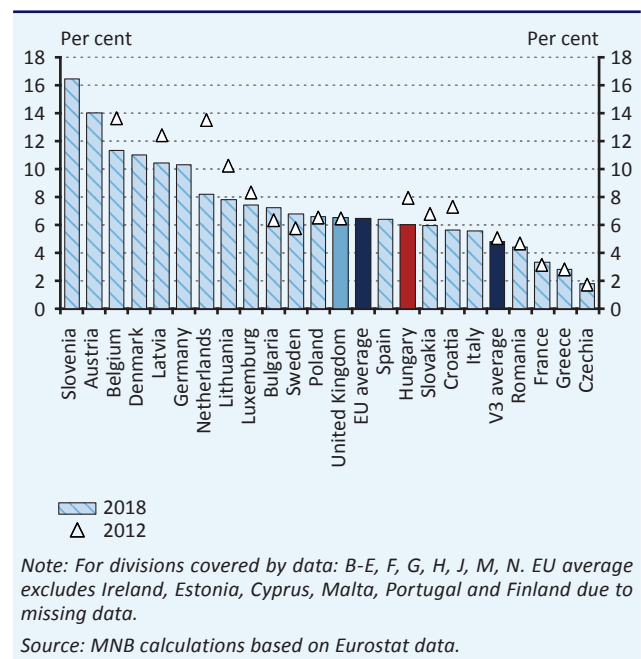
6.6.2 Share of knowledge-intensive employees in the economy



6.6.3 Economic Complexity Index (ECI)



6.6.4 Share of exporting companies in total (2018)



Sándor Kopátsy

(Kaposvár, 27 February 1922 – Budapest, 8 November 2020)

Sándor Kopátsy was born in Kaposvár in 1922. After primary school he continued his studies at the Kaposvár Secondary Modern School, Real Gymnasium, then enrolled in the Faculty of General Engineering of the Budapest University of Technology and Economics. In 1945, the Budapest University of Technology and Economics was relocated to Germany, but Kopátsy stayed in Hungary, and thus he did not obtain his graduation certificate.

After 1945, he became active in politics, joined the National Peasant Party and soon became the party's secretary in Baranya county. He also joined the left-wing youth alliance, becoming secretary-general of the Hungarian Democratic Youth Alliance in South Transdanubia. It was here that he met the peasant writers whose intellectual heritage accompanied him throughout his life.

He worked in state farms as a manual worker, as a successful site architect, and as a result he was invited to the National Planning Office, where he worked for eight years. He was interested in the reform of planned economy and regularly published articles in the Bulletin of Economic Planning and the Economic Review.

From 1953, he was involved in all economic reform programmes, and in 1954 he also drew up a programme for Imre Nagy. During the Hungarian Revolution of 1956 he was chairman of the revolutionary committee set up in the Planning Office.

He worked in the Ministry of Finance and was founder and first director of Financial Research Plc. During this period he taught and lectured at the Budapest University of Economics. He was awarded the title of Doctor of the Hungarian Academy of Sciences, and later also the title of university professor. In the 1960s he was the author and initiator of the series entitled 'Magyarázom a mechanizmust' (Explaining Mechanism). After the political transition, he was a member of the board of directors of the State Property Agency for two years, and from 1992 to 1998 he was chairman of the board of trustees of the Privatisation Research Institute, before working as an adviser to György Matolcsy.

He has published almost 30 books, in which he has put forward convincing and modern arguments in support of the truth that István Széchenyi said 170 years ago: the most important asset of the economy is the educated human capital. He believed that in recent advanced societies, the success of an economy depends not on capital investment or infrastructure, but on the volume of skilled and talented labour. A new approach to society requires new economics that takes into account not only physical capital but also intellectual capital, and increasingly emphasises talent, quality education and skills.

In 2011, he was awarded the Order of Merit of the Republic of Hungary with the State Cross with Star. He was awarded the Hungarian Economic Society's highest honour, the Economist's Life Achievement Award, at the 2015 Miskolc Annual Congress of the Hungarian Economic Association for his decades of outstanding professional service to the public, his rich oeuvre and his unparalleled originality of thought that has enriched the practice of economics. For many years, Mr Kopátsy was also a speaker at many economics society events, and several times delivered the closing lecture at the National Meeting of Young Economists.

He always fascinated his audience with his original ideas, astonishing insights and original proposals.

He had three children from his first marriage.

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