COMPETITIVENESS REPORT

2017

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

Albert Szent-Györgyi

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2017

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The purpose of the Competitiveness Report is to provide a comprehensive, objective picture of the aspects of Hungary's competitiveness that are less in the focus of the central bank's traditional macroeconomic analyses, although they are determinants in terms of economic developments. In 2016, the Magyar Nemzeti Bank published the book entitled 'Competitiveness and Growth' to analyse the changes in Hungary's competitiveness and explore options for moving forward. The Competitiveness Report examines and evaluates Hungary's competitiveness position in accordance with the principles and proposals laid down in the book.

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

This report was prepared by the staff of the Directorate for Fiscal and Competitiveness Analysis with the contribution of the staff of the Directorate Economic Forecast and Analysis, the Directorate Financial System Analysis and the Education Directorate. The analysis was approved by Dániel Palotai, Executive Director.

The analysis is based on information available for the period ending on 6 October 2017.

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1 Executive Summary

The Magyar Nemzeti Bank is publishing the Competitiveness Report for the first time, with the aim of providing a comprehensive and objective picture of Hungary's competitiveness. *In 2016, the MNB published the book 'Competitiveness and Growth' to analyse the changes in Hungary's competitiveness and explore the possibilities for moving forward. In accordance with that, for the purpose of credible assessment and monitoring of Hungary's competitiveness position, the Competitiveness Report provides a comprehensive, objective assessment in accordance with the principles and proposals laid down in the book. In addition, the creation of a regular publication is justified by the fact that the known international rankings deal with individual countries only briefly, typically without written assessment, and their findings may be distorted by the methodologies of the surveys as well.*

The Report also includes a detailed examination of dimensions that are less in the focus of the central bank's traditional macroeconomic analyses, although they are determinants in terms of economic developments. *The analysis of competitiveness is important for the central bank because it determines the long-term growth opportunities of the economy, which affect current economic developments as well. These areas and factors, which are basically of structural nature, influence – both over the medium and long term – economic agents' consumption, savings and investment decisions, potential economic growth, the financial balance and, through all of these, the expected yields and price level, as well as inflation.*

For a comprehensive, thorough assessment of competitiveness, we use more than 100 indicators, more than 90 percent of which are objective. *The analysis focuses on Hungary, comparing its position in terms of competitiveness and structure to its fellow competitors in the region and the European Union as a whole. For a comprehensive analysis and review of Hungary's competitiveness, the report covers 11 topics: (i) the macroeconomic environment, (ii) labour market competitiveness, (iii) demography and social structure, (iv) public sector competitiveness, (v) the competitiveness of enterprises, (vi) research, development and innovation, (vii) the competitiveness of energy market, (viii) education, (ix) health care, (x) banking sector competitiveness, and (xi) regional disparities within Hungary. In addition, we elaborate on the results concerning Hungary in the most widespread international competitiveness surveys and rankings.*

The strong macroeconomic fundamentals necessary for improving competitiveness have been established in Hungary in recent years. *Starting from 2010, as a first step, a budgetary reform was implemented in order to stabilise the general government and reduce public debt, and as a result of the structural reforms of the Széll Kálmán Plans, fiscal expenditures contribute to economic growth to a greater extent. From 2012–2013, the reform of monetary policy also took place. In addition to achieving price stability, the reduction of the policy rate and new, unconventional instruments (Funding for Growth Scheme, Growth Supporting Programme) contributed to economic growth and the avoidance of a credit crunch as well as to the turnaround in corporate lending. The Self-financing Programme and the conversion of households' foreign currency denominated loans considerably reduced the external vulnerability of the economy. In addition, these measures restored the macrofinancial balance of the national economy, stimulated economic growth to a greater extent than the EU average from 2013, and contributed to the fact that Hungary's debt rating was upgraded to investment grade category again by all the three major international credit rating agencies. As a result of the upswing in business activity, the employment rate caught up with the EU average, while real wages increased considerably, adding to households' savings and net financial wealth. The stability, profitability as well as the lending activity of the banking sector improved. As a result of the reforms, the tax burdens on enterprises and employees declined, R&D expenditures increased, and public expenditure on education has been rising since 2013.*

Nevertheless, progress is needed in various areas to overcome the handicap in competitiveness vis-à-vis the countries of the Visegrád region and to strengthen the turn for the better in competitiveness. *Although the relatively low productivity of enterprises (mainly SMEs) is one of the main reflections of the shortfall in competitiveness, in our interpretation, this in itself does not explain Hungary's competitiveness position. One of the greatest challenges is to ensure an adequate quantity and quality of available human capital for the Hungarian economy. In this area the evolution of educational, health care and mainly demographic trends causes particular difficulties, as it is only possible to achieve adequate results over a longer period of time. One challenge in education is that students must be prepared for a labour market that changes faster than in the past and for technological development. In the area of public health, the steps necessary for improving results go beyond financing issues in the narrow sense, such as the strengthening of prevention, the improvement of bed utilisation, the reduction of the ratio of the overweight and obese population or a further reduction of the number of potentially lost life years. While the availability of financial capital has improved considerably in recent years, the banking sector could support the development of the economy to a greater extent than it presently does. The public sector and government administration can primarily contribute to boosting productivity by creating a supportive business and regulatory environment, by further easing the burdens on enterprises and labour as well as by the reduction of state bureaucracy.*

A further objective of the Competitiveness Report is the structured monitoring of the implementation of the directions and measures laid down in the central bank's book entitled 'Competitiveness and Growth'. *Wide ranging implementation of the measures aimed at improving competitiveness proposed in that work can only take place over a longer period of time, partly because of their large number (some 50 measures) and partly due to their need for human and fiscal resources. An overview of the measures announced in the past period reveals that 8 of the 50 proposals presented in the book have materialised completely or to a great extent, and progressive steps were taken in the case of another 26, although they cannot yet be considered as realised.*

The main findings of the Competitiveness Report in the individual areas are as follows:

Macroeconomic environment

- *In terms of macroeconomic indicators, the competitiveness of the Hungarian economy has improved significantly in the past years, but in terms of labour productivity Hungary still has not surpassed the level observed before the 2008 crisis, and falls below the average values for the Union and the region.*
- *Starting from 2010, due to problems in the competitiveness of enterprises in the manufacturing of electronic and optical products (which had previously been a leading sector), Hungary's export market share diverged from the region. However, as a result of the large investment projects implemented in the automotive industry, the growth of Hungary's export market share exceeds the average of the Union. Foreign trade competitiveness has been further improved by the improvement in the terms of trade and in corporate profitability resulting from the decline in commodity prices.*
- *The considerable decline in external debt observed in recent years contributed significantly to the improvement in Hungary's external vulnerability as well as its risk assessment.*

Labour market competitiveness

- *Examining the past years' labour market developments in the European Union, Hungary's lag in the activity and employment rate, which had been significant before, ceased to exist by 2016. The upturn in economic activity and fiscal measures aimed at boosting labour market activity (introduction of the flat rate personal income tax system, Job Protection Action Plan, Public Work Scheme, reform of the pension and benefits system) contributed to the vigorous growth in employment in Hungary after 2010.*
- *The rise in employment resulted in a gradual decline in labour reserves. Despite the decline in available labour reserves, enterprises did not reduce their labour demand, resulting in a tightening labour market.*
- *As a result of this tightening and the improving economic prospects, wages also started to rise, supported by minimum wage increases as well, in addition to government career path models and sectoral wage rises.*

Owing to this, the Hungarian wage share rose considerably in 2016, although it still did not reach its pre-crisis level.

- *The Hungarian wage level remains below the average wage level of the region and the EU average as well. At the same time, at the aggregate level developments in the Hungarian (adjusted) wage level are in line with the level of Hungarian productivity.*

Public sector competitiveness

- *In Hungary, the ratio of public administration expenditures to GDP considerably exceeds the averages of both the European Union and the V3, in spite of the steadily declining trend observed since 2013. A significant portion of bureaucratic expenditures is wage related, which is not adequately efficient and motivating due to the setting of incomes according to a wage scale.*
- *With e-governance gaining further ground, both the efficiency of the sector and the utilisation of labour reserves within public administration could be improved.*

Competitiveness of enterprises

- *In terms of SMEs' labour productivity per employee, Hungary lags behind the Visegrád countries to some extent. The productivity of small enterprises in Western and Northern European countries amounts to 70–80 percent of that of the large ones, while the productivity of medium-sized enterprises often reaches or even exceeds that of the large ones. By contrast, productivity in Central and Eastern Europe is 10–20 percentage points lower in all size categories.*
- *The concentration of Hungarian exports and industrial production has been increasing since 2012, and the latter already surpassed the average of the Visegrád countries in 2014. This trend is partly attributable to the decline in production in the high-tech sector and the further increase in the share of the vehicle industry.*
- *Between 2005 and 2015, in Hungary the total tax rate of enterprises as a proportion of the pre-tax profit declined by around 13 percentage points, thus sinking below the average of the V3 and coming close to the EU average as well, which also declined in the period under review.*

Research, development and innovation

- *In Hungary, the R&D expenditures-to-GDP ratio increased from 0.9 percent to 1.4 percent between 2005 and 2015. While the amount of business expenditures is high, Hungary lags behind the average of the Visegrád region in the areas of tertiary education and public R&D expenditures. In respect of product and process innovation as well as the organisational and marketing innovation indicators, the Hungarian SME sector was in the last quarter in the EU in 2015.*
- *Both in a regional and EU comparison, the ratio of those employed in the high-tech sector is outstanding in Hungary. Moreover, as opposed to the stagnation observed in the other countries, this ratio increased further in Hungary in the past years.*
- *Compared to the EU, both the price and penetration of broadband internet are favourable in Hungary. In terms of 4G coverage and mobile internet speed Hungary is one of the leaders in the world. At the same time, mobile phone subscription fees are among the highest in the OECD countries.*

Competitiveness of the energy market

- *As a result of regulatory interventions, at purchasing power parity, energy prices for households declined to moderate levels. However, the prices of gas and electricity for companies are still higher than the averages in the EU or Visegrád countries.*
- *In 2015, Hungary's energy intensity was already slightly higher than not only the EU average but also that of the other Visegrád countries. In relation to that, the ratio of net energy imports of Hungary is also high and does not decline.*
- *In the area of the use of renewable energy sources Hungary has reached its EU target set for 2020.*

Demography and social structure

- *Over the long term, the quantitative factors of human capital are mostly determined by demographic developments, of which the decline in and the ageing of the population have posed the greatest challenges for almost all developed countries, including Hungary since the early 1980s.*
- *In order to prevent the decline in population over the medium term, the number of births per woman of childbearing age should rise from 1.49 in 2016 to at least 2.1 (it does not reach 1.6 in the EU either). Not only the number of inhabitants is important, but also the composition by age, in which ageing is the determining trend at present.*
- *In Hungary, disparities in terms of income and wealth are lower than the EU average.*

Education

- *The public education expenditures-to-GDP ratio has been increasing since 2013. As a result, these expenditures may rise to the pre-crisis level in 2017.*
- *International tests measuring the effectiveness of the education system show that although Hungarian students learn the curriculum as expected of them, but in the case of examples taken from real life they are unable to use what they learnt to an adequate degree.*
- *The ratio of those who speak at least one foreign language is lower than the European or regional average, although the extent of the lag declined among the young.*
- *The ratio of people with tertiary education increased considerably in the past decade, but the training structure of education does not completely comply with market demand.*

Health care

- *Total health care expenditures exceed the regional average, but within that the ratio of state expenditures is lower. In Hungary, two thirds of health care expenditures originate from public sources, while private expenditure accounted for one third of the costs. By contrast, the ratio of state expenditures is 78 percent on average in the other Visegrád countries, and 75 percent in the countries of the EU.*
- *In terms of expected healthy life years, Hungary caught up with the average of the Visegrád countries in the period under review, but is still below the average of the EU countries.*
- *The obesity rate in Hungary (20.6 percent) exceeds both the EU and the regional averages (17.1 percent).*

Banking system competitiveness

- *Partly as a result of the MNB's efforts, the competitiveness of the banking system has improved. The ratio of non-performing loans has declined considerably, household foreign currency denominated loans have been phased out, and banks' profitability has risen.*
- *The MNB's Funding for Growth Scheme played a major role in increasing the volume of and reducing the spreads on corporate financing, and at present a similar role is being played by the central bank measures that support market-based lending.*
- *The Hungarian banking system also has to face important shortfalls in the areas of efficiency, operating costs, digitalisation and interest rate spreads on household loans.*

Regional disparities within Hungary

- *Similarly to the other countries of the region, the economic dominance and attraction of the capital and its surroundings are strong within Hungary. In Hungary, the differences in levels of development across regions exceed what is typical of other Visegrád countries.*

2 Framework of the Competitiveness Report

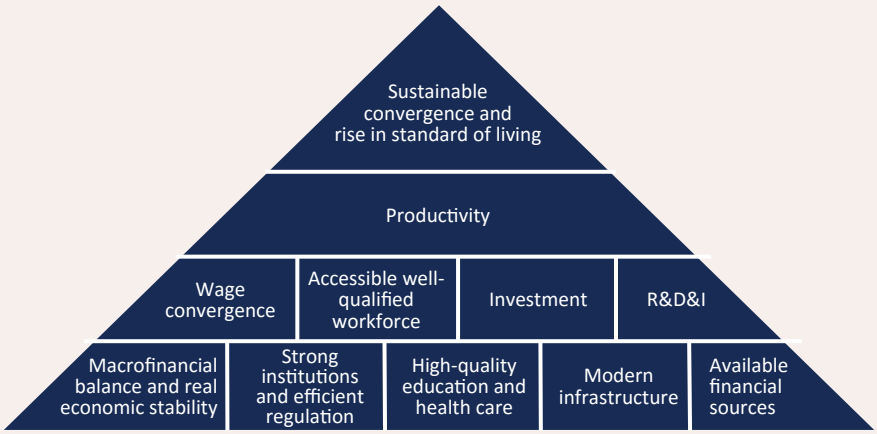
2.1 FRAMEWORK AND MAIN FINDINGS

The purpose of the Competitiveness Report is to provide a comprehensive and objective picture of Hungary's competitiveness. In 2016, the Magyar Nemzeti Bank published the book 'Competitiveness and Growth' to analyse the changes in Hungary's competitiveness and explore the possibilities for making progress. The Competitiveness Report examines and evaluates Hungary's competitiveness position in accordance with the principles and proposals laid down in the book. The publication also includes a detailed examination of dimensions that are less in the focus of the central bank's traditional macroeconomic analyses, although they are key factors in terms of economic developments. The compilation of the competitiveness analysis is justified by the fact that the known international rankings deal with individual countries only briefly, typically without written assessment, and their findings may be distorted by the methodologies of the surveys as well.

In our view, a national economy is competitive if it utilises its available resources optimally to attain the highest possible, but at the same time sustainable level of welfare. As there is no single, universal recipe for successful economic convergence, competitiveness also does not have a general, precise definition uniformly accepted by everybody. In some countries it entails rapid growth of the real economy, while elsewhere it results in the maintenance of the economic leading role and improvement in the qualitative features (quality of life, environmental protection, sustainability) of the fundamental factors. Consequently, the competitive functioning of the economy requires solid bases, such as stable macroeconomy and financing, strong and predictable institutions, efficient regulation as well as high-quality education and health care. Relying on these allows the creation of a well-functioning, predictable business environment as well as the stimulation of investment and innovation, which may lead to an increase in productivity and lasting economic convergence by respecting qualified labour.

The analysis of competitiveness is important for the central bank because it determines the long-term growth opportunities of the economy, which affect current developments as well. These areas and factors, which are basically structural in nature, influence – both over the medium and long term – economic agents' consumption, savings and investment decisions, potential economic growth, the financial balance and, through all of these, the expected yields and price level as well as inflation.

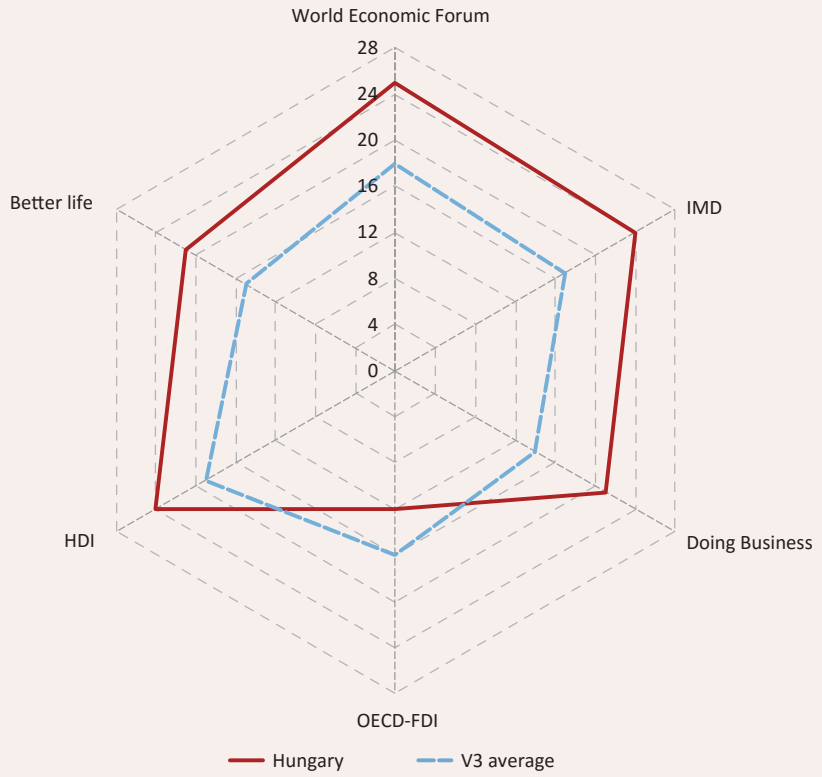
Chart 2.1
Stylised structure, foundations and objectives of competitiveness



Source: MNB.

According to the world's best known and most relevant global competitiveness rankings, of the 28 EU countries, Hungary's competitiveness is typically ranked in the last quarter, and lags behind its competitors in the Visegrád Group (Poland, Czech Republic and Slovakia, indicated by V3). The six competitiveness rankings presented here serve as examples for the variety of analyses and surveys of this type: the WEF and the IMD cover the dimensions of both economic and social performance of countries, the indicators compiled by Doing Business and the OECD measure the ability to attract FDI and thus focus more narrowly on economic and corporate dimensions, while the HDI and Better Life indicators primarily aim to quantify developments in the quality of life. Based on – objective and subjective surveys of – various competitiveness rankings, Hungary's

Chart 2.2
Hungary's position in international competitiveness rankings in the EU
(2016)

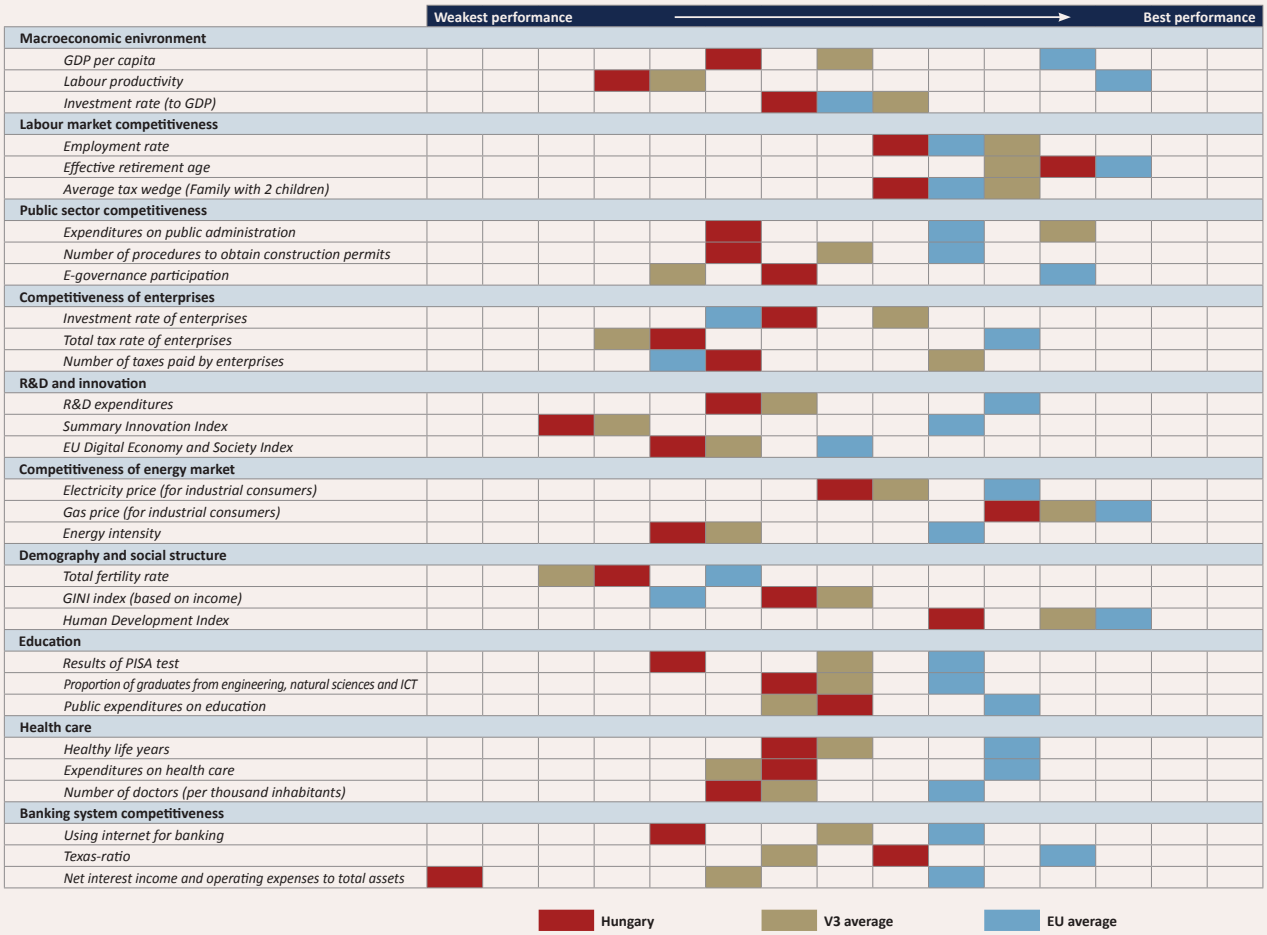


Sources: WEF, IMD, World Bank, OECD, UN.

performance falls short of the average of the V3 countries, except for the OECD ranking that examines the ability to attract FDI.

Our report confirms the result of international rankings that it is essential to improve the country's competitiveness. At the same time, the extent of the lag behind the region is deemed more moderate. The objective of the Competitiveness Report is to analyse the determinants of competitiveness in a time series format and in international comparison, in addition to examining the numerical values. The areas and their indicators are not aggregated into a composite indicator, partly in order to prevent any ensuing loss of information and partly stemming from methodological difficulties. Accordingly, instead of comparing a wide range of countries, the analysis focuses on Hungary, while the averages of the Visegrád countries and the European Union appear as benchmarks. The 30 indicators selected from the nearly 110 examined reflect that in most areas Hungary lags behind the performance of other countries in the Visegrád region, but the extent of the shortfall is often smaller than what is reflected by international surveys, which rely strongly on subjective assessment as well. Although the competitiveness of the Hungarian banking system and public sector falls well short of the relevant benchmarks, Hungary's competitive disadvantage is not significant in the areas of macroeconomic environment, labour market and business competitiveness or R&D&I and demography. In fact, Hungary has a relative advantage in some areas. The following presents an overview of the areas where Hungary has progressed in the past years as well as where deficits can be identified.

Chart 2.3
Stylised competitiveness position of Hungary compared to the average of V3 and EU countries based on the main competitiveness indicators



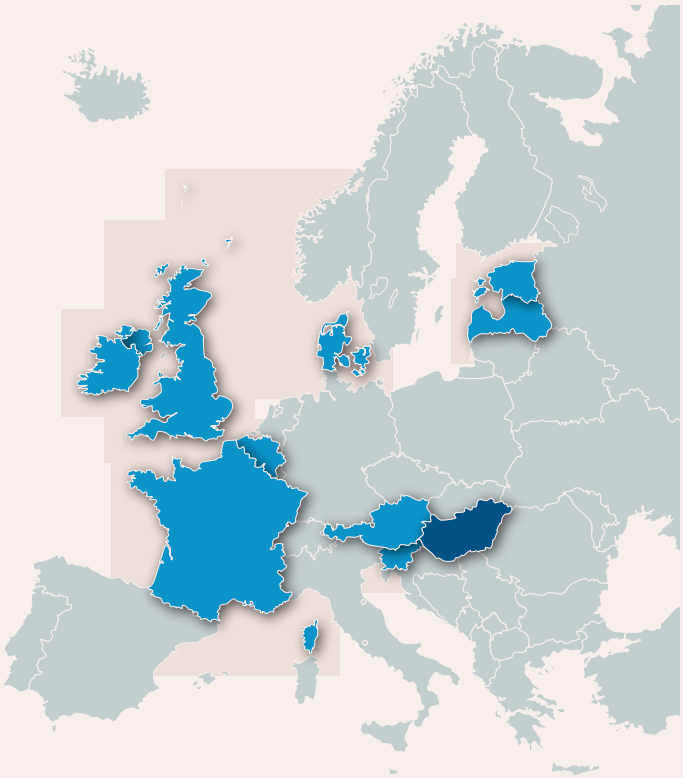
Source: MNB.

2.2 COMPARISON OF THE METHODOLOGY WITH OTHER COMPETITIVENESS ANALYSES

The MNB's Competitiveness Report differs from the foreign reports under review and from the rankings of international institutions in many aspects. Based on geographical coverage, there are two main types of competitiveness analyses. The objective of international competitiveness surveys is to provide a comprehensive, comparable picture of countries' competitiveness positions compared to one another. By contrast, national competitiveness analyses examine the circumstances and prospects of a given national economy (or region or sector). Our report belongs to the latter group, since its main objective is the analysis of Hungary's competitiveness, using international data as well.

Our analysis also differs from most other national competitiveness analyses to the extent that – in addition to productivity and macroeconomic indicators – it also examines deeper dimensions of competitiveness in detail. Most countries focus on macroeconomic, stability, productivity and price competitiveness indicators, while relatively few countries prepare comprehensive competitiveness reports. The reports of Ireland and Latvia, for example, examine a large number of indicators covering many areas, similarly to the MNB's Competitiveness Report. One similar feature of national reports is that they mainly rely on objective indicators, and their approach is primarily to analyse these variables over a time period and present a comparison of such to benchmark countries. In addition to numerical results, these reports also contain a detailed analysis of developments.

Chart 2.4
EU Member States preparing competitiveness reports



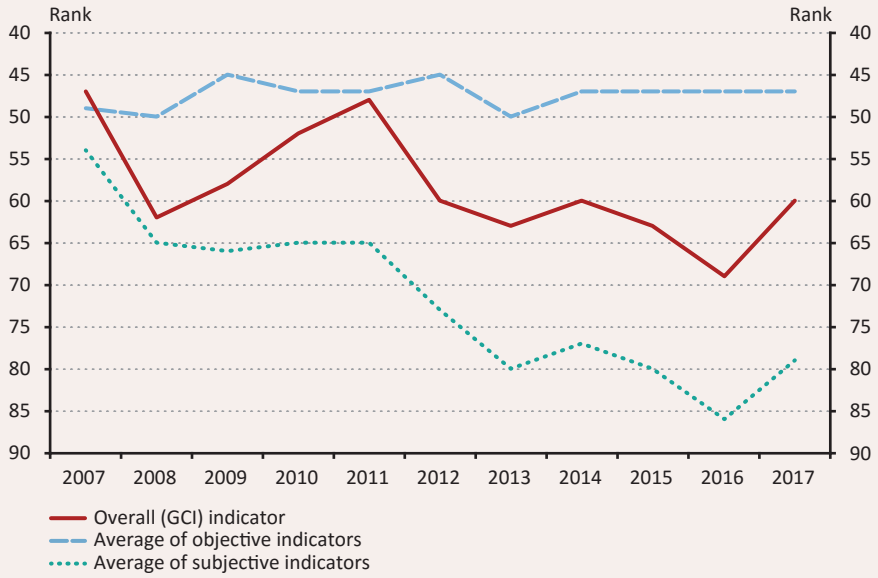
Source: MNB.

Our analysis also differs from international competitiveness reports and rankings in terms of the scope of objective data and the assessment of results. For wide geographical coverage, international rankings often rely on data which are not objective and are based on surveys. However, surveys reflect subjective moods and impressions, which may paint a distorted picture of the real state of affairs, especially in terms of international comparability. In addition, global rankings usually do not contain any written analysis of the results or comparison with their developments in the past.

One indispensable precondition for competitiveness reforms is a precise, credible assessment of the situation; therefore, objective statistical data account for more than 90 percent of the data published in the MNB's Competitiveness Report. For most indicators, the report presents the changes in the country's competitiveness position in a time series format as well, and analyses the developments in the indicators both comprehensively and individually. The analysis focuses on Hungary, comparing its competitiveness and structural positions to competitors in the region and to the European Union as a whole (in the analysis, V3 stands for the three Visegrád countries other than Hungary: Poland, Czech Republic and Slovakia). Comparable, credible statistical data were primarily available regarding the EU countries. That is why our analysis is limited to this scope.

Objective data and subjective surveys lead to different results. The global competitiveness index (GCI) of the World Economic Forum (WEF) is based on subjective surveys to a degree of 74 percent. This may significantly contribute to the fact that it reaches a different result than other international rankings which rely upon objective data to a greater degree, including the WEF's other indicator, the Inclusive Growth and Development Index (IDI). In the GCI ranking, out of 137 countries Hungary ranks 60th, while in the IDI, which entirely uses objective indicators, it is ranked 24th out of 109 countries, and 41st of 190 countries in the Doing Business ranking of the World Bank. The higher the ratio of objective indicators, the more favourable Hungary's position. This difference can also be observed within the GCI. In terms of objective indicators, Hungary has been in 47th place (for years), while in subjective surveys it ranks around the 80th place.

Chart 2.5
Decomposition of the Hungarian main composite index (GCI) and changes in components in a time series



Source: WEF, Global Competitiveness Report 2017–2018, authors' compilation.

Subjective surveys hinder international comparison. Such comparisons are mainly limited by the fact that there is no scale with a single meaning in the case of subjective assessments. The WEF ranking may be suitable for examining the changes in the competitiveness of a given country over time (more precisely: for assessing changes in respondents' satisfaction with the given factor), but it may be suitable for international comparison only with significant limitations. Moreover, it uses subjective surveys even when factual, more objective indicators are also available. An example of this is the presence of foreign-owned companies in Hungary. According to the WEF survey, in this respect Hungary ranks 67th, and, for example, lags significantly behind the Czech Republic (5th) and Slovakia (6th), which belong to the leaders. By contrast, the statistics suggest that the share of foreign-owned companies in whole-economy value added is the highest in Hungary (53 percent) not only in the region, but also compared to the average of the EU countries (20 percent). In addition, the ratio of foreign-owned enterprises operating in the Hungarian national economy also exceeds the average of the region. Similarly, instead of interviews, numeric indicators which measure the strength, liquidity, capital position and profitability capacity of the banking system are available for the examination of banks' solvency

as well. In the case of the WEF competitiveness index, the survey is limited to only 83 executives (52 in 2016), so the result cannot ensure sufficient robustness.

The MNB's report strives to use the most suitable statistics for each area of competitiveness, preferring objective data when possible. Accordingly, our analysis mainly relies on factual data from large international organisations. In our opinion, subjective surveys are useful for focusing on narrower fields that cannot be measured otherwise; for all other factors, the use of the most objective data possible from the institutions and organisations relevant in the given fields of interest is proposed.

2.3 ACHIEVEMENTS IN COMPETITIVENESS

The strong macroeconomic fundamentals necessary for improving competitiveness have been formed in Hungary in recent years. The fiscal and monetary policy reforms implemented since 2010 restored macrofinancial balance and – starting from 2013 – allowed the evolution of economic growth exceeding the EU average.

Hungary faced a complex internal and external crisis prior to launching the reforms. The decline in demand, liquidity shortage, increasing risk aversion and lack of confidence were global problems. In addition, country-specific factors also made recovery more difficult in Hungary. Indebtedness was high in all segments of the economy as a result of the procyclical behaviour of the banking sector and fiscal policy, and interest rates also rose after the crisis erupted. In particular, foreign exchange denominated debt vis-à-vis foreign investors increased vulnerability and sustainability risks of the Hungarian economy. The general government deficit was persistently high, and the attempt by fiscal policy to reduce it just at the time of the crisis exacerbated the recession through the decline in fiscal demand. From 2006, the attempts to reduce the general government deficit took the wrong structure, namely by raising taxes, which led to low employment and pervasive tax evasion.

Starting from 2010, as a first step, a fiscal reform was implemented in order to stabilise the budget balance and reduce public debt. As part of this, the most important element of the tax reform was the reduction of the taxes on labour, which – from a fiscal aspect – was offset by raising consumption taxes and introducing crisis taxes aimed at a more even burden sharing. Shifting the tax centralisation from taxes on labour to consumption taxes improves external competitiveness, as production becomes cheaper. As a result of the introduction of the 16 percent flat rate PIT, the average and marginal tax rates declined considerably, contributing to an increase in employment and shrinking the shadow economy. The family tax allowance contributed to the fact that demographic developments became more favourable (the fertility rate started to rise in 2012), while the reduction in the social security contribution under the Job Protection Action Plan supported labour market activity by lower-activity groups. The reduction of the shadow economy was vastly facilitated by the online connection of cash registers to the tax authority and introduction of the Electronic Public Road Trade Control System, which resulted in an improvement in the efficiency of tax collection and a decline in the estimated ratio of uncollected VAT (from 21 percent to 14 percent between 2011 and 2015).

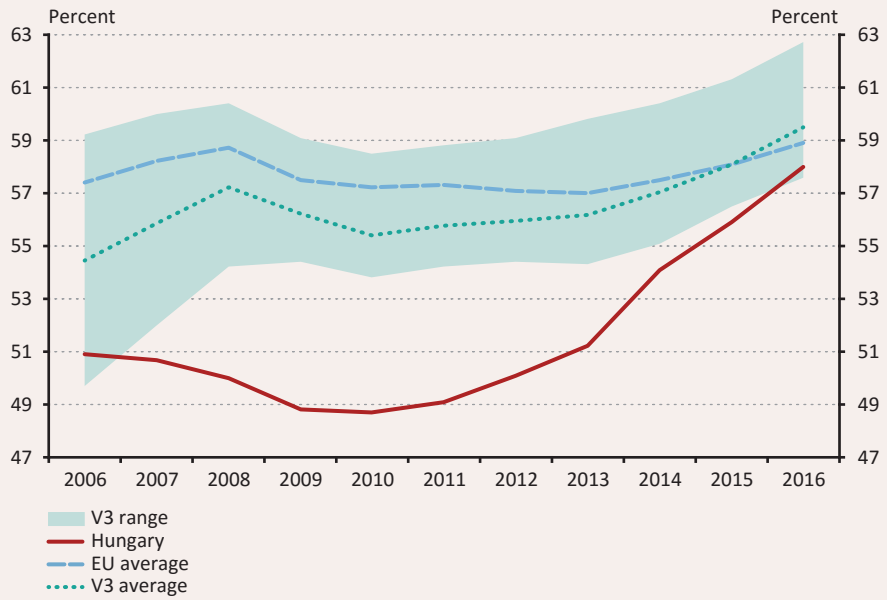
Fiscal expenditures became more significant contributors to economic growth as a result of the structural reforms of the Széll Kálmán Plans. Economic activity was strongly boosted by tightening the rules on early retirement and reviewing disability pensions. The ratio of public administration expenditures to GDP declined from the pre-crisis level of more than 9 percent to approximately 8 percent in 2016. As a result of the fiscal reforms, the government deficit fell to a sustainable level that is also able to support economic growth. Since 2012, the deficit has been fluctuating around 2 percent of GDP. The public debt-to-GDP ratio has been steadily declining since 2011, from 80 percent to 74 percent by end-2016. As a result of these achievements, in 2013 the European Union abrogated the excessive deficit procedure that had been going on against Hungary since 2004, and from 2016 all of the major international credit rating agencies classified Hungary in the investment grade category.

Starting from 2013, monetary policy reform also took place. Reduction of the policy rate began in 2012 and progressed in several waves from 7 percent to 0.9 percent. As a result, interest burdens declined considerably in

all sectors of the economy. Accordingly, the annual interest expenditures of the general government fell from 4.3 percent of GDP to 2.6 percent between 2013 and 2017. In addition, through the Funding for Growth Scheme, monetary policy supported nearly 40,000 SMEs in accessing loans in the amount of roughly HUF 2,800 billion, thus playing an important role in avoiding a credit crunch. Starting from 2014, the objective of the Self-financing Programme was to discourage commercial banks from placing their liquid resources with the central bank and to make them finance other sectors. This also significantly contributed to the decline in the share of foreign ownership in public debt from 66 percent to 40 percent, while the ratio of FX-denominated debt fell from 50 percent to 25 percent. The previously accumulated high amount of households' foreign currency loans was one of the most serious economic and social hazards. In addition to the initial steps after 2010 (exchange rate cap, early repayment), the legal basis and institutional framework for a comprehensive solution were established, and the complete conversion of FX-denominated loans occurred in 2014. In the implementation phase, the MNB contributed to the successful conversion of household foreign currency loans into forints by making available the necessary FX liquidity, i.e. some EUR 9 billion. As a result, practically no foreign currency loans remained in households' balance sheets by end-2015. In 2013, the financial supervisory function was integrated into the central bank, which allowed the concerted application of macro- and microprudential instruments for a greater stability of the financial system than before. As a result of all these steps and achievements, Hungary's external vulnerability declined considerably.

The fiscal and central bank reforms significantly contributed to economic growth and the expansion of employment. The Hungarian employment rate, which was among the lowest in the European Union and remained 6–9 percentage points below the average value throughout the 2000s, almost reached the average of the EU in 2016. The number of employed was 3.7 million in mid-2010 and grew to 4.4 million by 2016. From around 11 percent observed in the early 2010s, the unemployment rate declined to below 5 percent. Since 2013, economic growth has exceeded 3 percent on average, and thus it is even higher than the EU average. Supported by the government career path models and minimum wage increases, wages rose considerably in the labour market, which became increasingly tight as a result of the pick-up in economic growth and the declining unemployment rate. As a result of higher incomes and more favourable prospects, the savings rate increased by 8 percentage points between 2005 and 2015. Households' net financial wealth-to-GDP ratio rose from the pre-crisis level of 60 percent to above 100 percent by 2016. Starting from 2012–2013, the rise in the savings rate also bolstered investment activity, supported by central bank programmes and EU funding as well.

Chart 2.6
Employment rate in the 15–74 age group



Source: Eurostat.

The competitiveness of enterprises was promoted by the simplification and rationalisation of certain regulations. Compared to the pre-crisis situation, the time required for setting up an enterprise fell by one month in Hungary, which is an outstanding achievement compared to both the EU and the region. In 10 years, companies' total tax rate as a proportion of pre-tax profit declined from 59.3 percent to 46.5 percent, and from 2010 to 2011 the total time spent by companies on completing tax returns decreased by nearly 50 hours a year. In addition to the simpler tax environment, since 2011 there has been a steady improvement in the intention to establish a firm.

During the past 10 years, it was mainly the increase in R&D expenditures and the development of digital infrastructure that contributed to the improvement in the effectiveness of research, development and innovation. R&D expenditures as a proportion of GDP rose by nearly one half of a percentage point in Hungary between 2005 and 2015. In parallel with that, the quality of digital infrastructure shows favourable signs in terms of the success of innovation policy. Compared to its competitors in the EU and the region, Hungary has favourable characteristics in terms of both the penetration and the monthly fee of broadband internet, and is among the leaders at global level as well in terms of the coverage and speed of mobile net (4G).

Regarding indicators that deal with human resources, Hungary's performance has improved in various segments, but, overall, significant progress is still needed. From 2011 to 2016, the Hungarian fertility rate increased from 1.23 to 1.49, exceeding the EU average (but still falling short of the value of 2.1 necessary for stopping the natural population decline). In the Human Development Index (HDI), which compares the quality of life, life expectancy at birth, literacy, education and the standard of living, Hungary improved steadily between 2005 and 2015. The ratio of people with tertiary education has been growing steadily since 2006. In 10 years, it rose from 20 percent to a range between 30 and 35 percent. Since 2013 Hungary has also exceeded the EU 2020 target set in terms of the ratio of people with tertiary education. Despite lagging behind the regional average in many aspects, the competitiveness of health care has caught up with the V3 in some areas, for example regarding expected healthy life years. The number of potentially lost life years per 100,000 people declined from more than 7,000 in 2004 to approximately 5,000 life years.

In the past years, the stability, profitability and lending activity of the banking system improved significantly, while regulations prevented excessively procyclical behaviour. The ratio of non-performing loans fell from 17 percent to less than 8 percent, and the capital adequacy of the banking system continued to improve. With the conversion of household foreign currency loans into forints, the largest systemic risk was phased out in 2015. Starting from end-2015, lending growth to the SME sector rose to the 5–10 percent band, which is estimated to be optimal by the MNB, and as of 2017 credit expansion in the corporate sector as a whole may be within this range. Following the outbreak of the financial crisis, it became necessary to mitigate the systemic risks stemming from the pro-cyclicality of the banking system. For this purpose, *inter alia*, the so-called countercyclical capital buffer was introduced.

In terms of improvement in regional competitiveness, the rising employment and declining unemployment seen in recent years in Hungary's eastern regions can be mentioned. The improvement in employment indicators of underdeveloped regions was facilitated by the Public Work Scheme, which was expanded from 2010, within the framework of which an average 200,000 employees worked in 2016, resulting in a significant decline in the unemployment rate in the regions of Northern Hungary, the Northern Great Plain and South Transdanubia (between 2010 and 2016, the rate fell by 10 percentage points in Northern Hungary). In addition, in recent years a notable increase was observed in industrial gross value added in the regions of Northern Hungary and the Northern Great Plain, which is a result of new investment (e.g. Bosch, Mercedes). At the same time, in the West Transdanubian region real GDP growth can be emphasised (the average annual growth rate was above 7 percent between 2013 and 2015), which increased the regional gross domestic product to one and a half times higher in the past ten years.

Table 2.7
Improvement in certain competitiveness indicators between 2010 and 2016 in Hungary

	2010	2016
GDP per capita (USD based on PPP)	22,277	25,381
Net external debt (percent of GDP)	54.9	19.5
Gross savings (percent of GDP)	21	24.9*
Net financial wealth of households (percent of GDP)	67.9	105.8
Employment rate (percent)	48.7	58
Unemployment rate (percent)	11.2	5.1
Average tax wedge (families with 2 children, percent)	41.7	37.6*****
Gross public debt (percent of GDP)	79.7	73.9
Total tax rate of enterprises (percent)	52.4	46.5*
Proportion of uncollected VAT (percent)	21.4****	13.7*
Fertility rate	1.25	1.49
Tertiary educational attainment (30–34 age, percent)	26.1	33
Proportion of graduates from engineering, natural sciences and ICT (percent)	18.1	20.8**
Expected healthy life years (year)	58.6 (women);	60.1 (women);
	56.3 (men)*	58.2 (men)*
Individuals using the internet for internet banking (percent)	19	35
Annual change in loan portfolio for corporate sector and at the SME level (percent)	–5.9 (all companies);	2.0 (all companies);
	–6.9 (SMEs)	8.8 (SMEs)
Share of non-performing loans of the credit institution sector (percent)	16.8***	7.4

** value for 2015*
*** value for 2014*
**** value for 2013*
***** value for 2011*
****** value for 2018*

Sources: Eurostat, European Commission, World Bank, European Central Bank, PwC, UN, MNB

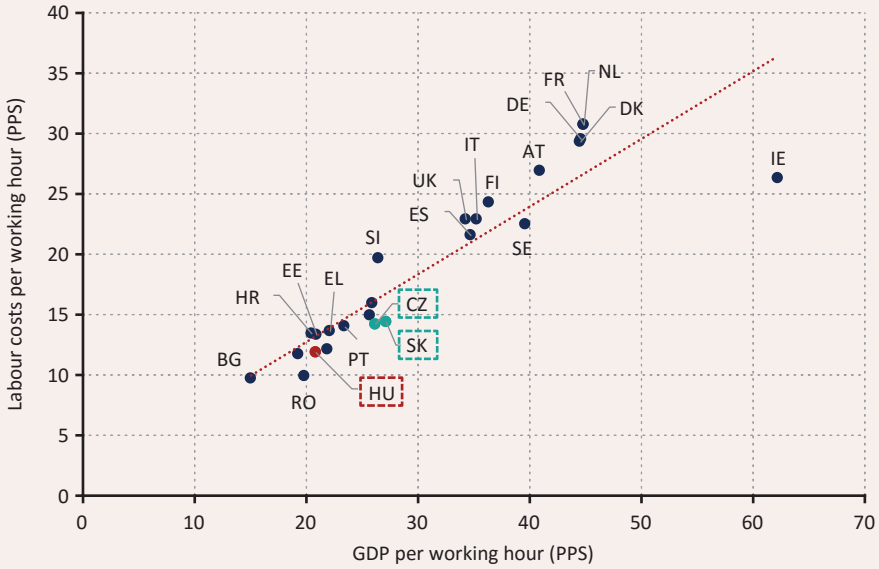
2.4 NECESSARY DIRECTIONS OF PROGRESS

In addition to macroeconomic indicators, improvement also occurred in other areas in recent years, although many challenges must still be overcome to enable Hungary to follow a path of sustainable convergence. One of the greatest tasks is to ensure the adequate quantity and quality of available human capital for the Hungarian economy. In this area, it causes particular difficulties that changes in educational, health care and in particular demographic trends, as well as the achievement of results, are only possible over a longer period of time. In parallel with human capital, increasing the quantity of physical capital and improving the quality of its utilisation also deserve attention. However, these factors are correlated at the systemic level, and therefore the responses to challenges also must be formulated in a complex manner in order to achieve their desired impact.

At present, one of the main obstacles to economic growth in Hungary is the availability of adequately trained labour. Hungary is moving on a basically unfavourable demographic path (the ratio of the working-age population is declining), and its effect was further strengthened by the gradual opening up of opportunities to work abroad following accession to the European Union. The pick-up in economic activity following the turnaround in growth revealed the effects of these developments. The employment rate has been rising steadily since 2010, with the successful government programmes aimed at expanding employment (Job Protection Action Plan, the revision of early retirement pensions, Public Work Scheme) also playing a significant role in this regard. At the same time, in certain areas the further expansion of companies was hindered by the limited availability of skilled labour. The challenges caused by labour shortages may be addressed from various aspects, and a holistic approach may result in solutions to the problems.

One of the most important shortfalls of the Hungarian economy is the relatively low level of productivity of companies (mainly of SMEs). In terms of productivity, the Hungarian corporate sector has a strongly dual character depending on company size. The productivity of Hungarian SMEs is well below that of large enterprises and of the corresponding values of the countries in the region, with the latter 15–20 percent lower than the performance of SMEs in Western Europe. This forms the basis for the difference in wages, which is one of the main driving forces behind the emigration of labour. Accordingly, the key to reducing the labour shortage is to boost productivity: for enterprises to be able to retain their employees and attract back employees who left the country it is essential to improve production efficiency and to produce products with higher value added. At present, the level of wages in Hungary is not much below productivity. Therefore, to be able to compete with countries that offer higher wages it is necessary to improve productivity. In addition, an increase in the productivity of SMEs could contribute to a higher degree of diversification of the rather concentrated Hungarian industrial production and exports, which would reduce the dependence of the Hungarian economy on the performance of large corporations. Moreover, the energy efficiency of Hungarian enterprises is well below the EU average, resulting in a competitive disadvantage especially due to the high energy dependency.

Chart 2.8
Productivity and wages in the European Union
(2016)



Source: Eurostat.

The banking system, which plays an essential role in financing Hungarian enterprises, could facilitate the development of the economy to a greater extent than it currently does. The banking sector contributes to the competitiveness of a country by the efficient allocation of financial resources in a manner that supports growth over the long term. One important element of this is that the operation of the banking system should not be procyclical. In the case of the Hungarian banking system there is still ample room in a number of areas to strengthen this supportive role. Intensifying the digitalisation of the sector would help reduce operating costs, which would open up opportunity to lower the currently relatively high lending interest rates (mainly on household loans), to increase the spread of bank products and to further simplify enterprises' access to loans.

The government can primarily contribute to raising productivity by creating a supportive business and regulatory environment as well as by reducing the burdens on enterprises and labour. Reducing state bureaucracy and digitalising administrative procedures (e-governance) could significantly simplify the day-to-day administration of enterprises. Currently, in the region it is Hungary where an enterprise has to spend the most time with tax-related paperwork, and, for example, the connection of electricity also takes the

longest time in Hungary. The ratio of public administration expenditures to GDP declined from 9.5 percent to approximately 8 percent between 2013 and 2015, which still exceeds the EU and V3 averages. In addition, despite the improving trend in recent years, for enterprises that obey the law it is a significant competitive disadvantage that the ratio of the shadow economy is still high in Hungary compared to the region (estimated to be 22 percent in 2015, compared to the EU and V3 averages of around 18 percent).

Research, development and innovation activity is indispensable for increasing productivity: the success of the years to come will be determined by the degree of Hungarian enterprises' ability to comply with the need to develop caused jointly by the upswing in economic activity and the labour shortage. The ratio of SMEs involved in innovation and the ratio of employees working in research and development should considerably increase for R&D expenditures to reach the level of 1.8 percent of GDP targeted for 2020. The role of the government is essential here as well, since it can improve the business environment for enterprises that are able to develop with various measures and also support research activities directly (for example, with infrastructure development for institutions of tertiary education). It is important to emphasise, however, that research and innovation results can only have an impact on the performance of the economy at the systemic level as well if they are able to spread more widely through adequately created channels of transfer of knowledge. This process is significantly facilitated by online opportunities easily available for everyone, although it would be important to change the attitude of enterprises so that they are open to adopting and implementing the new ideas of others.

A special dichotomy in the Hungarian economy is that in parallel with a general labour shortage there are also significant labour reserves in the system, but their utilisation is difficult, primarily because of the geographical and the skills mismatch. The unemployment rate is around 3 percent in the western part of the country, while in the Northern Great Plain region it is 9 percent, and youth unemployment rate is also higher in the latter area. With proper government intervention it would be possible to increase mobility within the country, and targeted training programmes could also allow the learning of skills necessary for taking jobs. The scope of active earners could be further expanded through increased state support for atypical forms of employment. The spread of part-time employment and teleworking could improve women's return to the labour market after childbirth as well as the involvement of groups in the labour market in whose case the 8 hours per day employment forms, which are generally accepted in Hungary, cannot be implemented for some reason (for example, commuting to work is difficult). Further labour reserves could be freed for the private sector through the reduction of state bureaucracy and the ratio of those employed by the government.

Increasing the quantity and improving the quality of human capital poses challenges for all European countries over the long term as well. Some countries have been able to improve the fertility rate, but at present no EU country reaches the reproduction value of 2.1, which is considered necessary for maintaining the population. Despite the improving trend, much work remains to be done in Hungary. The government has recognised this necessity and officially declared 2018 The Year of the Families. Nevertheless, the expansion of family allowances in itself will not be able to solve the problems: changing the unfavourable demographic trends over the long term will only be possible with the resolute implementation of a clear, carefully considered strategy. At the same time, increasing the fertility rate can only mitigate the challenges stemming from the ageing of society. The role of self-reliance will gain increasing importance in the future, especially in view of the pressure on state pension systems and the development (and cost increase) of health care technologies.

Improvement in the quality of human capital is able to boost the competitiveness and growth potential of the real economy over the long run by developing the ability to innovate and raising labour productivity. The quality of human capital is fundamentally determined by the performance of the education and the health care systems. Reform of the education system already started in the past years, but no system-level reforms have taken place in health care to date.

The main challenge for the education system is to prepare the young for a future state that is increasingly difficult to predict because of the accelerating development. Students who started elementary school in 2017 will finish their secondary school studies the earliest in 2029 and their university studies in 2032, before entering the labour market. At the current pace of development it is almost unimaginable what knowledge they will need during their labour market career, for which the education system is supposed to prepare them. Therefore, it is essential to set up an education system in Hungary that primarily invests students with the need and ability of continuous learning. It would be expedient to formulate the National Core Curriculum, which is under development at present, in a way that it should strive to develop abilities as much as possible and provide practice oriented knowledge for students. Namely, on the basis of the experiences of international surveys (PISA, TIMSS), Hungarian students learn the curriculum sufficiently, but cannot adequately apply the knowledge in real life situations. In any case, efforts must be made in order to improve the quality of primary education and to reduce disparities, since without adequate basic skills (comprehension, reading, counting) the further levels of the education system cannot reach their desired targets. In addition, it is necessary to expand the scope of basic skills with the knowledge of the English language and information technology. To be able to increase the ratio of those with a degree in natural sciences (especially IT), it is absolutely necessary to significantly improve the quality of the teaching of natural sciences in public education. We also consider important the spread of the attitude in the Hungarian society that it is possible to meet the challenges of the modern era only with the help of lifelong learning.

The Hungarian health care system struggles with various challenges, the solution of which requires more than just an increase in expenditures. The level of health care expenditures as a proportion of GDP exceeds the average of the countries in the region, but at the same time the proportion financed by the government in Hungary (67 percent) is below the average values of the region (78 percent) and the EU countries (75 percent). Nevertheless, boosting public expenditures alone is unable to solve the problems of the sector, which is also attributable to the fact that the available funds are not spent in an efficient manner. Individual parts of the health care system strive to be cost-effective separately, which, in turn, does not result in the most efficient solutions at the system level. We consider it important that health policy focus on long-term, system-level cost-effectiveness. The high level of expenditures on medical goods or the low level of bed occupancy represent efficiency reserves in the Hungarian health care system. Their thoughtful regrouping (for example for preventive and primary care purposes) would allow the health condition of the population to be improved. The latter is also very important because in Hungary – in spite of the declining trend – the loss of life years due to death attributable to preventable reasons is still high, and the standardised mortality rate related to malignant tumours as well as the ratio of those suffering from symptoms of depression are the highest in the European Union. The sector's state of supply with human resources also poses a challenge, which over the long term can only be solved by significant improvement of the standard of wages and working conditions.

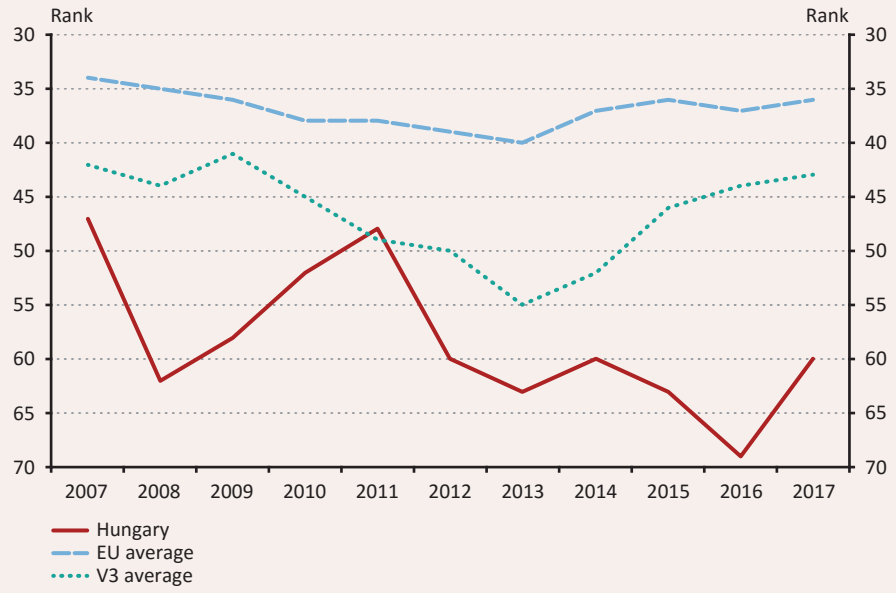
3 Comprehensive assessment of the competitiveness of the Hungarian economy

3.1 RESULTS OF INTERNATIONAL COMPETITIVENESS RANKINGS

3.1.1 Results of the 2017–2018 ranking prepared by the World Economic Forum

In 2017, Hungary improved nine places compared to last year to reach 60th place in the competitiveness ranking prepared by the World Economic Forum based on an analysis covering 137 countries. Of the V4 countries, the Czech Republic was ranked best (31st), followed by Poland (39th) and Slovakia (59th), one place before Hungary. In the group of the 28 EU member countries Hungary is the 24th. The 114 basic indicators included in the 2017–2018 ranking and the necessary data were collected starting from the second half of 2016 until mid-2017. Although the range of indicators applied by the WEF covers almost all of the relevant areas of competitiveness, only a small portion (26 percent) of the indicators is objective, while the rest are subjective.

Chart 3.1
WEF GCI ranking of Hungary, the region and the EU



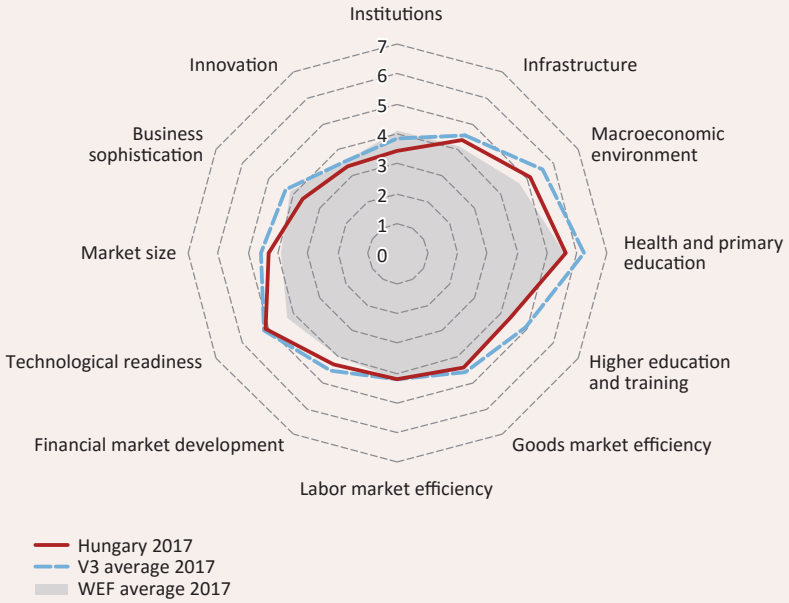
Source: WEF GCI.

The WEF competitiveness indicator examines the state of and developments in competitiveness through 12 areas. The first four pillars of the index deal with fundamentals, the next six with efficiency-increasing factors, while the last two treat the subjects of innovation and economic complexity.

In the group that reflects the foundations of the operation of the country, Hungary lags behind the region. Government regulations, confidence in politicians and the protection of ownership received low scores in the questionnaire survey. The assessment of Hungary's **infrastructure** (56th) improved six places compared to last year, but is still below other countries of the region. According to the survey, the weaker ranking is attributable

to the less modern air transport infrastructure and the poor quality of river ports. The **macroeconomic** environment is in a better position (46th) than the average, and the steady improvement observed since 2013 continued. The pillar examines, *inter alia*, the budget balance as a proportion of GDP, the changes in the gross government debt ratio and households' net savings position on the basis of objective indicators.

Chart 3.2
Performance of Hungary and the V3 countries compared to the WEF global average in the 12 pillars of the ranking
(2017)



Note: The performance reflects the absolute competitiveness position measured on a scale from 1 to 7, where 1 is the worst and 7 is the best value.
Source: WEF GCI.

Health care and primary education (78th) are examined together. Its absolute assessment among the pillars proved to be the best in Hungary, but Hungary's relative position is still below its combined result. While Hungary's position is relatively favourable in the **health care** indicators, according to the WEF it is much worse in **primary education**, mainly due to the low ratio of those enrolled in school (101st) (this contrasts with specialised statistics, according to which the enrolment rate is 5 percentage points higher than in the WEF indicator). The assessment of the pillar that examines **secondary and higher education** is more favourable (73rd) as a result of the high number of participants.

The assessment of the efficiency of the goods market is good, while Hungary's result is less favourable concerning the labour market. Looking at the **goods market** (64th), according to the WEF the regulation regarding the establishment of companies has improved steadily in recent years, while the intensity of local competition is below average. Although **labour market** efficiency (71st) became more favourable compared to last year, the availability of trained labour continues to cause problems.

Major improvement took place in technological (40th) and financial market (45th) development compared to last year. Nevertheless, business sophistication (96th) is below the average of the region. In **technological readiness** Hungary achieved a better rank than its combined position, which is the result of the penetration of cable internet and bandwidth. In the case of the pillar that examines **business sophistication**, according to the WEF the performance of suppliers and the degree of marketing use are the main deficiencies.

In the indicator that examines the **size of the market** (55th), Hungary's openness, which allows the economy to reach various export markets, is taken into account as a significant advantage. Last year, a significant lag was still observed in the **innovation pillar** (62nd), but Hungary's relative position improved considerably, advancing by 18 places.

3.1.2 Results of the World Bank Doing Business 2017 ranking

According to the World Bank's Doing Business report, which focuses on the start-up and operation of businesses, Hungary is the 41st in the competitiveness ranking covering 190 countries. The publication entitled 'Doing Business' and compiled by the World Bank provides an annual global analysis of countries' ability to encourage investment and enterprise. The 45 indicators included in the latest, 2017 ranking were collected until June 2016. **All these indicators are objective.** Instead of macroeconomic parameters, a regulatory environment for a modelled medium-sized company as well as the efficiency of setting-up and operating a company and of bureaucracy are taken into account in preparing the ranking. With its 41st place, in this year's ranking Hungary took a somewhat less favourable position compared to its competitors in the region, falling one place from its rank last year, but the country improved its total score, while the evaluation methodology was also amended in the past period. Within the European Union, Hungary ranks the 21st, ahead of, for example, Belgium as well as Croatia from the CEE region, while the V3 countries have a higher ranking.

Table 3.3
Position of the V4 in the World Bank's Doing Business ranking

	Hungary	Slovakia	Czech Republic	Poland
2017	41st	33rd	27th	24th
2016	40th	30th	26th	25th
2015	54th (40th)	37th (29th)	44th (33rd)	32nd (28th)
2014	54th	49th	75th	45th

Note: For 2016, a new methodology was used for ranking in the publication. Rankings for 2015 according to the new methodology are in brackets. The 2014 ranking is available only on the basis of the old methodology.

Source: World Bank – Doing Business 2017.

Of the examined ten main pillars, Hungary achieved the best results in the areas of trading across borders, accessing credit, enforcing contracts and registering property. At the same time, foreign trade openness is extremely high in all of the Visegrád countries in global terms as well. According to the analysis, the good result achieved in access to credit is the consequence of the adequate regulation of the area. The Doing Business report suggests that the regulation of starting a business, including the registering of property, is also appropriate. Moreover, the enforceability of contracts is the highest in the region (8th place out of 190 countries). In the case of the pillar that examines the enforceability of contracts, Hungary's competitive advantage compared to the CEE region is attributable to the speed of proceedings and relative cheapness. It should be noted that the system of legal institutions and access to credit in Hungary are considered to be much less favourable by the World Economic Forum, which shows that there may be differences and contradictions between individual assessments. Stronger differences between the findings of individual institutions are primarily attributable to the methodological background and the different ratios of the objective–subjective nature of the basic indicators.

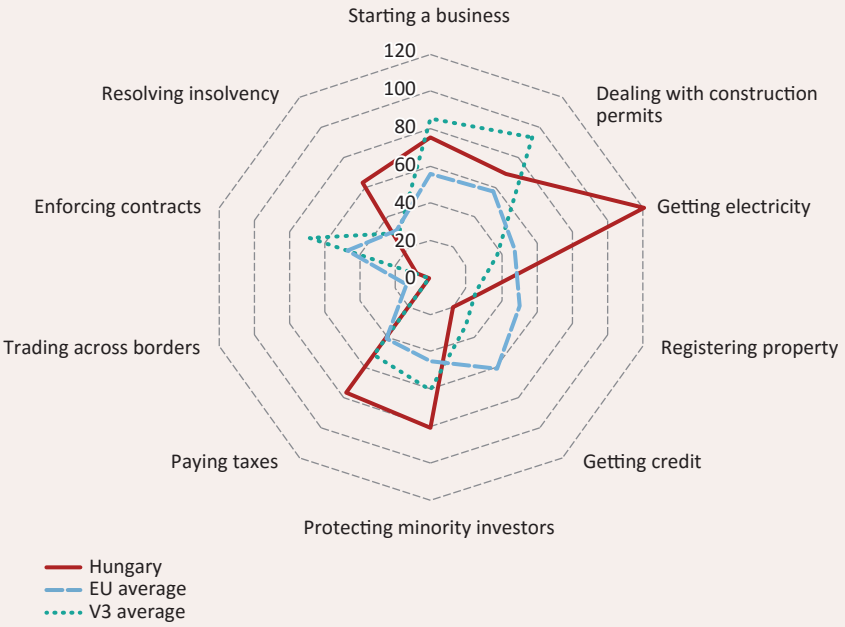
At the same time, according to the Doing Business report, the operation of companies is excessively hindered by several regulations. Greenfield investment is hindered by the complicated nature and time requirement of obtaining construction permits and access to infrastructure (electricity). Hungary took 69th place in the case of the indicator that examines the issuing of construction permits. However, since then the National Assembly has made a decision on the simplification and acceleration of the permit procedure for residential properties, while simplification would also be important in the case of permits for commercial real estate.

In the taxation pillar, Hungary is in a less favourable position than its regional competitors, despite improvement in its result. In an international comparison, the taxes on labour paid by companies proved to be high. At the same time it is advantageous that between 2008 and 2015 the total tax rate[1] of Hungarian

[1] Total tax rate means all the taxes (on profit, labour and other taxes) paid by the modelled company as a proportion of the pre-tax net profit. For Hungary, the following taxes were taken into account: corporate tax, local business tax, social contribution tax, vocational training contribution, innovation contribution, property tax, motor vehicle tax.

companies declined from 58 percent to 46 percent, i.e. below the V3 average, which, however, is still some 5 percentage points higher than the EU average. Further improvement in paying taxes would require the simplification of tax declarations and the acceleration of procedures. There has also been progress in this regard recently: from 2017, the National Tax and Customs Administration prepares the tax returns of private persons, and the tax authority is also planning to be able to compile corporate tax returns starting from 2018.

Chart 3.4
Average relative ranks of Hungary, the V3 countries and EU Member States



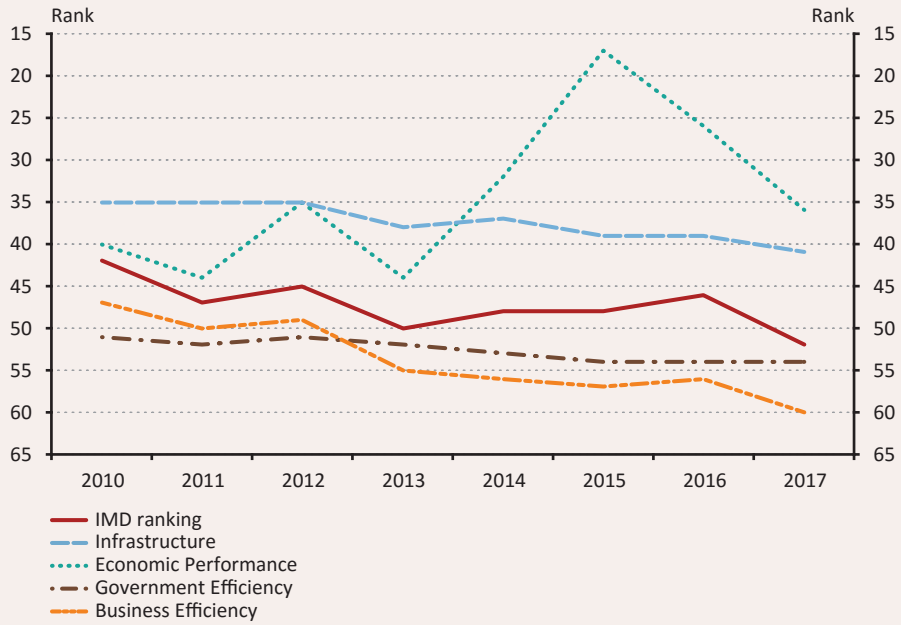
Source: World Bank – Doing Business 2017.

Hungary also falls short of the relevant benchmarks in the protection of minority investors. This pillar measures the conflict management possibilities of minority investors and their ability to enforce their interests in company management. A priority objective of the new strategy of the Budapest Stock Exchange is to facilitate the protection of minority investors, which may result in an improvement in Hungary's ranking in this respect as well.

3.1.3 Results of the 2017 ranking prepared by the IMD

In the latest, 2017 ranking of the IMD Hungary came in 52nd place, lagging slightly behind its competitors in the region. This ranking examines the competitiveness of 63 countries on the basis of more than 340 indicators, two thirds of which are objective. The majority of the countries examined by the IMD can be classified among the developed ones; this is partly the reason why Hungary is at a relatively low position in this ranking.

Chart 3.5
Hungary's results in the four main areas and in the overall ranking



Note: By 2017, the scope of countries under review was expanded by two countries (Saudi Arabia and Cyprus), which makes the time series comparison of results more difficult. Both countries achieved better positions than Hungary.

Source: IMD.

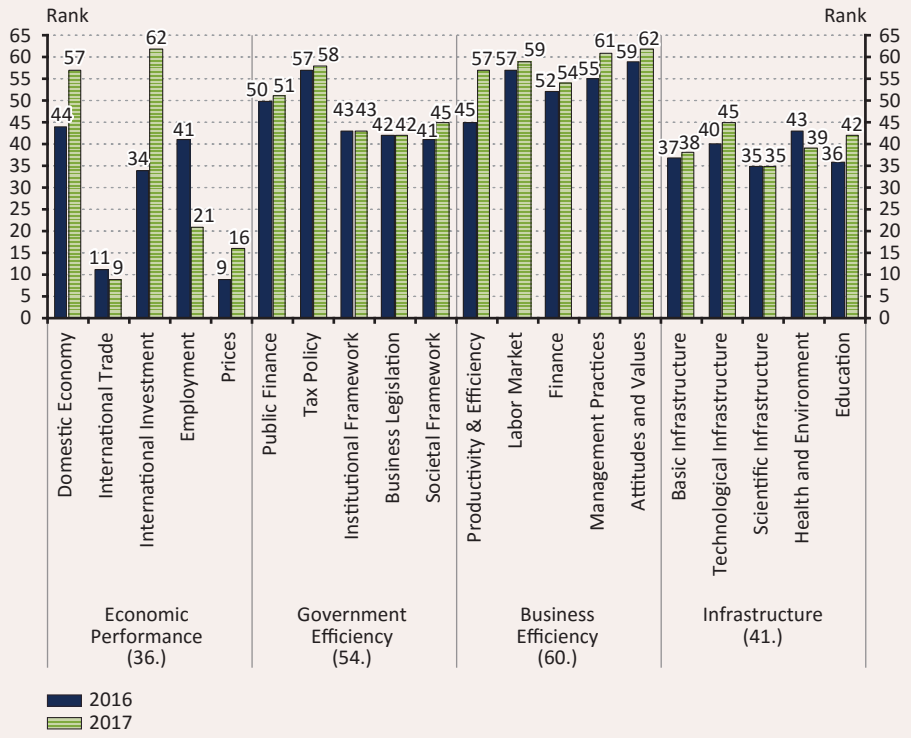
According to the IMD, Hungary's largest shortfalls in competitiveness are in the areas of the private sector and government efficiency, while Hungary's economic performance is relatively favourable. Within the economic performance pillar, from the region only the Czech Republic and Poland are ahead of Hungary, but there is a major deficit in the category that examines the efficiency of the government and the private sector. Hungary's performance is better than that of the CEE region in the area of infrastructure.

In the category that measures economic performance, the results of the sub-groups of international trade and the one measuring prices are especially good, which is attributable to the positive trade balance and moderate inflation. By contrast, in respect of international investment Hungary takes the penultimate place, which is justified by the decline in FDI inflows in 2016 (disregarding the strong fluctuations between years).

Hungary came in 54th place in the area of government efficiency, which is the consequence of the high tax centralisation rate compared to the countries under review, the high value of the general VAT tax rate and the relatively high ratio of revenues from indirect taxes.

According to the ranking, the efficiency of the private sector is below average, falling short of Hungary's competitors. The rankings reached by the economy in terms of the labour market, management practice as well as attitudes and values are also well below the average. Hungary's competitive disadvantage in the case of the labour market is attributable to the shortage of skilled labour, the low level of lifelong learning and the strong 'brain drain'.

Chart 3.6
Ranks attained by Hungary in the sub-categories in the 2016 and 2017 rankings



Source: IMD.

In terms of infrastructure, Hungary ranks relatively favourably. The performance of scientific infrastructure, which examines elements such as the amount spent on R&D activity, the number of Nobel Prize winners and the number of those with academic degrees, was the best. Compared to the previous year, Hungary improved four places in the sub-category that assesses the environment and health care. In the sub-pillar that examines education, a deterioration took place due to the findings of the PISA survey.

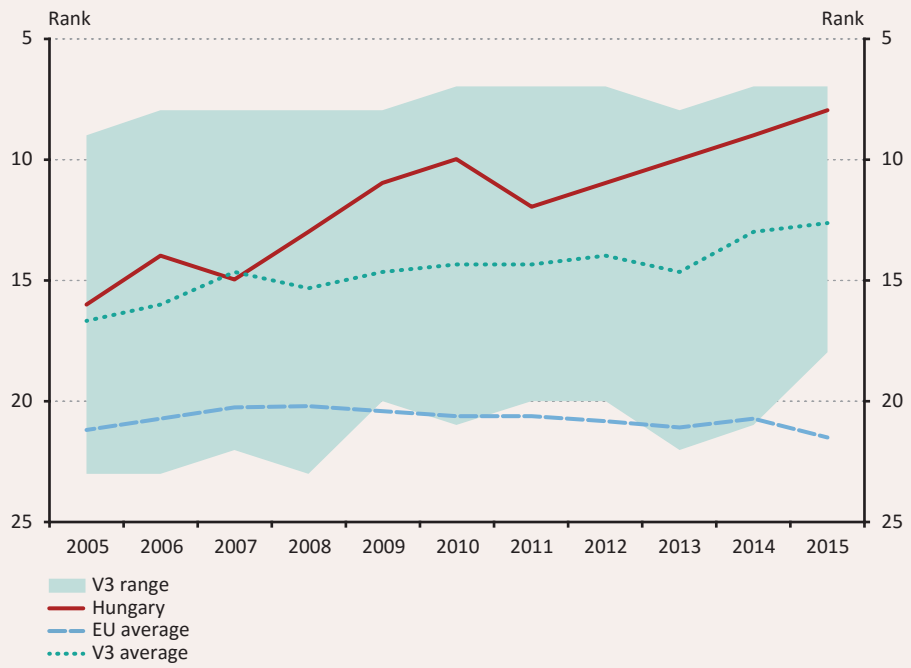
3.1.4 The Economic Complexity Index

Using international trade data, the Economic Complexity Index indicates the degree of complexity of the economy of a country. The index primarily intends to capture the knowledge capital present in the country, for which the trade structure and characteristics serve as tools.

In terms of economic complexity and development, the Economic Complexity Index may give an answer regarding the expected pace of convergence. The index captures the trade structure through the commercial embeddedness of national economies and products' penetration, based on which it is also possible to draw conclusions concerning countries' ability to catch up. According to the correlation, countries with highly complex economies and low income at present, for example China and Ukraine, may have an opportunity to break out of the income trap. On the other hand, the high degree of economic development of countries with highly complex economies and high income, such as Germany and Sweden, can be maintained as a result of their complex knowledge base.

In 2015, out of 128 countries Hungary placed 8th in the ranking, surpassing the Visegrád and EU averages. Hungary's ranking has improved steadily since 2011, while the place of the V3 remained practically unchanged, and the average relative position of the EU declined. In the ranking, Hungary is above, *inter alia*, the United States of America, Finland, the United Kingdom, Belgium as well as the Netherlands. For years, Japan, Switzerland and Germany have been the countries reaching the three best places in the indicator.

Chart 3.7
Ranking of the Economic Complexity Index among 128 countries



Source: The Atlas of Economic Complexity.

The index is based on objective data applying mathematical methods and excluding factors that distort the result. Every year, 128 countries are examined within the framework of the Economic Complexity Index. Only those countries are analysed where information is available for gross domestic product, export volume and structure, and where the population exceeds 1,200,000 people, the value of trade is greater than USD 1 billion per year and data are reliable. The source for the calculation of the index is the UN COMTRADE database.

Economic complexity is calculated on the basis of the total number of products and product groups exported by the countries under review and the number of countries that are able to produce these product groups. Accordingly, the index reflects the economic strength of a country stemming from its export diversity and product quality (hard-to-substitute, complex products).

Albert-László Barabási played a key role in elaborating the aforementioned index as one of those who laid the foundation of its methodological background. The index was created during a project led by Ricardo Hausmann, Director, Center for International Development at Harvard University and César A. Hidalgo, Professor, Massachusetts Institute of Technology, with the cooperation of the two universities. Albert-László Barabási is a Hungarian physicist and a researcher of network theory, member of the American Physical Society as well as external member of the Hungarian Academy of Sciences and the Academia Europea.

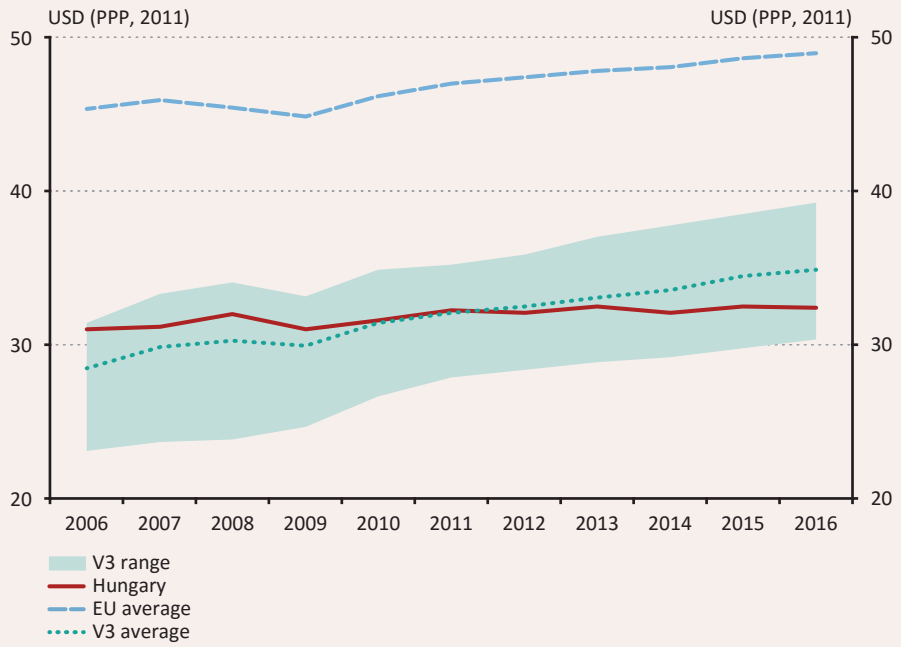
3.2 SUMMARY OF THE MNB'S COMPETITIVENESS ANALYSIS

3.2.1 Macroeconomic environment

In terms of macroeconomic indicators, the competitiveness of the Hungarian economy improved significantly in the past years, but lags can be identified in the case of several variables. The economic development of Hungary already departed from the regional trends prior to the crisis, and the country's relative stage of development declined until 2013. However, after 2013, as a result of a turnaround in real growth, Hungary's relative shortfall compared to the Visegrád region disappeared, and the process of catching up with the EU average started again.

Prior to the crisis, the increase in productivity, which determines the growth potential, was more restrained than in the region and gradually fell behind the region. In the years following the crisis, productivity increased both in the EU and the Visegrád region, but as a result of the stagnation in Hungarian productivity, starting from 2012 the average productivity of Hungary's competitors in the Visegrád Group already exceeded that of Hungary. At present, Hungary's productivity only slightly exceeds the level observed before the 2008 crisis. One of the underlying reasons is that rising employment in the lower productivity group was the main factor behind the increasing activity rate in the past years.

Chart 3.8
Labour productivity
(GDP per working hour)



Source: Eurostat, WDI.

Hungary's export market share has been catching up with the region again in recent years. Hungary's share in the global trade was rising until 2008, similarly to that of the region as a whole. However, starting from 2010, due to problems in competitiveness in the manufacturing of electronic and optical products, which had previously been a leading sector, Hungary's export market share departed from the region. As a result of recent years' large investment projects in the automotive industry, Hungary's export market share is approaching the regional level again, while its growth rate exceeds the EU average. In recent years, foreign trade competitiveness was further ameliorated by the improvement in the terms of trade and in corporate profitability resulting from the decline in commodity prices.

It is expedient to examine real economy developments together with the financing conditions, which have also improved considerably in the past years. The considerable decline in external debt observed in recent years contributed significantly to the improvement in Hungary's external vulnerability as well as its risk assessment, which led to a decrease in risk premia and an improvement in competitiveness. The decline in external vulnerability resulted from the adjustment of domestic sectors as well as from the conversion of households' outstanding debt into forints and from non-residents' gradually decreasing government securities holdings, which was partly related to the Self-financing Programme. By 2016, net external debt had fallen to a historical low, approaching the averages of the Visegrád and EU countries.

The savings rate in Hungary was below the averages of both the region and the EU in the pre-crisis years. As a result of the adjustment process following the crisis, the savings rate rose considerably, with significant

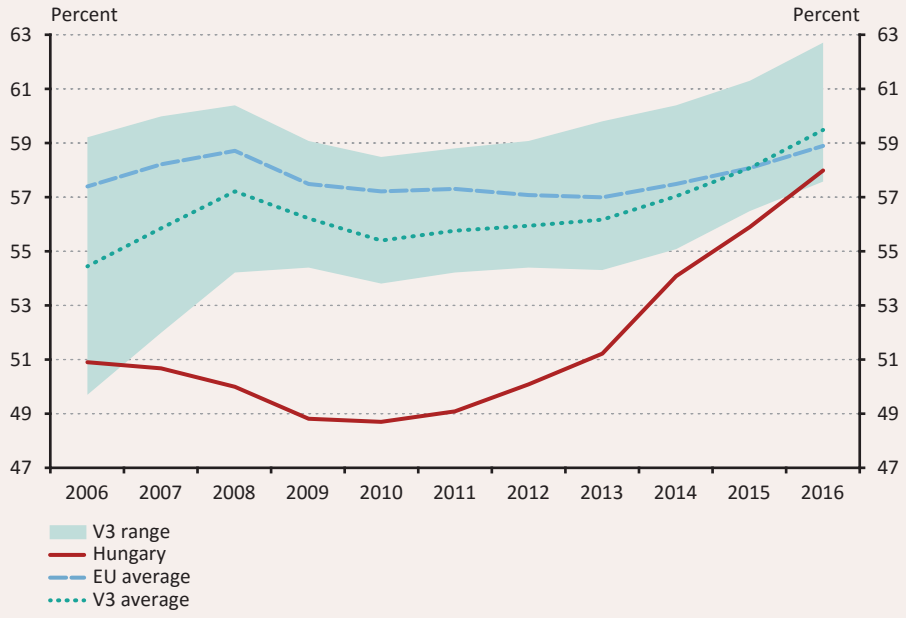
contributions from the slow reduction of the unsustainable debt accumulated earlier, the persistently subdued lending activity after the crisis as well as the rise in incomes. In last several years, the savings rate in Hungary consistently exceeded both the regional and EU averages. The adequately high savings rate supports the increase in domestic corporate investment without a rise in external indebtedness. Investment was already below the regional average prior to the crisis, and a turning point only occurred in domestic investment activity in 2012–2013, supported by the pick-up in corporate investment activity resulting from central bank programmes and the increase in – partly public – investment financed from EU funds. As a result, the rate fluctuated around the regional average again. Keeping the investment rate at a high level ensures the maintenance and expansion of corporate production capacities, which – in addition to GDP growth – also serves as a basis for potential growth and competitiveness.

3.2.2 Labour market competitiveness

In the pre-crisis period, the low employment rate limited the growth potential of the economy in Hungary. Employment bottomed out in 2010, in parallel with a surge in the unemployment rate. Against this background, labour market adjustment took place as a result of an increase in the ratio of part-time employees, in parallel with which the average number of hours worked also declined. The adjustment process was reflected in the decline in the Hungarian wage share as well, whereas the wage share remained practically unchanged in most EU Member States and in the Visegrád countries. By 2011 the gap between the Hungarian and the EU wage shares had increased from the pre-crisis level of 4 percent to 8 percent, i.e. during the crisis the share of capital in value added grew at the expense of labour in Hungary.

Examining the past years' labour market developments in a regional comparison, Hungary's deficit in terms of activity and employment, which had previously been significant, ceased to exist by 2016–2017. The acceleration of economic activity and government measures to boost labour market activity (Job Protection Action Plan, Public Work Scheme, significant minimum wage increases in 2012 and 2017, changing of the contribution system, reform of the pension and benefits system as well as the reduction of the personal income tax) contributed to the strong growth in employment in Hungary after 2010. The considerable increase observed in the number of those working temporarily abroad also contributed to the expansion in employment. In parallel with the rise in employment figures, the unemployment rate has now fallen below both the regional and EU averages, and is at a historically low domestic level compared to the previous figures as well.

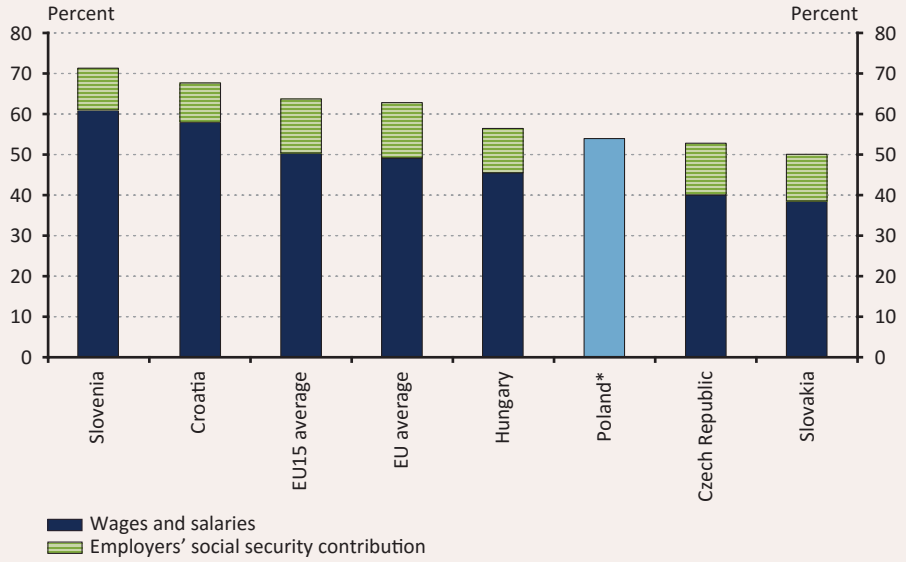
Chart 3.9
Employment rate in the 15–74 age group



Source: Eurostat.

The increase in employment entailed a gradual decline in labour reserves, resulting in a tightening labour market. As a result of this and the improving economic prospects, wages started to grow dynamically, supported by the minimum wage increases, in addition to the public career path models and sectoral wage rises. As a result, the Hungarian wage share rose to some extent in 2016 (the growth in the wage share was also a result of a temporary slowdown in GDP), but it still has not reached its pre-crisis level.

Chart 3.10
Adjusted wage share according to gross wages and burdens on employers
(2016)



Note: Breakdown of wages and burdens on employers is not available for Poland.
Sources: Eurostat, MNB calculation.

Overall, employment in Hungary caught up with the regional (59.5 percent) and EU (58.9 percent) averages. Nevertheless, the Hungarian wage level (EUR 16,699 per year on PPS basis) is still below the regional average wage level (EUR 18,736 per year on PPS basis), and even further below the EU average (EUR 28,389 per year on PPS basis). At the same time, on an aggregate level the Hungarian (adjusted) wage level is in line with Hungarian productivity. At present, the Hungarian wage share is higher than the regional average, but well below the EU average. In terms of the burdens on labour, the contributions on the employer side are not considered extreme in a European comparison (in the case of Hungary, as a result of the contribution reductions in 2017 and 2018 the 'employers' tax wedge' will be even narrower than the ratio seen in the chart), but the total tax wedge calculated together with employees' taxes and contributions (i.e. the ratio of the total burden imposed on labour by the state) is still considered high, both in regional and European comparisons.

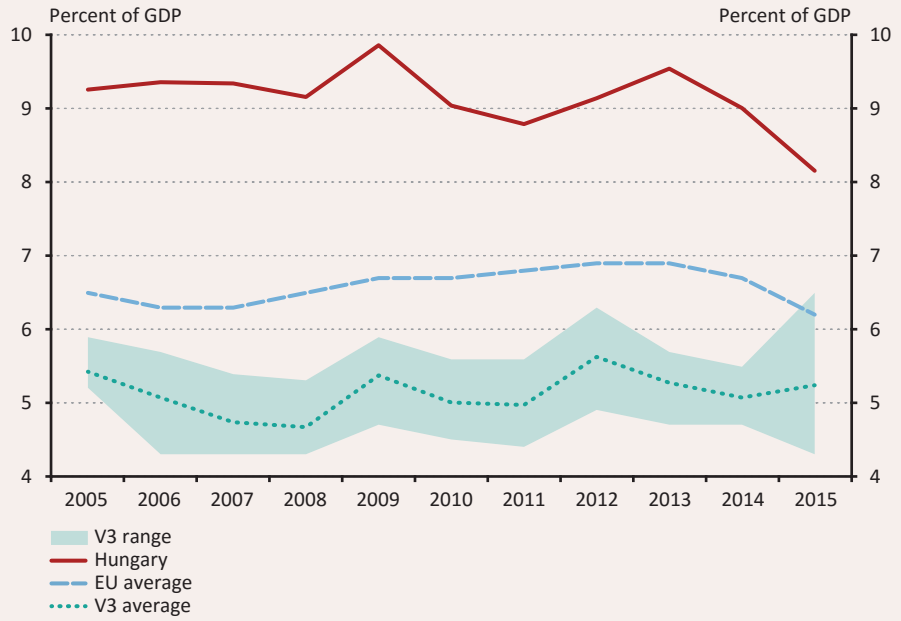
3.2.3 Public sector competitiveness

Adequate functioning of the state is one of the most important influencing factors for a country's competitiveness through both its weight in the economy and its regulatory power. One of the key factors in determining public sector competitiveness is the assessment of what environment the state creates for enterprises and private persons. Business environment comprises both the tax and regulatory environments, which are important determinants of the intention to start a business and the intention to invest, and through that of the economic performance. A general measure of the tax system is the degree of tax centralisation. In Hungary, this indicator is high in regional comparison, but looking at the European Union as a whole, it has been below the average since 2010. One of the most important trends in Hungary that affects savings and investment decisions as well as employment is the decline in the ratio of taxes on labour to GDP and the increase in taxes on consumption. Firstly, this type of change in the tax structure reduces the economy distorting effects of taxation, facilitates the fight against the shadow economy and boosts employment and the growth of the real

economy over the long term as well.[2] Secondly, it contributes to the competitiveness of foreign trade (through the reduction of production costs and making imports more expensive),[3] also resulting in economic growth.

In Hungary, the ratio of public administration expenditures considerably exceeds the averages of both the European Union and the V3, despite the steady downward trend observed since 2013. A significant portion of bureaucratic expenditures is wage related, which is not sufficiently efficient and motivating due to the determination of incomes according to a wage scale. With its improvement and performance-based waging it would be possible to significantly reduce the size of the public sector.

Chart 3.11
Public administration expenditures to-GDP-ratio between 2005 and 2015



Note: Expenditures related to Public Work Scheme have been excluded from the data series for Hungary.
Source: Eurostat, MNB.

The quality of public services is also a part of the environment created by the state. One of these services is public administration through the internet. According to the OECD database, Hungary falls short of the EU average in this area, but exceeds the regional level. While people often use the internet to search for data in administrative matters, they are much less able to use it for attending to administrative matters. Electricity is an indispensable element of infrastructure, and not only its connection but also its later reliable quality are essential for a company's operations. The data presented by the World Bank take into account the required maximum connection data, in which Hungary does not perform well, falling short of the EU and regional averages. Moreover, the difference slightly increased last year. By contrast, the issuance of construction permits for residential properties has been simplified significantly in Hungary, and similar easing would be necessary in the case of enterprises as well. Acceleration of administrative procedures may encourage the willingness to build, which may contribute to a further upswing in the economy.

Measuring the efficiency of the public sector is important in order to learn about the productivity of the national economy as a whole. In most developed countries, in certain sectors the government is the largest and often the only economic agent. The functioning of the public sector can be considered efficient if one unit of government expenditure results in the most favourable effect possible for social welfare. Measuring state productivity is still in its infancy; few countries do it, and there is no universal methodology. A good example for that is the United Kingdom, where the Office for National Statistics annually publishes information on

[2] OECD: Tax Policy Reform and Economic Growth, OECD Tax Policy Studies 20. Paris, OECD Publishing. 2010
[3] European Commission: Study on the Impacts of Fiscal Devaluation, European Commission, Working Paper N. 36-2013

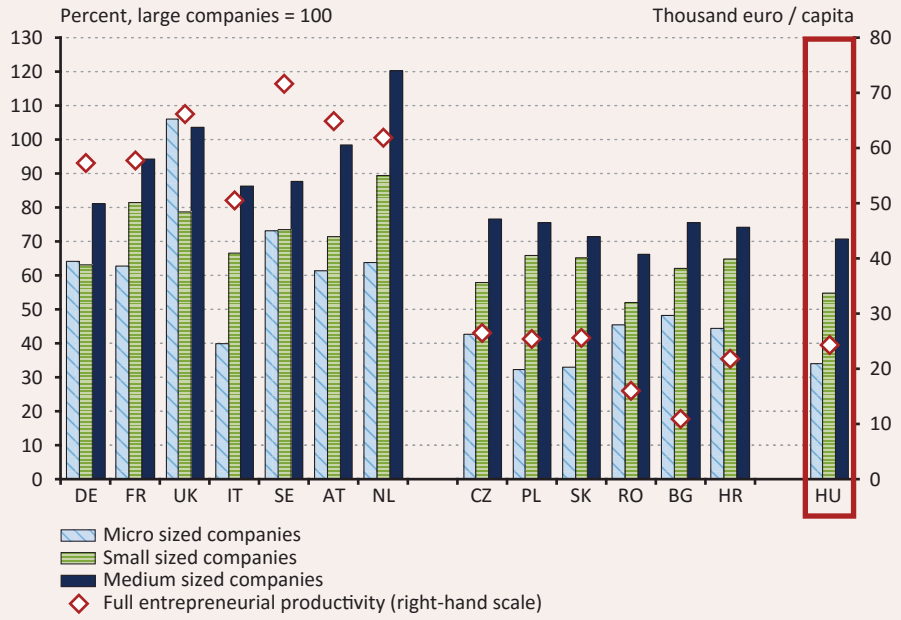
public sector efficiency. The more we know how efficient the public sector is and how productive its individual institutions and areas are, the better chances we may have to improve the efficiency of the functioning of the state, which may also improve the potential growth of the national economy.

3.2.4 Competitiveness of enterprises

Improving the labour productivity of enterprises and the SME sector forms the basis for economic competitiveness. In the CEE region, the main challenge related to the private sector is to implement a simultaneous increase in productivity and wages, and thus to enable Hungary to overcome the competitiveness model based on the wage cost advantage and the middle income trap. Increasing labour productivity is also a precondition for the Hungarian SME sector to be able to upgrade in international value chains.

In relation to the per capita labour productivity of SMEs, Hungary's performance is the weakest in the Visegrád region, and the average of the region does not reach half of the per capita total corporate labour productivity of West and North European countries. While the productivity of small enterprises in West and North European countries amounts to 70–80 percent of that of the large ones, and the productivity of medium-sized enterprises reaches or even exceeds that of the large ones in several countries, the lag in East Central Europe is 10–20 percentage points bigger in all size categories. Based on the OECD's 2017 report entitled 'Entrepreneurship at a Glance', in the Visegrád region the productivity of the Hungarian manufacturing SMEs grew the least (2.7 percent) between 2009 and 2014. At the same time, among service-providing SMEs Hungarian productivity growth was the highest (3.5 percent) in the region. The degree of labour shortage is a new and important phenomenon not only in Hungary, but also in the Visegrád region as a whole. According to the survey conducted by the German-Hungarian Chamber of Industry and Commerce, the shortage of labour is the most severe in the Czech Republic, followed by Hungary, and for the time being, in this respect the assessment of the labour market situation is the most favourable in Poland. In addition to wage rises, providing skilled workforce also requires the development of vocational training and the increasing of the number of SMEs' employees with higher education.

Chart 3.12
Productivity of the SME sector
(2014)



Source: Eurostat.

In order to improve the productivity of the corporate segment, it is essential to raise the corporate investment rate, including an increase in the innovation activities of the business sector. As a result of the crisis, the corporate investment rate fell in the EU, the Visegrád region and within that in Hungary as well, but the degree

of the decline was higher in the Visegrád region and Hungary than the EU average. In Hungary, as a result of successful supportive measures taken by the central bank and the government as well as renewed increased drawdowns of EU funds, the rise in the amount of loans granted by the banking sector to the SME sector is already visible, which is expected to be reflected in an increase in the investment rate as well. However, in addition to more active traditional lending, it is also important that alternative forms of financing that facilitate the spread of innovation based forms of enterprises (e.g. start-ups, seed enterprises) also gain ground.

The concentration of Hungarian exports and industrial production has been increasing since 2012, with the latter already exceeding the average of the Visegrád countries in 2014. This trend is partly attributable to the decline in the production of the high-tech sector and the increase in the share of the vehicle industry following the crisis. This is corroborated by the fact that the share of high-tech exports within manufacturing exports has been declining since 2009 (although its value is high), while it has increased in the V3 in this period. Concentrated industrial production may result in excessive dependence concerning the given aspect. Therefore, wider diversification supported by a stronger SME sector would be advantageous.

The competitiveness of enterprises can be measured in terms of the burdens of regulation as well, which can be quantified by indicators such as the time to start a business or the time to comply with tax filing for enterprises. The reduction in the time to start a business is typical of the whole EU and even more of Hungary. In spite of the fact that in 2007 starting a business took more time in Hungary than the average of the Visegrád countries, now the related administration can be arranged in nearly one third of that time (in 7 days), which is even faster than the EU average. By contrast, the time to comply with tax filing for enterprises is unchanged in Hungary (277 hours per year), while it has been steadily declining in the other countries of the Visegrád region since 2009. The competitiveness of enterprises in Hungary may significantly improve in this area as well with the implementation of the corporate tax return prepared by the Hungarian tax authority.

For each enterprise, an important aspect of the (re)investment of earnings is whether they can operate under favourable tax conditions in the target country compared to the peers in the region. According to the data of the Doing Business survey, between 2005 and 2015, the total tax rate of enterprises as a proportion of the commercial profit declined by more than 12 percentage points in Hungary, thus sinking to a level below the average of the V3 and approximating the EU average as well, which also declined in the period under review. However, to reach the EU average, the total tax rate of enterprises needs to be further reduced, which is partly implemented by the considerable decline in the social contribution and the corporate tax rate. Another measure of fast and transparent tax administration is the number of tax types paid by enterprises in a year. Hungary's performance in this indicator is in line with the EU average, but is weaker than the performance of the V3.

Improvement in the quality of the business environment and at the same time the development of ethical corporate behaviour are also indicated if the extent of the shadow economy declines and the intention to establish businesses improves.[4] In the estimated degree of the shadow economy, which affects both the external and internal conditions of the competitiveness of enterprises, Hungary is 4 percentage points higher than the EU and V3 averages. Following the crisis, the shadow economy is losing ground again throughout the EU. As a result of government measures and the continuous improvement in economic activity, the decline in the VAT gap in Hungary was among the most significant within the EU between 2013 and 2015. Nevertheless, further steps need to be taken to reduce the shadow economy to an even lower level. In respect of entrepreneurial intentions, Hungary exceeds the averages of both the EU and the V3. Strong enterprising spirit is a precondition for the successful renewal of businesses. Accordingly, the state should facilitate the realisation of these intentions and ensure adequate conditions for already existing businesses as well.

Improvement in the business environment and in the operating competitiveness of enterprises was perceived in the past few years, but progress in increasing productivity, mitigating the labour shortage and further reducing the shadow economy is essential for Hungary's continued successful convergence.

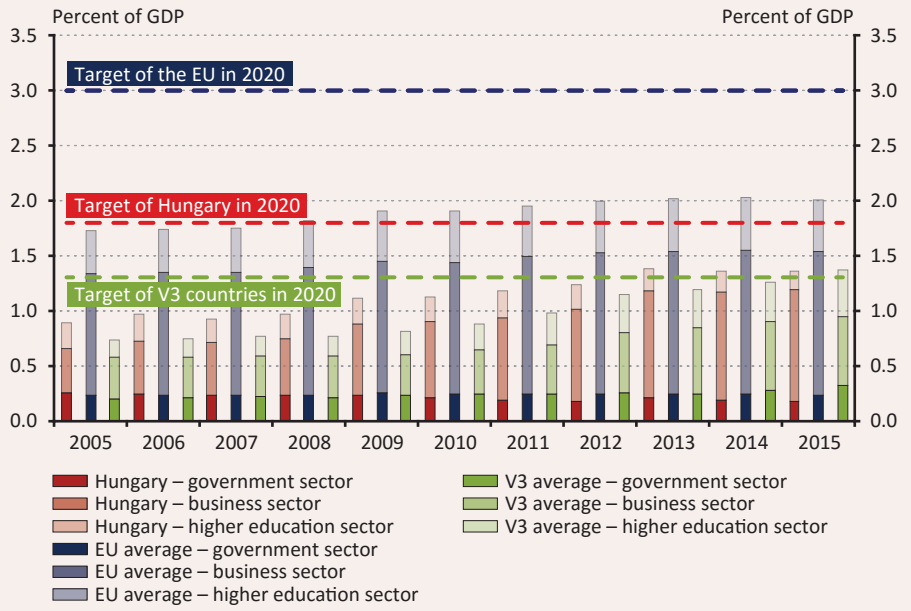
[4] Schneider, Friedrich (2015): Size and development of the shadow economy of 31 European and 5 other OECD countries from 2003 to 2015: different developments. January 2015, http://www.econ.jku.at/members/Schneider/files/publications/2015/ShadEcEurope31.pdf

3.2.5 R&D and innovation

Competitive research and development (R&D) and innovation are preconditions for an economy that functions on the basis of the innovation-driven model. For the change-over from the investment-driven model to an innovation-driven model it is necessary to increase R&D expenditures and R&D personnel, the expansion of which facilitates the creation of a research infrastructure that is competitive internationally as well. However, the research, development and innovation ecosystem does not only depend on funding and headcount conditions, but also on the expansion and development of the innovation capacities of enterprises, easy access to the latest technologies and the spread of robotisation and digitalisation across the economy.

Hungary's innovation performance is below the EU average, but on par with the regional average. In Hungary, the ratio of total R&D expenditures to GDP increased from 0.92 percent to 1.38 percent between 2005 and 2015. While the amount of business expenditures is high, Hungary falls short of the average of the Visegrád region in the areas of higher education and public R&D expenditures. On average, the V3 countries have already reached the targets undertaken for 2020, but Hungary still has not reached its target, which is higher than that of the region. For the creation of a research ecosystem that is competitive over the long term it would be expedient to increase Hungarian R&D expenditures, and within that the funds intended for higher education and public R&D. Similarly to the region, the R&D workforce followed a rising trend in Hungary until 2013, but then declined slightly, while the V3 countries were able to further increase it, catching up with Hungary by 2015. Nevertheless, none of the Visegrád countries reaches the EU average. Putting the R&D workforce on a rising path again would be important in terms of the competitiveness of R&D&I.

Chart 3.13
R&D expenditure in the economy and by sectors



Source: Eurostat.

In terms of corporate product and process innovation as well as organisational and marketing innovation indicators, the Hungarian SME sector was in the last quarter in the EU in 2015. Hungary's performance is below the EU and V3 averages in product and process innovation as well as in organisational and marketing innovation processes. The improvement achieved in the product and process innovation indicator reflects the adoption of new technologies, robotisation and digital solutions. At the same time, progress in the field of organisational and marketing innovation facilitates the convergence in corporate governance and management competences.

Hungary and the Visegrád region falls well short of the EU average in the number of patents. The number of Hungarian patents granted by the national patent authority of Hungary is lower than the Visegrád average, but the number of patents registered by Hungarian citizens with the European Patent Office exceeds the regional average. Firstly, the low Hungarian value is attributable to the fact that large multinational companies register new technological achievements in their respective home countries even if they were not developed there. Secondly, most of the knowledge-intensive business research activity is carried out in the core countries of the EU.

Both in a regional and EU comparison, the ratio of those employed in the high-tech sector is outstanding in Hungary. Moreover, in contrast to the stagnation observed in the other countries, in the past years this ratio increased further in Hungary, covering those working the fields of electronics, optics, the pharmaceutical industry and IT as well as telecommunications, TV, broadcasting, sound technology, programming, consultancy and research and development activities. According to the innovation scoreboard of the EU, Hungary is the first in the exports of products representing medium technological development and of high-tech products, and is also among the leaders in the EU in the rapidly growing enterprises of the innovative sectors.

Compared to the EU, both the price and penetration of broadband internet are favourable in Hungary. A well-functioning infocommunication sector is also necessary for a competitive economic ecosystem. At purchasing power parity, the monthly broadband internet price is 20 percent lower than the Visegrád average, which facilitates the further increase in the ratio of broadband subscriptions. Hungary is among the leaders both at EU and global level in 4G coverage and the speed of mobile internet. At the same time, mobile phone subscription prices (900 calls + 2 GB internet) are among the highest in the OECD countries.

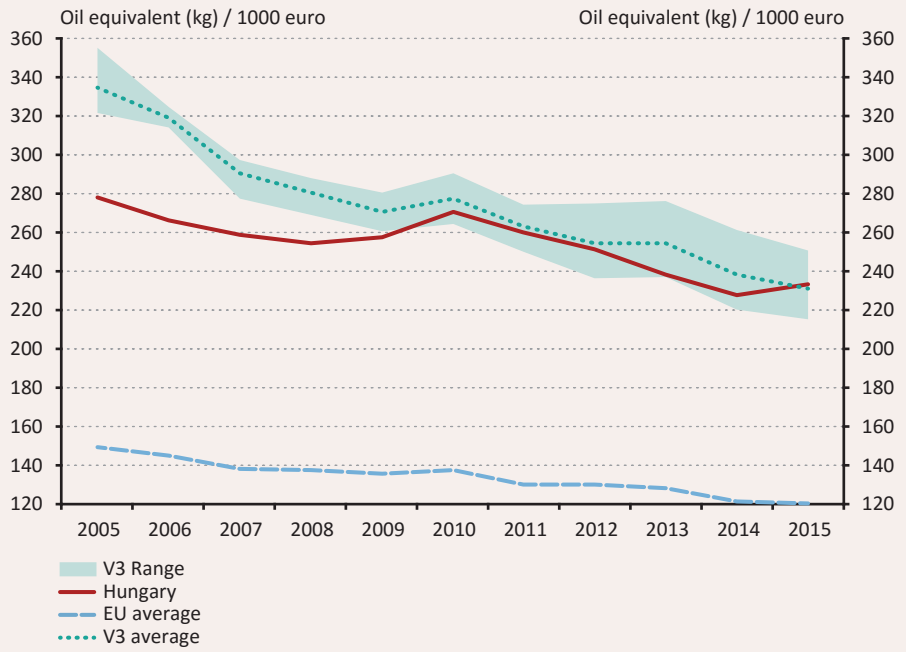
In the field of digitalisation, it is primarily the development and spread of enterprises' digital technologies as well as an improvement in the quality and ratio of use of e-administration that is necessary in Hungary. The latest aspect of R&D&I is the process of digitalisation, which has formed the basis of adopting the most modern technologies since 2010. Based on the EU's Digital Economy and Society Index, in terms of digitalisation development Hungary lags behind the EU average, but is on par with the V3 average. In the dimensions of connectivity and the use of internet, Hungary outperforms the EU average. At the same time, in terms of the development of companies' digital competences as well as the quality and ratio of use of e-administration it is among the last in the EU.[5]

3.2.6 Competitiveness of the energy market

Similarly to the other countries of the Visegrád region, the energy intensity of the Hungarian economy is high. Although the energy requirement per unit of production has followed a downward trend in Hungary since 2010, and a similar decline is also observed in the EU as a whole, the energy intensity of the V3 and Hungary are more than twice as high as the EU average. In relation to that, the ratio of Hungary's net energy imports is also high and is not declining.

[5] European Commission (2017): Digital Economy and Society Index 2017 – Hungary. http://ec.europa.eu/newsroom/document.cfm?doc_id=43017

Chart 3.14
Energy intensity of the economy



Source: Eurostat.

In the use of renewable energy sources, Hungary reached its EU target set for 2020, but has been unable to show any further progress since 2014, while the share of renewable energy sources has increased slightly in both the EU and the other countries of the Visegrád region. The ratio of use of renewable energy sources in Hungary declined below the EU average in 2014–2015, which is primarily attributable to the deceleration in the spread of water and wind energy. Nevertheless, the V3 average is still lower than the Hungarian indicator. By increasing the ratio of renewable energy sources within the total use of energy it would be possible to diversify the country's energy supply, to progress in the implementation of smart buildings and smart solutions and to promote compliance with environmental aspects.[6] At the same time, the expansion of renewable energy capacities faces significant technological constraints and additional costs.

As a result of regulatory interventions after 2012, at purchasing power parity, Hungarian energy prices for households declined to moderate levels. In view of price reductions in several steps, between 2012 and 2014 the price of electricity for households declined below the average of the Visegrád region first, and then below the EU average after 2014. As a result of regulated price reductions in several steps, between 2011 and 2014 the price of gas for households also decreased first below the Visegrád average and then below the EU average. The low Hungarian household energy price level increases households' disposable income that can be spent on other consumer goods and adds to households' savings, which improve Hungary's economic competitiveness. Therefore, keeping household energy prices at low levels may continue to be an important means of preserving Hungary's energy industry competitiveness.

The prices of gas and electricity for Hungarian enterprises are higher on average than the averages in the EU or Visegrád countries. Although between 2013 and 2016 the price of gas for industrial consumers declined in Hungary, it was unable to fall below the V3 and EU average prices, which were also decreasing in the same period. Similar developments are observed in the price of electric energy for industrial use, which is also higher in Hungary than the average of the EU or the V3. At the same time, the Hungarian Power Exchange was launched in 2010, where the daily price of electricity used for industrial consumption is determined on the

[6] Ministry of National Development (2010): Hungary's Renewable Energy Utilisation Action Plan 2010–2020 http://2010-2014.kormány.hu/download/2/b9/30000/Meg%C3%BAjul%C3%B3%20Energia_Magyarorsz%C3%Alg%20Meg%C3%BAjul%C3%B3%20Energia%20Hasznos%C3%ADt%C3%Alsi%20Cselekv%C3%A9si%20terve%202010_2020%20kiadv%C3%Alny.pdf

basis of the current demand and supply. It also depends significantly on individual enterprises' management abilities under what price conditions they are able to obtain electricity. The expansion of the channels of access to industrial energy has a price-reducing effect; therefore, solutions similar to the power exchange constitute the basis for industrial energy supply that is competitive over the long term as well.

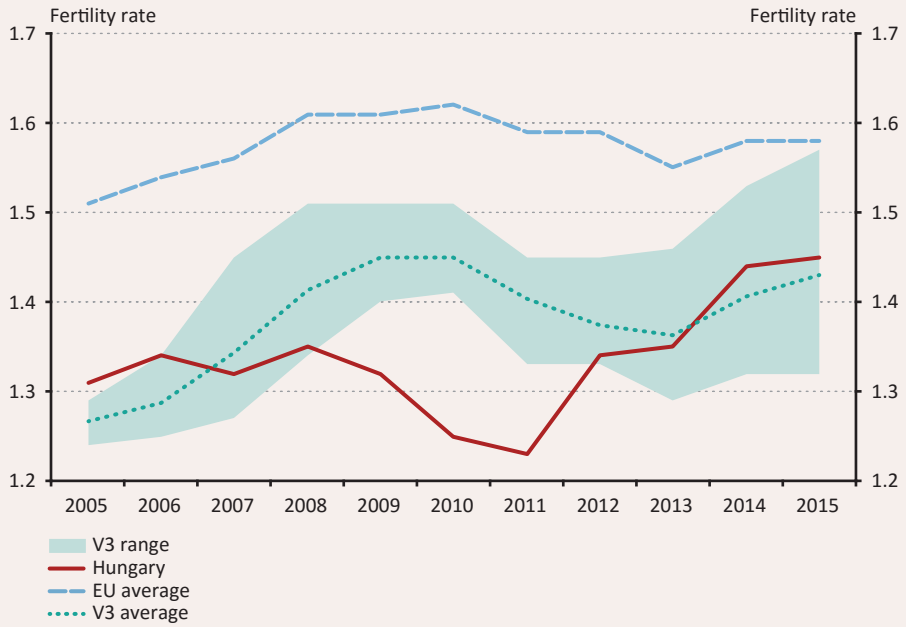
Within economic competitiveness, steps necessary for Hungary's long-term convergence in the energy market have already been taken for higher effectiveness in price competition. At the same time, further steps are necessary to reduce Hungary's energy intensity, enhance its energy independence and increase the use of alternative energy sources.

3.2.7 Demography and social structure

One of the key issues of economic growth and convergence is the quality and quantity of the human capital that is active in the labour market. Over the long term, the quantitative factors of human capital are mostly determined by demographic developments, of which the decrease in and ageing of the population represent the greatest challenges for almost all developed countries, including Hungary since the early 1980s. According the HCSO's projection, in Hungary the number of inhabitants is declining steadily without a major rise in the number of births, whereas in other countries the economic convergence in most cases took place in parallel with an increase in the population. In order to reverse the unfavourable trends it is important to formulate a social policy that supports childbearing even better than the current one.

Boosting the fertility rate is a precondition for reversing the unfavourable demographic trend. In order to prevent a further decrease in population in the medium term, fertility should rise to at least 2.1 (it also fails to reach 1.6 in the EU). In Hungary, contrary to the trends in the countries of the EU and the region, following its historical low (1.23) in 2011, the fertility rate rose continuously, reaching 1.49 by 2016, but it is still below the value of 2.1, which is the minimum requirement for social reproduction. Another determinant of the increase in the number of inhabitants is life expectancy at birth, the rise in which also adds to the quantity of available human capital, but at the same time also increases the median age. Life expectancy at birth increased in Hungary in the past ten years. Nevertheless, it is still below the average of the countries in the region and the EU.

Chart 3.15
Total fertility rate



Source: Eurostat.

Not only the number of inhabitants is important, but also the composition by age, in which ageing is the determining trend at present. The proportion of the above-65 age group is on a rising trend in most developed countries, owing to both the longer life expectancy and the decreasing population. In Hungary, the ageing of the society follows a similar trend to the EU average, although at a lower level. In the V3 countries, the ratio of the elderly in the society is below the EU average, but the growth rate is faster than in the EU. All of this means that the working-age population may decrease even faster than the total number of inhabitants, and the ratio of the dependent population (children and elderly people) will grow.

In the Human Development Index Hungary falls below the averages of both the V3 countries and the EU, which is mainly attributable to the lower values of life expectancy at birth, the number of years spent at school and per capita GNI compared to Hungary's peers in the region. In the past ten years, continuous improvement similar to the EU average was observed in Hungary, although its degree is below the regional average.

In Hungary, inequalities in terms of income and wealth are lower than the EU average. In the European Union, the inequality in market incomes is medium-high, but it is reduced considerably by government redistribution. In the Visegrád countries, the income disparity is traditionally lower than the average of the EU, but within the region – with minimum dispersion – the figure for Hungary is the highest. Wealth disparity in the region and Hungary is even lower than income disparity, the main reason of which is that even in the lower wealth layer the ratio of real estate owners is relatively high. In this field, one of the lowest inequalities within the EU is observed in Hungary. The importance and consequences of inequality have became topics of economic interest in the past years, but the cause and effect relationship with development and growth is not clear-cut.

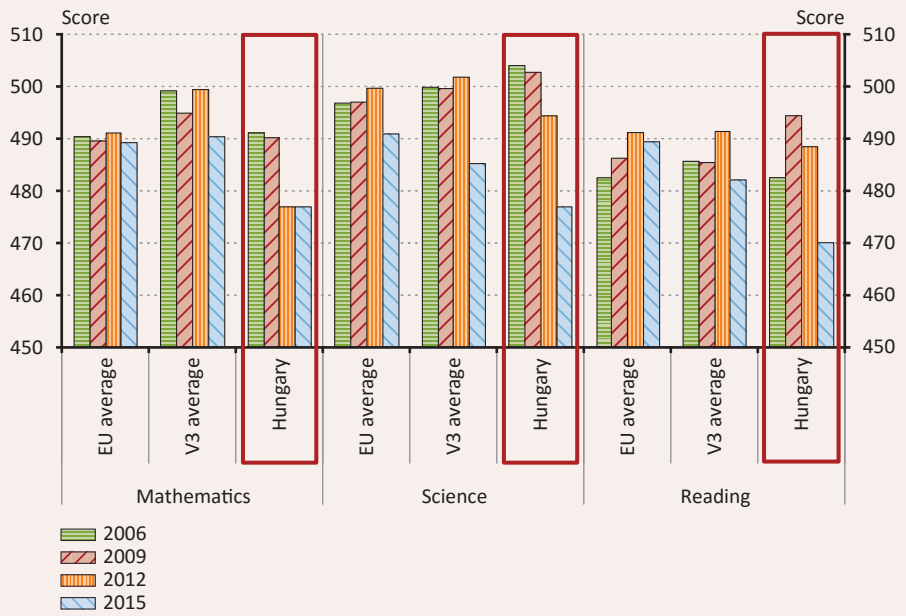
3.2.8 Education

Through the quality and productivity of the available workforce, education has a major impact on the economic performance and competitiveness of a country. At the same time, it is not easy to measure the efficiency of education, as in the case of a university graduate we can speak about at least 18 years of education, where it is difficult to clearly separate the value added of the individual levels of education.

Early childhood education is of special importance in learning the basic skills necessary for later studies. In Hungary, at the age of 3 the ratio of those receiving early childhood education reaches the average of the countries of the EU and the region, while at the age of 4 it exceeds that average. In order to acquire adequate social skills, the Hungarian regulation expressly changed towards the widest possible expansion of nursery and kindergarten education in recent years. In addition, discussions are going on about the introduction of one more grade in the current 8-year elementary school system as of 2019. The main objective of this modification is to enable the Hungarian education system to provide more thorough competencies to students than at present as well as to better balance the differences stemming from children's socioeconomic backgrounds.

International tests measuring the effectiveness of the educational system show that although Hungarian students learn the curriculum as expected of them, in the case of examples taken from real life they are unable to use this knowledge to an adequate degree. The TIMSS and PIRLS tests completed by students from grades 4 and 8 focus mainly on checking the curriculum learnt. In these tests, Hungarian students performed above the average of EU countries. By contrast, in the PISA tests, which examine how students can use the learnt curriculum in real life examples, the Hungarian results are below the average regional and European levels, and even follow a deteriorating trend over time. An especially significant problem in Hungary is the higher ratio of low achievers compared to the region: 18.5 percent of Hungarian students did not reach the minimum required level in any of the three PISA subjects, while this ratio is only 13.9 percent in the EU countries. The inadequate level of digital skills may also have played a role in the increase in the ratio of low achievers in Hungary, as the first survey that students had to complete entirely on the computer was conducted in 2015.

Chart 3.16
Results of PISA tests



Source: OECD.

Of the output indicators on the education system, the analysis of early leavers from education and training deserves special attention; Hungary's lag behind its peers in the region is significant. In Hungary, within the 18–24 age group the ratio of those people who finished only elementary school at most and do not participate in any further education or training amounted to 12.4 percent, which is nearly the double of the average of the region, and exceeds the 10 percent target set in the Europe 2020 strategy. The restructuring of the Hungarian vocational training system by introducing a dual training structure aims to reduce school-leaving without qualification; the relevant impact will unfold in the coming years.

Increasing the ratio of those with a tertiary education degree, and within that those with a degree in natural sciences, is one of the objectives of Hungarian education policy. In view of the technological development and digitalisation, labour market requirements are already changing nowadays, and these developments are expected to be perceived even more strongly in the future. Education systems face serious challenges: they have to prepare students for labour market needs that are unknown today. Digital knowledge is also becoming increasingly important among basic skills; its continuous development will be indispensable for a successful career. The highest possible number of graduates with natural sciences, technical and ICT degrees significantly contributes to Hungary's best possible adjustment to future challenges.[7]

Due to the constantly changing labour market needs, lifelong learning and continuous (self)-development will be essential parts of people's lives. In Hungary, participation in lifelong learning is still below the European average, although Hungary's peers in the region are struggling with similar problems. At the same time, Hungary's indicators are among the worst in the area of foreign languages: only 37 percent of the whole population say that they speak at least one foreign language, although this ratio is much higher among the youth. Compared to Hungary, the corresponding ratio is twice as high in the EU and Visegrád countries as well. The financial literacy of the population could also be improved in Hungary, to which the increasing of the ratio of active savers could contribute significantly. Although stemming from its statutory mandate, the MNB contributes to boosting financial literacy, providing financial knowledge in public education more widely would also help.

[7] Changing Gears in Tertiary Education: Development policies for performance oriented higher education. Government strategy.

The ratio of public education expenditures to GDP depends to a great degree on the attitude of the data source examined. Based on the classification of budgetary items, the level of expenditures in Hungary exceeds the averages of the EU and the region, while on the basis of the special statistics broken down by the levels of education Hungary is below the EU average. According to the latter approach, in expenditures on early childhood education Hungary is among the leaders in Europe, which is attributable to the extensive kindergarten network maintained by the state. In addition, education expenditures for secondary schools are also remarkable. By contrast, a significant lag is identified in the expenditures on elementary school and tertiary education. The low level of elementary school expenditures may reduce the effectiveness of the further levels of education that rely upon the elementary school level. The career path models (pedagogical and those for university lecturers) introduced in the sector increased the respect for the teaching profession, and thus Hungarian students can be taught by teachers who are able to adapt themselves to continuously changing labour market expectations.

The education management system underwent several significant changes in the past years. Public education institutions that had been maintained by local governments were first taken into state maintenance, and then, following the restructuring of the Klebelsberg Institution Maintenance Centre (KLIK), 58 educational districts were formed. Radical changes in vocational training also started in the past years: as of 1 July 2015, the maintenance of many specialised grammar schools and vocational secondary schools was taken over by the Ministry for National Economy. At the national level, they were organised into 44 vocational training centres, and the weight of dual training structures is also increasing within vocational training. The objective of restructuring is to improve the efficiency of the Hungarian education system and that students who finish their studies can better meet the current and future requirements of the labour market.

3.2.9 Health care

Through the quantity and quality of the available workforce, health care has an impact on both the economic performance and competitiveness of a country. Prolonged illnesses significantly reduce both the active time spent working and labour productivity, and the lost potential active life years can also cause major damage to the economy.[8] Health care has a significant direct impact as well on the economy, as health care expenditures amount to 6–10 percent of GDP in European countries.

The share of the overweight population is a serious problem in developed countries, which significantly contributes to premature mortality and the deterioration in the quality of life through the related illnesses (such as diabetes and high blood pressure). The obesity rate in Hungary (20.6 percent) exceeds both the EU and the regional averages (17.1 percent). The ratio of those struggling with weight problems is increasing with age: 76 percent of the 65–74 age group are already considered overweight in Hungary.

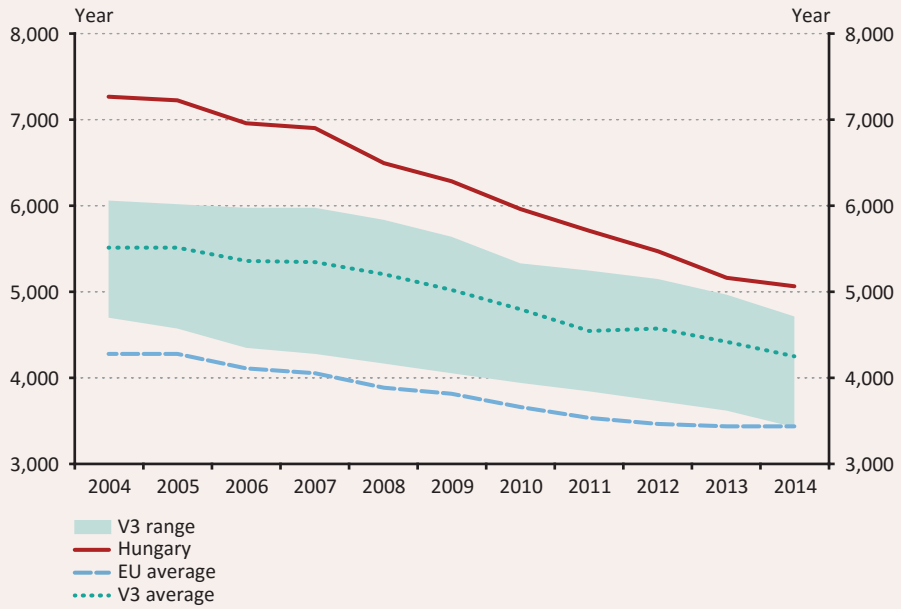
By their own admission, more than 10 percent of the Hungarian adult population experienced depressive symptoms, which is the highest value in the EU. In 2014, in the Visegrád countries, the ratio of those perceiving depressive symptoms was a mere 4.0 percent on average, which is even lower than the EU average (6.7 percent). In Hungary, the value of this indicator is extremely high among those with low education, where the value for Hungary exceeds that of Portugal (12.8 percent), whose value is the second worse, by 6.4 percentage points.

With the promotion of healthy lifestyle and the strengthening of prevention it would be possible to significantly improve the quality of life of the population, and the negative consequences of premature mortality could also be reduced. In terms of healthy life years, Hungary caught up with the average of the Visegrád countries in the period under review, but is still below the average of the EU countries. In this respect, a difference between sexes is perceived at present as well: in 2015, similarly to the region, Hungarian men could live an average 2 years less without health damage than women. The average difference for EU countries is less than a year. Productivity and the number of years spent working decrease in the case of employees with

[8] Ministry of National Resources: Semmelweis Plan to Save Health Care. October 2010

inadequate health condition. In spite of a steady decrease, the number of potential years of life lost is still high in Hungary (death due to a preventable cause).

Chart 3.17
Potential years of life lost



Note: The indicator shows, for 100,000 inhabitants, the number of lost life years in a given year due to preventable death before the age of 70.
Source: OECD.

In 2015, in spite of the below-average ratio of public expenditures, total expenditure on health care continued to be higher than the regional average, while the level of current expenditure on medical goods in Hungary is considered to be significantly high among European and OECD countries. In Hungary, two thirds of current expenditure on health originate from public sources, while private expenditures (voluntary fund systems and households' out-of-pocket payments) accounted for one third of the costs. By contrast, the proportion of state expenditures was 78 percent in the V3 countries, and 75 percent in the countries of the EU. In 2015, the ratio of current expenditure on medical goods to GDP was 2.3 percent, i.e. 0.5 percentage point less than in 2011, primarily due to the reduction of drug subsidies from the budget. Changing the traditions of prescribing and taking drugs in Hungary may, over the longer term, significantly contribute to the reduction of health care expenditures and to the efficient operation of the health care system, for example, by regrouping the expenditures to prevention.[9]

The ageing of physicians is typical not only in Hungary, but also in Europe. In the EU countries, on average, 35.2 percent of the physicians were older than 55 in 2015. This ratio is 40.5 percent in Hungary, 37.2 percent in the Czech Republic and as high as 53.3 percent in Italy. The proportion of physicians younger than 35 years is 20.3 percent in Hungary, which is slightly above the EU average (19.7 percent). At the same time it is a serious problem in Hungary that 15.9 percent of the physicians with a licence to practice are over 65 years of age, which is the fourth highest value among the EU countries. The fact that many of the European countries struggle with the problem of the ageing of health personnel contributes to the strengthening of the migration of physicians towards West and North European countries, where financial conditions are more favourable.

[9] Ministry of National Resources: Semmelweis Plan to Save Health Care. October 2010

3.2.10 Banking system competitiveness

The competitiveness of a country structurally depends on the efficiency and quality of financial intermediation, which is closely related to the competitiveness of the banking system. The link between the financial system and economic development is also a central topic in the influential book by Gerschenkron (1962),[10] in which the author presents the models applied in different eras for the financing of industrialisation and hence, economic convergence. Model-level differences across the banking sectors of European countries have become less significant by now, but due to their various structural characteristics there are differences among them in terms of competitiveness. However, due to lack of relevant and wide-ranging comparison, only fragments of information have been available about these differences.

By virtue of its financial stability mandate, at the beginning of the new financial cycle the Magyar Nemzeti Bank examined the competitiveness ranking of European countries, developing a previously non-existent index that synthesises contrasting perspectives.[11] The index is able to capture the characteristics of European banking sectors seen in the past few years in a comparable manner and to draw attention to neuralgic points revealed by this comparison. At the same time, this detailed and comprehensive index developed by the MNB helps to identify and understand the reasons for the deficit of the Hungarian banking sector in competitiveness, and also provides adequate support in formulating the central bank vision that serves the long-term development of the Hungarian banking sector. We primarily examine the structural characteristics of efficiently functioning and growth supporting banking sectors through the index, although with its help it is possible to further examine the role of the banking sector in the competitiveness of individual countries.

Basically, we consider those banking sectors competitive over the long term that operate efficiently in financial allocation and are able to support growth persistently, although banking sector competitiveness can be interpreted according to various approaches, depending on which market player's preference system is focused on. In connection with retail and corporate clients, the decision of financial involvement or exclusion may arise if they do not have access to funds or they consider the service too expensive or low quality. However, in respect of the capital necessary for the development of bank infrastructure or from a bank investor's view, a banking sector also must be able to comply with other aspects in order to remain attractive compared to the alternatives as well. These aspects include capital adequacy and stability, profitability that allows capital accumulation and expansion, a supportive operating environment, adequate growth possibilities as well as technological conditions and efficiency characteristics.

In the Competitiveness Report we intend to present both perspectives. One aspect in the selection was to include the basic indicators of both the demand and supply sides, and that the European comparison should carry relevant messages for Hungary. Firstly, we point out critical deficits, where catching up can only be achieved with the cooperation of all market participants. Secondly, there are fields where Hungary's banking sector has moved significantly forward following the financial crisis, even outperforming the banking sectors of more developed countries where conditions are better.

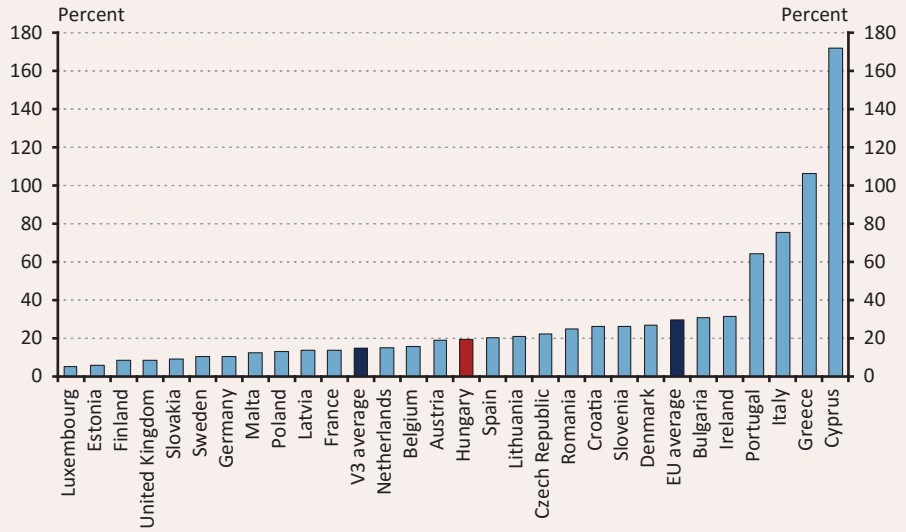
Hungary made progress in terms of the Texas ratio, which reflects the stability of the banking sector, or in the simplification of companies' access to credit. The Texas ratio shows the magnitude of loans becoming non-performing in a banking sector and also shows the prudent operation and accumulation of capital reserves needed for the given banking sector to reach that state. Based on its average value, Hungary can now be considered very stable in the European ranking, as a result of capital injections after the crisis and the regulatory steps that facilitate the clean-up of the non-performing loan portfolios. Starting from end-2015, the lending growth to the SME sector increased to the 5–10 percent band, which is estimated to be optimal by the MNB, and from 2017 the credit expansion of the corporate sector may also be within this range. The access of the

[10] Gerschenkron, Alexander (1962): 'Economic backwardness in historical perspective, a book of essays', Cambridge, Massachusetts: Belknap Press of Harvard University Press.

[11] Péter Asztalos – Gábor Horváth– Štefan Krakovský – Tamás Tóth (2017): Resolving Conflicts in Measuring Banking System Competitiveness – MNB Banking System Competitiveness Index, Financial and Economic Review, Vol. 16, Issue 3, September 2017

real economy to sufficient funds is a particularly important field in terms of sustainable and inclusive growth, as a significant portion of the active age population is employed by the SME sector in most European countries, including Hungary. The MNB's Funding for Growth Scheme played a major role in increasing the volume of and reducing the spreads on corporate financing, and at present a similar role is being played by the central bank measures that support market-based lending.

Chart 3.18
Texas ratio
(2015)



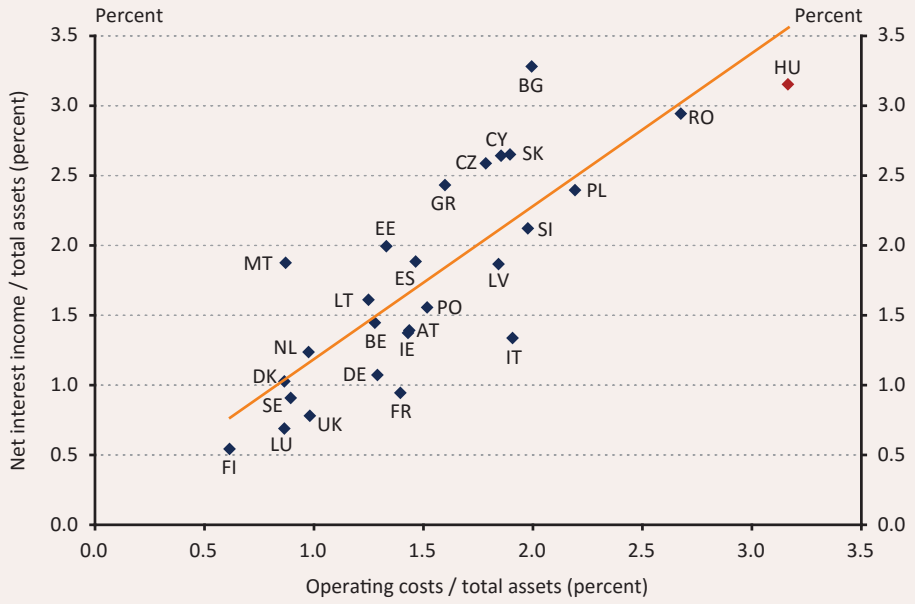
Note: The Texas ratio describes the coverage of non-performing loans by capital and loan loss provisioning. The indicator is used to measure the stability and efficiency of banking sectors.

Sources: IMF – FSI, ECB – CBD.

Nevertheless, the Hungarian banking sector also faces important deficits in the areas of efficiency, operating costs, digitalisation as well as confidence and household spreads. Although among internet users the proportion of those who use internet banking increased considerably in the past decade, the deviation from the European average has not declined significantly. In Hungary, the interest and fee income per bank employee exceeds the average of the Visegrád countries, but is only half of the European and one third of the West European average, which is partly explained by the low domestic credit penetration. Confidence of enterprises, which determines credit demand, has also not recovered. It may have significantly been eroded by the fall in lending following the crisis, with the termination of a number of credit lines and refusals of loan applications. In addition, both the operating costs and thus the spreads observed in lending are high.[12] Compared to Hungary, only the population of Bulgaria faces worse credit demand conditions; there a large part of the banking sector is foreign-owned, and the asset side is FX-denominated due to the currency board.

[12] Hicks, J., 1935: Annual Survey of Economic Theory: The Theory of Monopoly. Econometrica, Vol. 3., No. 1, January, pp. 1–20

Chart 3.19
Operating costs and net interest income as a proportion of total assets
(2016)



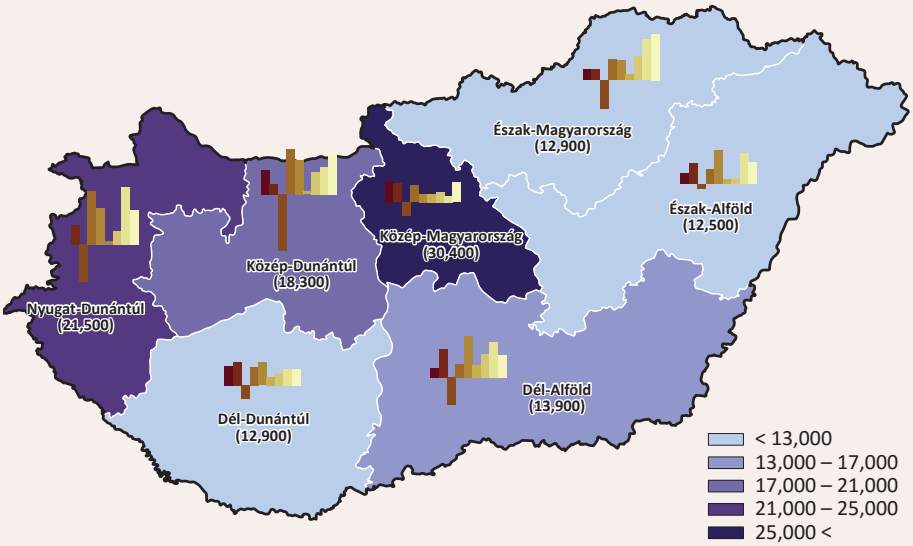
Source: ECB – CBD.

3.2.11 Regional competitiveness

In terms of regional competitiveness, the CEE region is a special area. As a result of the size and the economic and social system of the countries, the regions of the capitals dominate strongly. The stage of development of individual regions is determined more by their location within the country than the average development of the given economy. In the Visegrád countries, the regions of Prague, Bratislava and Budapest have high values, while territorial equality is more typical of Poland. In the past quarter of a century no territorial equalisation took place. Moreover, the difference between the stages of development of the centre and periphery became even larger.

In terms of per capita gross domestic product measured at purchasing power parity, disparities across the country are high in Hungary. In 2015, the Central Hungary region including the capital exceeded even the EU average, while the Northern Great Plain region was among the poorest areas in the European Union. In Hungary, the worst decline during the crisis was suffered by the Central Transdanubia region, where the fall was nearly 12 percent in a year (between 2008 and 2009). The rise in the level of development of the Western Transdanubia region is outstanding; in the past 10 years the per capita gross domestic product increased one and a half times in the region (its annual average growth rate was above 7 percent between 2013 and 2015). The main contributor to growth in the region was the industrial sector, the output of which increased in nominal terms by more than 60 percent in the region between 2009 and 2016.

Chart 3.20
Per capita GDP at purchasing power parity*
(EUR, 2007–2015)



** Hungarian NUTS2 regions are translated in this report as follows: Közép-Magyarország: Central Hungary, Közép-Dunántúl: Central Transdanubia, Észak-Alföld: Northern Great Plain, Észak-Magyarország: Northern Hungary, Dél-Alföld: Southern Great Plain, Dél-Dunántúl: Southern Transdanubia, Nyugat-Dunántúl: Western Transdanubia.*

Note: The column diagram depicts the annual change in per capita regional GDP.

Source: Eurostat.

In recent years, Hungary's industry concentrated in Central Hungary, where the strengthening of the services sector did not entail a decline in industrial capacities. In 2016, the three north-western regions (Western Transdanubia, Central Transdanubia and Central Hungary) provided two thirds of the total industrial GVA, i.e. the industrial centre of the Hungarian economy is located along the route of the M1 motorway. At the same time, the industrial contribution of the Northern Hungary and Southern Great Plain regions is growing gradually; the development of the region seen in the past years is mainly attributable to the high-volume projects of foreign investors (Bosch, Mercedes) and the expansion of the domestic supplier network.[13] The overall conclusion is that strong regional concentration took place in the Hungarian industry after the political transformation. However, this process was mitigated by investment projects supported by the government, which is seen in the employment figures as well.

From 2010 to 2016, Hungary increased its employment rate by 11.6 percentage points. The less developed eastern regions contributed to the growth to a greater degree than the more developed western ones. In the period under review, the EU members and the V3 states increased their respective employment indicators by 2–3 and 6 percentage points on average, while all Hungarian regions reached higher growth rates. The rise in the employment rate in underdeveloped Hungarian regions is mainly attributable to the expansion of the Public Work Scheme in 2010, with some 200,000 employees working in this framework in 2016. In Hungary, the employment rate became more even across regions; the indicator was between 61.8 and 70.8 percent in 2016.

In relation to the employment rate, the differences in the unemployment rate across regions also declined in Hungary in recent years. Between 2010 and 2016, the unemployment rate of the Central Transdanubia region, which suffered from factory shutdowns and capacity reductions (e.g. Nokia, Flextronics) during the crisis, declined from 10 percent to 3 percent, while in the Northern Hungary region, where development was

[13] Gelei, A. – Venter, L. – Gémesi, K. (2011): A multinacionális vállalatok a járműgyártás iparágban (Multinational companies in vehicle manufacturing). Chikán, A. (ed.): A multinacionális vállalatok hatása a hazai versenyre és a versenyképességre (The impact of multinational companies on domestic competition and competitiveness). Corvinus University of Budapest, Competitiveness Research Centre, Budapest. pp. 179–232

the strongest, this indicator improved by nearly 10 percentage points. In spite of the developments, in 2016 the Western Transdanubia region, which had the lowest value, stood at 2.7 percent, while unemployment was 9.3 percent in the Northern Great Plain region.

In summary, similarly to the CEE region, regional disparities within Hungary in 2016 were still very high compared to the average of the EU. In the region, the disparities across areas are attributable to the higher development of the capitals and their surroundings and to the small size of the countries (namely, in parallel with the capital, no other settlement or region is able to gain similar importance). In Hungary, following the political transformation, infrastructure improvements (mainly in transport) were able to mitigate the shortfalls of the more underdeveloped regions, but the proximity of western export markets and the dominance of the region of the capital continue to determine the configuration.[14] The availability of skilled labour has a fundamental influence on the convergence of the less developed regions, but the structural imbalance in the labour market hinders the convergence process. After 2010 in Hungary, as a result of the Job Protection Action Plan and the Public Work Scheme, the territorial imbalance declined in the quantitative dimension of the labour market, but further areas of development can be identified in the quality segment.

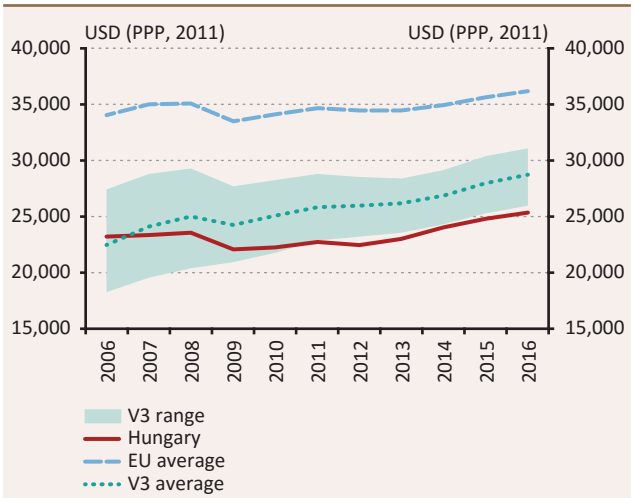
[14] Pavlínek, P. – Domański, B. – Guzik, R. (2009): Industrial Upgrading through Foreign Direct Investment in Central European Automotive Manufacturing. European Urban and Regional Studies, 1. pp. 43-63

4 Competitiveness indicators

4.1 MACROECONOMIC ENVIRONMENT

Measuring macroeconomic competitiveness is a complex task, and many indicators and indexes need to be used to obtain a comprehensive picture of the developments in Hungary's competitiveness. In this analysis, we examine Hungary's relative performance in terms of earning power and production efficiency as well as with the help of price-based and cost-based competitiveness indicators. In addition to the relative developments in per capita GDP and labour productivity, the changes in labour cost are also taken into account upon the assessment of competitiveness. For a small, open economy such as Hungary the value it produces in terms of products and services for international trade is a key issue. In order to quantify this, we examine the change in Hungary's export market share as well as the terms of trade impact originating from the relative change in foreign trade prices. The competitiveness of a country is affected by its financing environment and investment activity as well, and thus the relative developments in the external debt-to-GDP ratio and investment rates also constitute an important aspect when identifying competitive advantages. In addition to the above, in the case of financing capacity it is of particular importance to what extent the given country relies upon the sources created by domestic savings, and thus the examination of the gross savings rate, which is the basic indicator of the creation of domestic funds, is also a part of our analysis framework.

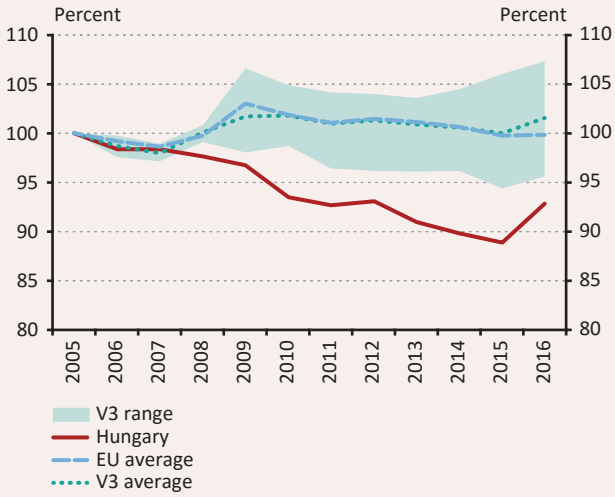
4.1 GDP per capita



Source: World Bank.

In the case of Hungary, in 2006 the PPP-based GDP per capita, an indicator frequently used to measure economic development in international comparisons, was still higher than the average of the Visegrád region. However, during the years of the crisis – due amongst other things to the high indebtedness which spread from the early 2000s – a stronger decline in economic development was observed than in the Visegrád countries. The downturn was followed by several years of stagnation, as a result of which Hungary fell behind all the three countries of the Visegrád region by 2012. As a result of the fiscal and economic stabilisation after 2010, Hungary's relative lag behind the other countries of the Visegrád region came to a halt following 2013, and with the turnaround in growth the convergence process to the EU average started again.

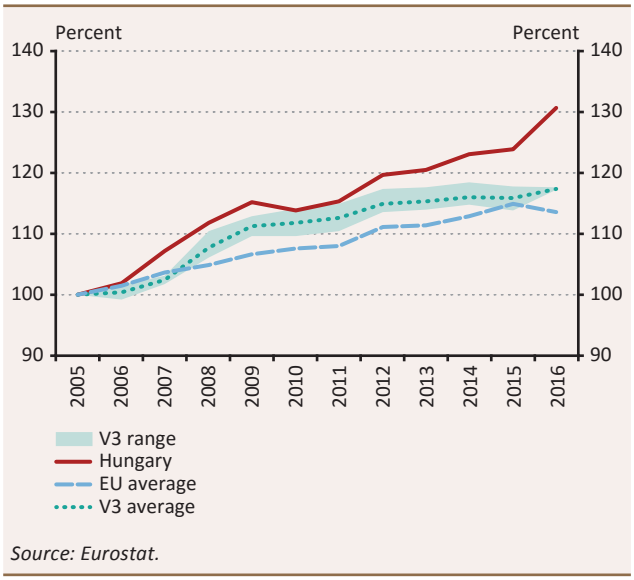
4.2 Unit labour cost (real, 2005 = 100)



Source: AMECO.

In real terms, a significant decline in unit labour cost was observed compared to 2005. Accordingly, the nominal total cost of labour increased to a lesser extent than nominal productivity. The developments accelerated considerably following the 2009 crisis and were only temporarily slowed down by the significant minimum wage increase in 2012. The decrease in real unit labour cost implies that the domestic wage share is declining, i.e. its complement, the profit rate increased until 2015. In 2016, due to the temporary deceleration of economic growth this trend reversed, but the real unit labour cost is still below the pre-crisis level.

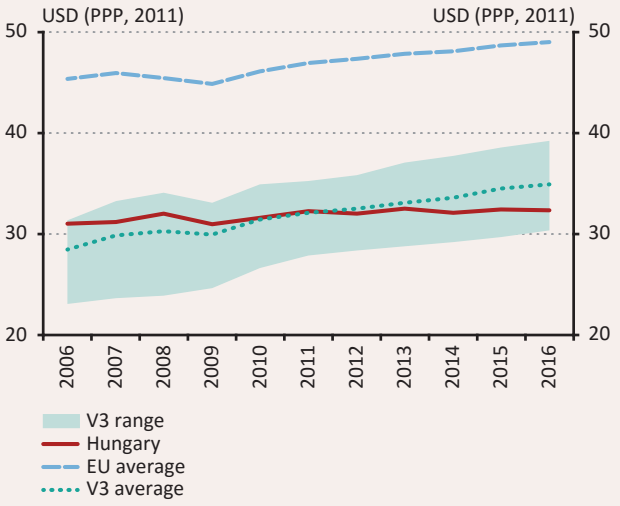
4.3 Unit labour cost (nominal, 2005 = 100)



Source: Eurostat.

Although the real unit labour cost reflects significant adjustment in the labour market, contrasting developments are seen in the case of the nominal labour cost. The difference is attributable to the GDP deflator, which more than offset the impact of the relative decline in labour costs. While the deviation of the V3 from the EU average was not significant, the general price increase in Hungary (i.e. the GDP deflator) was higher than the price increase observed in the region.

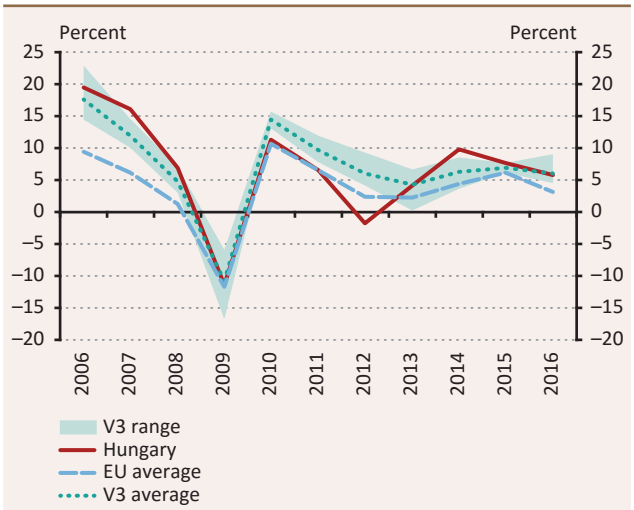
4.4 Labour productivity (GDP per working hour)



Source: Eurostat, WDI

In the pre-crisis years, the level of Hungarian productivity exceeded the average of the Visegrád region, but growth already started to decelerate at that time. In the meantime, a dynamic, general rise was observed both in the case of the regional competitors and the average of the EU. As a result of the stagnation in Hungarian productivity, which started from 2010, the average productivity of the competitors in the Visegrád region already exceeded that of Hungary starting from 2012, and this gap increased further by 2016. The rise in Hungarian productivity between 2006 and 2016 is smaller that of the competitors in the Visegrád group, but the level of productivity per hour is still within the regional range. One of the reasons for the stagnation of productivity in Hungary after 2010 is the significant stimulation and rise in employment by economic policy. As a result, new groups of the inactive became active in the labour market, although in parallel with that the number of employees producing low value added also grew.

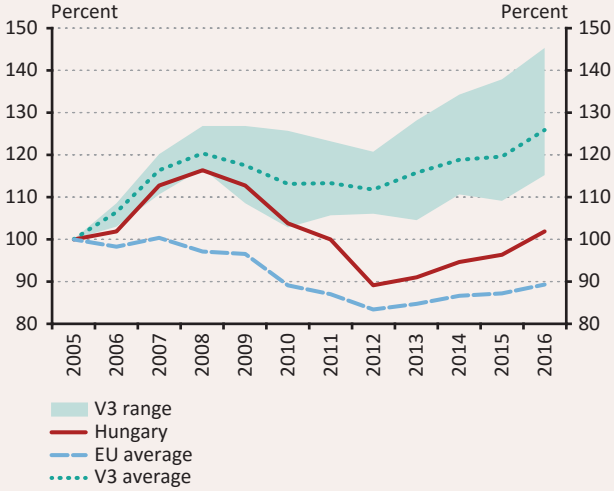
4.5 Annual changes in exports



Source: Eurostat.

In the pre-crisis years, the growth rate of Hungary's exports exceeded the averages of both the region and the European Union, which was mainly attributable to the high volume of foreign direct investment inflows to Hungary. The crisis resulted in a major decline in export volumes. Demand for consumer durables, which account for most of Hungary's exports, is very sensitive to business cycles. Therefore, both during the 2009 crisis and in the subsequent period the dynamics of Hungarian exports was below the regional average. Accordingly, in the case of Hungary the decline following the crisis primarily resulted from the export structure, which amplified the impacts from the external market due to the significant fall in goods exports sensitive to external business activity. A new wave of FDI and capacity increases in the vehicle industry lent new momentum to exports, resulting in a significant expansion in manufacturing export capacities after 2013, thus contributing to the growth in exports.

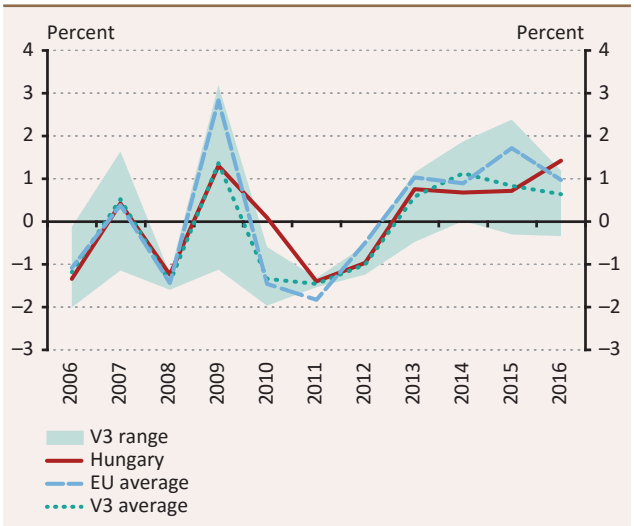
4.6 Export market share (share in global exports, 2005 = 100)



Source: Eurostat.

Hungary's share in global trade was rising together with the countries of the Visegrád region until 2008 and then started to decline significantly as a result of the crisis. This is due to the export structure of the region, as income elastic consumer durables constitute an important element of exports in the region. However, starting from 2010, mainly owing to problems in the competitiveness of enterprises in the manufacturing of electronic and optical products, which had previously been a leading sector, Hungary's export market share diverged from the region. The negative trend was broken by large investment projects in the automotive industry in 2013. Since then, the export market share of Hungary has been converging with the regional level, showing stronger growth than the EU average.

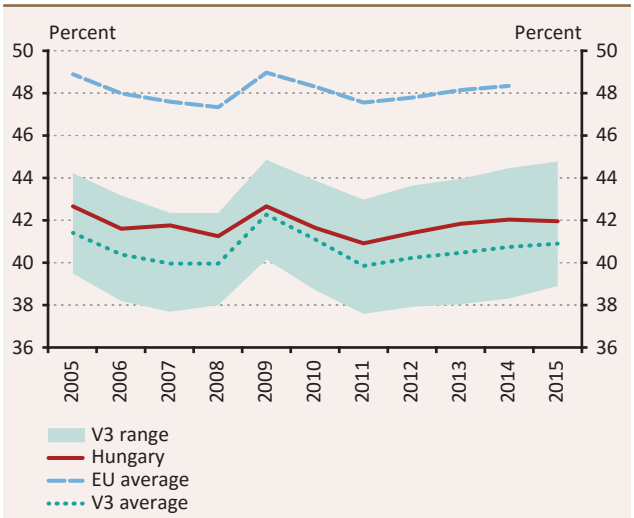
4.7 Annual change in terms of trade



Source: Eurostat.

Hungary's terms of trade developed similarly to the average of the Visegrád region in the past decade. After the 2008 crisis, due to the decline in commodity prices, there was a sharp improvement in the terms of trade, but then in the years after the crisis, in parallel with the renewed increase in commodity prices, the indicator started to worsen. In recent years, the decline in commodity prices once again significantly contributed to the improvement in the terms of trade and corporate profitability. In the case of Hungary, the improvement in the terms of trade exceeded the level observed following the crisis. The stronger improvement in the terms of trade compared to the countries of the region can be explained by the fact that – in a regional comparison – the level of energy imports can be considered high, and thus the improving effect of the low oil prices on the terms of trade was stronger in Hungary.

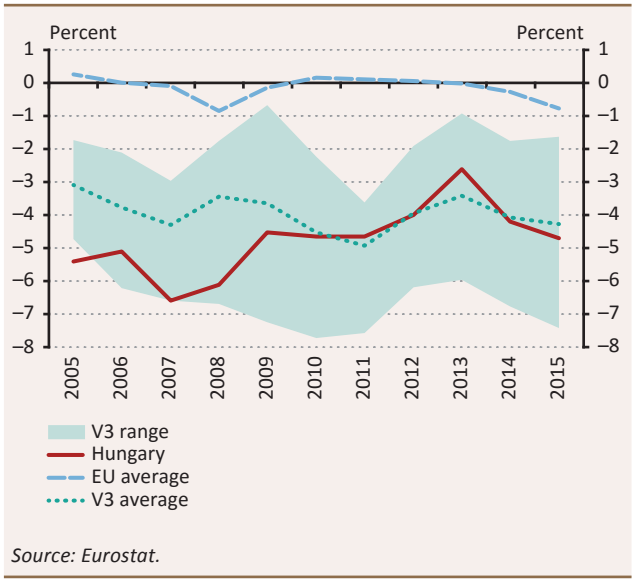
4.8 Value added as a proportion of production value



Source: Eurostat.

One important indicator of an economy's earning power is the ratio of the produced value added to output. The higher the value added per unit of output, the greater the earning power of economic growth. In Hungary, value added as a proportion of output falls short of the EU average, but is higher than the average of the regional competitors. This indicator declined slightly after the crisis before starting to rise again from 2011. At present, value added as a proportion of output is around the pre-crisis average in all of the countries under review. As opposed to assembling, processes with higher value added are related to the services prior to and following manufacturing (R&D, marketing, etc.), but the production structure of the countries in the region is based on high value added services to a lesser degree, and thus in this respect the region falls short of the EU average.

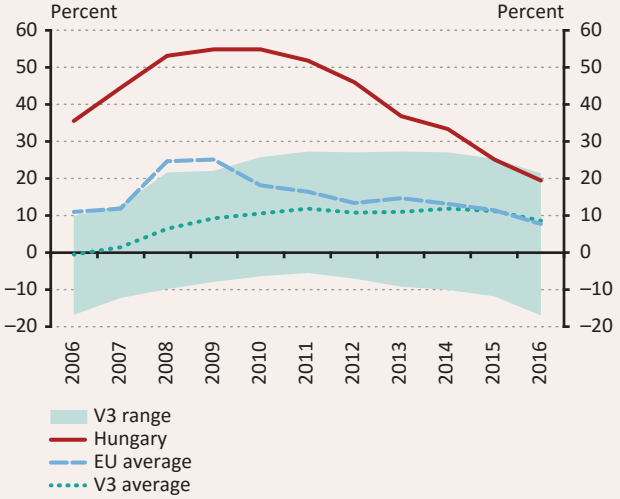
4.9 Difference between GNI and GDP as a percentage of GDP



Source: Eurostat.

Foreign capital inflow is typical in the case of emerging economies; therefore, it is important to examine the gross national income adjusted for foreign income transfers. In the pre-crisis period, in a regional comparison the gap between GNI and GDP was wide in Hungary, which was primarily attributable to the significant external indebtedness and the high FDI stock. Following the crisis, the gap between GNI and GDP narrowed, resulting from a decline in corporate profits, a significant fall in external debt and an increase in the number of Hungarians working abroad. The major rise in incomes repatriated by Hungarians working abroad and the decline in foreign investors' corporate incomes in Hungary jointly contributed to the decrease in the difference seen until 2013. At present, the GNI–GDP gap in Hungary is similar to the average of the region, but the degree of the difference continues to significantly exceed the EU average, which is strongly attributable to the difference in the stage of development.

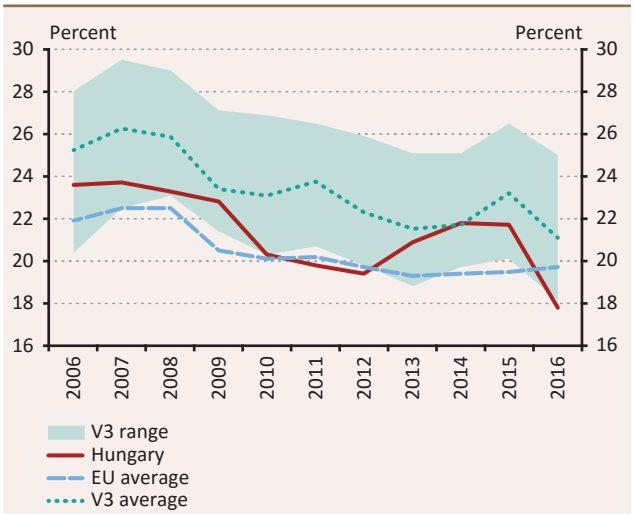
4.10 Net external debt-to-GDP ratio (excl shareholder loans)



Source: Eurostat.

The path of Hungary's net external debt differs strongly from that of the region and the EU. In the years of the economic crisis, Hungary's net external debt-to-GDP ratio increased sharply, due to revaluation of the outstanding debt vis-à-vis the rest of the world and further borrowing by the private sector. With the acceleration of the domestic sectors' adjustment process, the indicator declined significantly. By 2016 Hungary's net external debt ratio had decreased to a historic level, coming close to the average of the Visegrád and EU countries. The considerable decline in external debt observed in the past years as well as the conversion into forints, which reduced the FX debt of individual sectors considerably, and the Self-financing Programme contributed significantly to the improvement in Hungary's external vulnerability as well as risk assessment, which resulted in a decrease in spreads and an improvement in competitiveness.

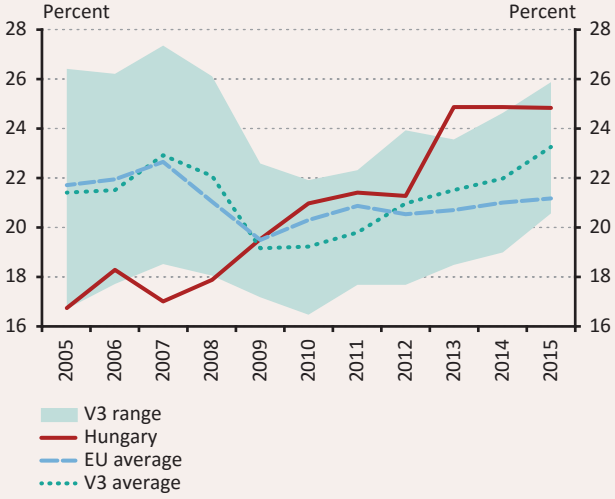
4.11 Investment rate as a proportion of GDP



Source: Eurostat.

The Hungarian investment rate as a percentage of GDP is lower than the average of Hungary's regional competitors. The Hungarian rate already departed from the regional average prior to the crisis, following the adjustments in 2006 and then dropped considerably after the crisis. During the years of recovery from the crisis, the lasting decline in the investment rate was primarily related to the weak developments underlying corporate investment. A turnaround occurred in 2012 and 2013 with contributions from the central bank programmes that stimulated corporate investment activity as well as from an increase in – partly public – investment financed from EU funds, and thus the rate once again approximated the regional average. In 2016, however, the Hungarian investment rate fell below the EU level due to the sharp decline in investment financed from EU funds, which is attributable to the change of the EU budget cycle. The value of the Hungarian indicator is expected to adjust from 2017 with strengthening domestic economic activity and increased drawdowns of EU funds from the new programming cycle. Keeping the investment rate at a high level ensures the maintenance and expansion of corporate production capacities, which – in addition to GDP growth – also serves as a basis for potential growth and competitiveness.

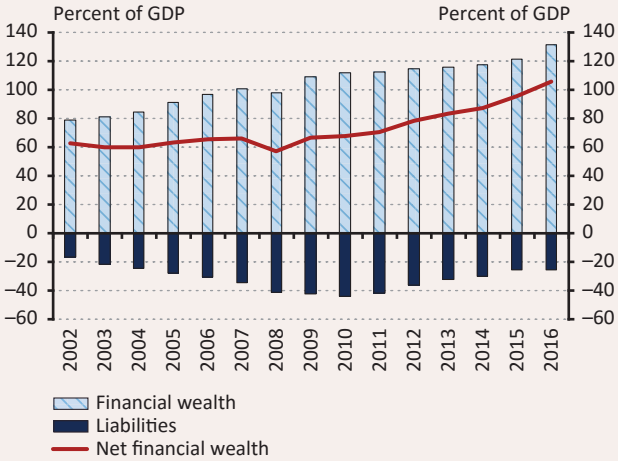
4.12 Gross savings rate as a percentage of GDP



Source: Eurostat.

In the pre-crisis years, Hungary's gross savings rate as a percentage of GDP fell short of the averages of both the region and the EU, which was related to the excessive lending activity of the Hungarian private sector. In addition, the savings rate was continuously below the investment rate, which was reflected in the high current account deficit. Following the crisis, in line with the adjustment process of the household sector, the Hungarian savings rate rose rapidly, with significant contributions from the gradual reduction of the previously accumulated unsustainable debt, the persistently subdued lending activity after the crisis and the rise in incomes. In recent years, the savings rate was stagnant, but still exceeds both the regional and EU averages. An adequately high savings rate is intended to ensure the cover for domestic corporate investment for the purpose of sustainable, continuous capital accumulation without external indebtedness.

4.13 Households' net financial wealth



Source: MNB.

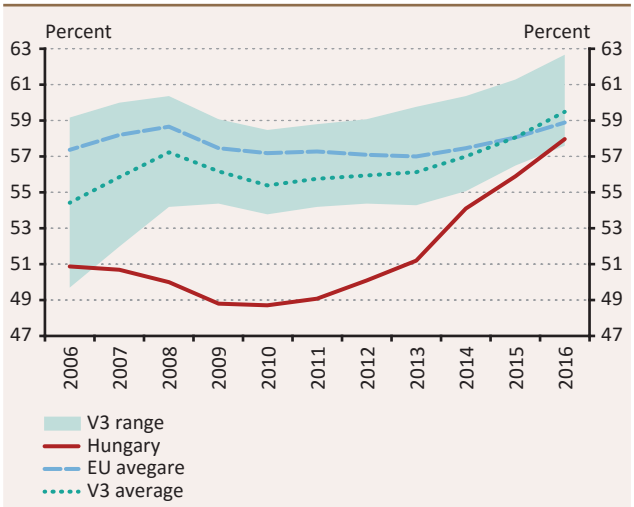
Households' net financial wealth is an indicator defined as the difference between financial assets and liabilities. Shares and other equity as well as cash are the key components in the structure of assets, which have been increasing steadily since 2010. In addition, the stock of debt securities also rose significantly in recent years. Within that, a significant role is played by the expansion of households' government securities holdings, which is also supported by the economic strategy of the government. By 2010, households' liabilities more than doubled, followed by a consolidation process as a result of the MNB's market regulation measures, the early repayment and the conversion into forints. In addition to the MNB's post-2013 programmes, the government's measures to stimulate the economy, boost employment and support wage growth also played a major role in the decline in indebtedness after 2010 and in the significant increase in net financial wealth.

4.2 LABOUR MARKET COMPETITIVENESS

The labour market supports economic growth through employment and labour productivity. Before 2010, the degree of activity and employment in Hungary was extremely low in international comparison, i.e. one of the lowest in the European Union, and labour market developments clearly limited the economy's growth potential. Low activity and employment along with a high level of taxes on labour were typical of Hungary in the quantitative dimension of the labour market, while low labour productivity and a training structure that has trouble matching the labour market expectations were reflected in the quality segment. In terms of growth potential, both quantitative and qualitative aspects are of key importance; improving the latter is essential for strengthening the knowledge-based economic model.

After 2010, in the labour-based Hungarian economic policy model, emphasis was placed on increasing employment. In order to develop the quantitative side of the labour market and to boost employment, after 2010 the personal income tax was restructured and reduced, the Job Protection Action Plan was introduced, the Public Work Scheme was started, and in the tax system the weight shifted from taxes on labour towards consumption taxes. On the quality side, reforms were implemented in public education and higher education, affecting both the training and financing sides. In connection with the labour market, the unsustainable pension system was restructured, including the revision of early retirement pensions and the disability pension system.

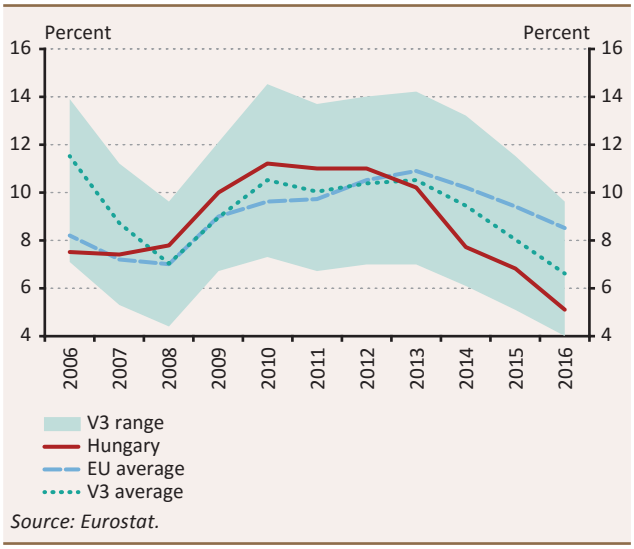
4.14 Employment rate in the 15–74 age group



Source: Eurostat.

In the pre-crisis period, the low employment rate limited the economy's growth potential and put excessive burdens on the social benefits system in Hungary. After 2010, employment started to rise in Hungary, which was attributable to the government measures aimed at increasing labour market activity and the expansion of Public Work Scheme in 2013. The rise in employment observed in recent years was strongly supported by the pick-up in economic activity. As a result of all this, by 2016 the employment rate in Hungary was close to the averages of the EU and the region.

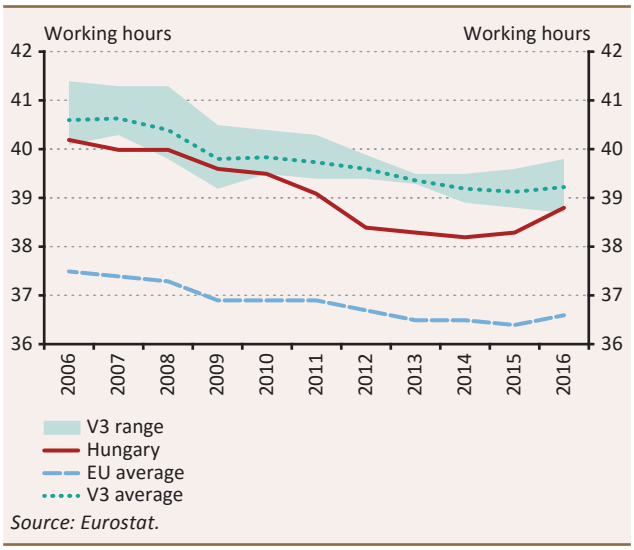
4.15 Unemployment rate in the 15–74 age group



Source: Eurostat.

In the years after the 2008 crisis, the unemployment rate rose sharply, which was a general phenomenon in the EU countries. 2013 can be considered a turning point: as a result of an upswing in domestic and external aggregate demand, demand for labour also started to grow, supported by the tenders of the EU budget cycle as well. Both labour reserves in a narrow sense (unemployed) and labour reserves in a wider sense (also taking into account the inactive who are more closely related to the labour market) have followed a downtrend in the Visegrád countries since 2013. In Hungary, the substantial decline in the unemployment rate was attributable to the Job Protection Action Plan, which facilitated employment, to the restructuring of the personal income tax system and to the expansion of Public Work Scheme. By 2016, the unemployment rate in Hungary had dropped to a historical low, and it is one of the lowest among the EU Member States.

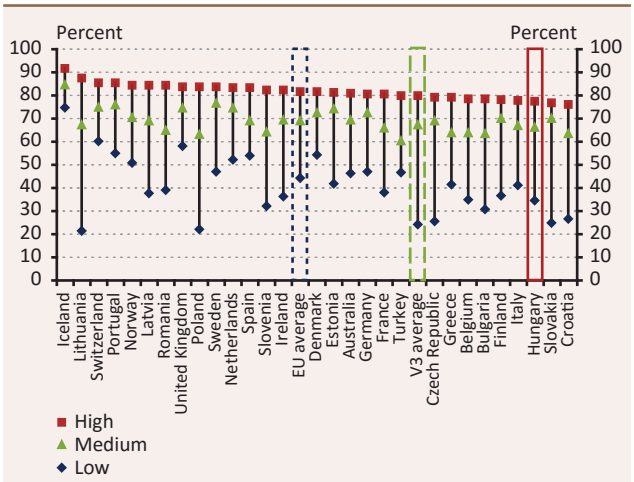
4.16 Average weekly number of hours worked in the national economy



Source: Eurostat.

Within the European Union, the Visegrád countries are among the leaders in terms of the average number of hours worked, while people in the Netherlands spend the least time working (on average, employees in the Visegrád countries work seven hours more per week than in the Netherlands). One main reason is that part-time employment is not common in the Visegrád countries. In terms of the average number of hours worked, little convergence to the much lower-level EU average can be identified in the Visegrád region. Moreover, the tight labour market environment in recent years has slowed down this trend through companies' intensive-side adjustment, and has even reversed it in the case of Hungary.

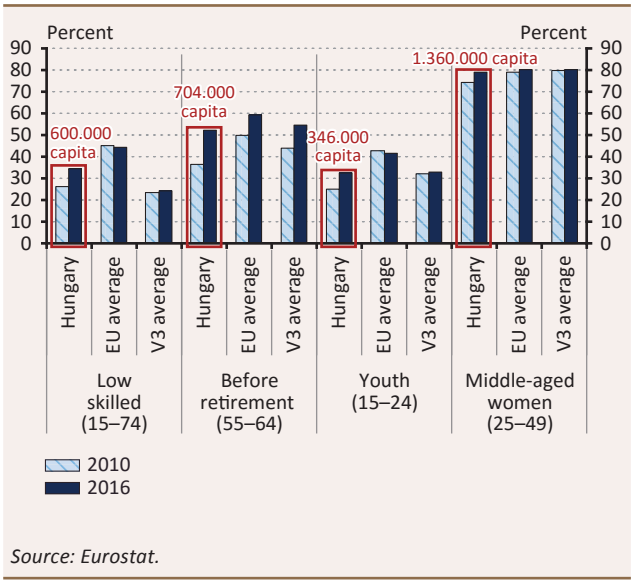
4.17 Activity rate by educational attainment level in the 15–74 age group (2016)



Source: Eurostat.

Looking at the main levels of education, the activity rate in the Visegrád countries is lower than the EU average, and the activity rate of the low-qualified is extremely low in the Visegrád countries. In Hungary, the activity rates of those with higher and secondary education are both lower than the average of the other Visegrád countries. However, the activity rate of the low-qualified is higher in Hungary than the average of the Visegrád countries, which is primarily attributable to the introduction of the Job Protection Action Plan and the expansion of Public Work Scheme.

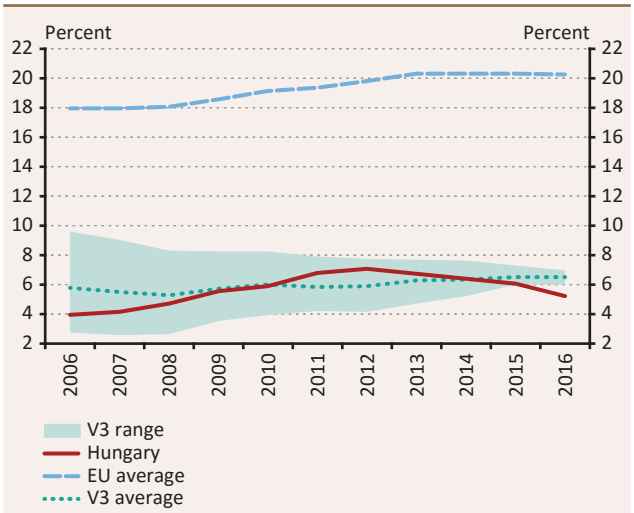
4.18 Activity rate in certain social groups



Source: Eurostat.

The activity rate measures the ratio of the active (employed and unemployed) to the working-age population. Following the crisis, the labour market activity of the low-qualified, those before retirement and the young was at a low level in the European Union, but these social groups gradually re-entered the labour market. In Hungary and the Visegrád countries, the activity of the low-qualified was especially low, but the Hungarian figures have improved in recent years. This was mainly attributable to the Public Work Scheme and the 2013 Job Protection Action Plan, within the framework of which employers that employed people belonging to disadvantaged social groups were granted considerable reductions in contributions. Within the Job Protection Action Plan, employers benefited from the scheme for nearly 900,000 employees in 2016.

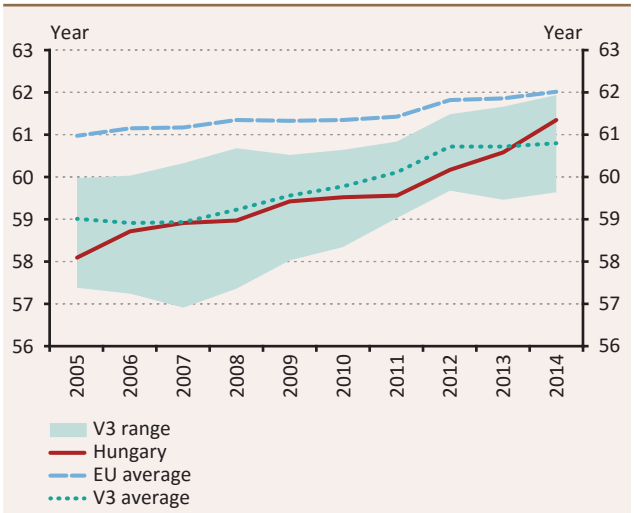
4.19 Part-time employees as a proportion of total employment



Source: Eurostat.

The average ratio of part-time employees is much higher in the EU than in the Visegrád countries, where flexible working schemes are not common. In 2006, a mere 4 percent of employees had part-time jobs in Hungary, while an average ratio of 18 percent was observed in the EU. It was mainly cyclical effects (labour hoarding in manufacturing) that played a role in the increase in part-time employment following the crisis. In parallel with the tightening of the labour market, the share of part-time employees declined close to the pre-crisis level.

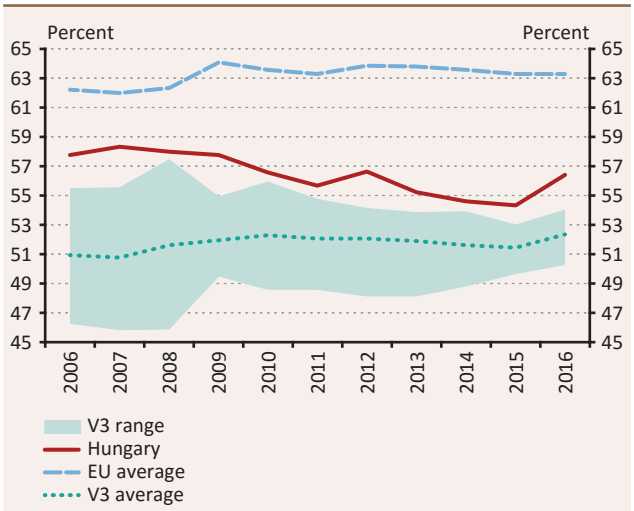
4.20 Average effective age of retirement



Source: OECD.

As a result of exemptions ('back doors'), the effective age of retirement may be much different from the official retirement age. In Hungary, the actual age of retirement has been increasing dynamically since 2010, and thus in 2014 it already exceeded the average of the V3 and is close to the EU average. Firstly, this is attributable to the revision of early retirement and of the lawfulness of disability pensions, and secondly, to the gradual increase in the legal retirement age between 2013 and 2022.

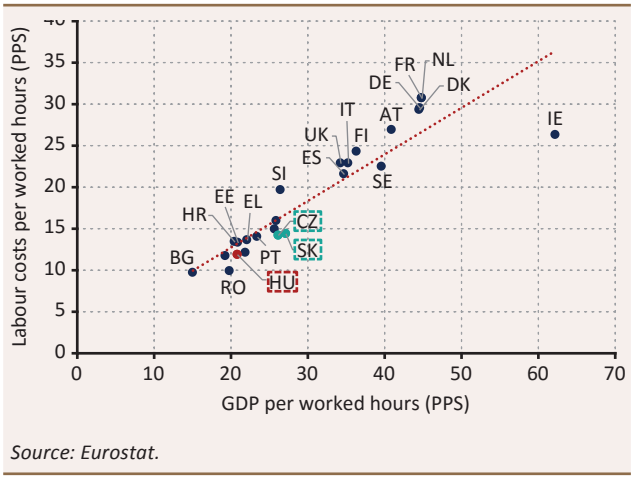
4.21 Wage share in the national economy



Source: European Commission – AMECO.

It is typical in the countries of the region that the wage share (the ratio of labour cost to value added) is much lower than the EU average. The wage share in Hungary is higher than in the other Visegrád countries. In terms of the developments in the wage share, prior to the crisis the Visegrád countries and the European Union showed a mixed picture. During the crisis, of the Visegrád countries, the share of wages in production value declined in Hungary and Poland. Following the crisis, both the EU average and the average of the other Visegrád countries can be considered stable, while a slightly declining trend was observed in Hungary. In 2016, however, the wage share increased sharply, primarily as a result of large pay rises.

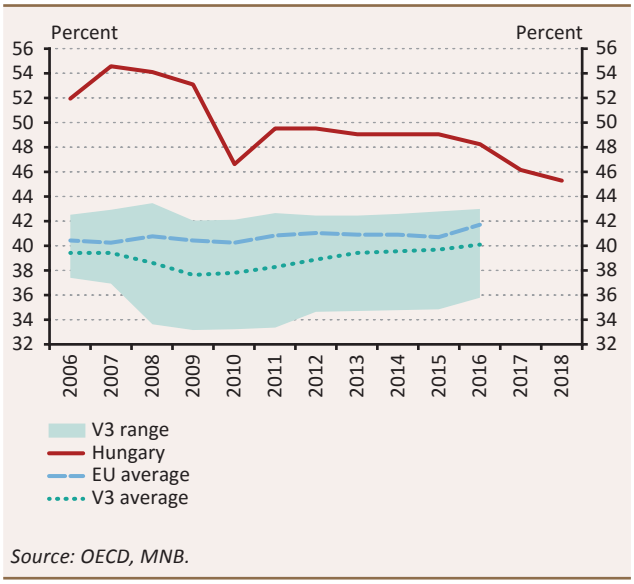
4.22 Labour productivity and labour costs in the EU (2016)



Source: Eurostat.

In comparing labour costs across countries, it is necessary to take into account the purchasing power of wages and salaries. In 2016, calculated at purchasing power standard (PPS), the lag of Hungarian wages was more than twofold behind the average of the countries that are considered to be the main emigration destinations of Hungarian labour (United Kingdom, Germany, Austria). However, upon the evaluation of wages it is also worth taking into account the value added produced by the workforce, i.e. productivity. Looking at the EU countries, changes in the Hungarian wage level are in line with domestic productivity.

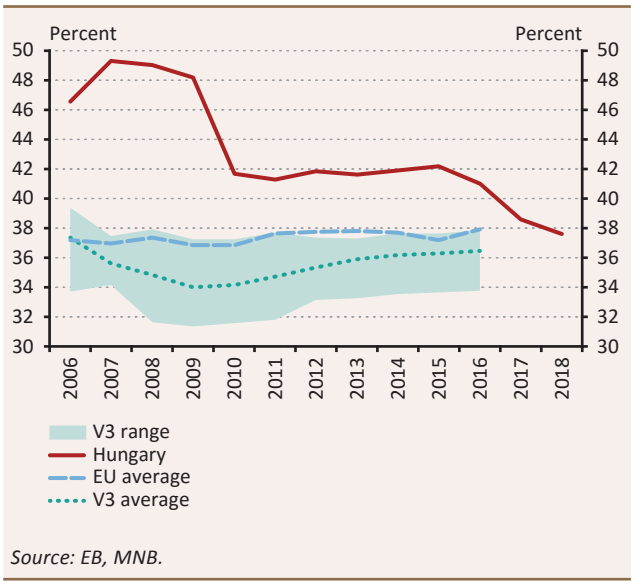
4.23 Average tax wedge in the case of single persons at 100 percent of the average wage



Source: OECD, MNB.

The average tax wedge shows the degree of the total tax burden on job-taking (both on employee and employer); this burden is an extremely important factor in terms of employment. Although the tax wedge has declined since 2009, at levels near the average wage its size in the case of single earners in Hungary is still higher than the averages of the EU Member States and the region. The main underlying reason is the larger social contribution tax, which will decline by 7.5 percentage points over two years from 2017, reducing the tax wedge by another 3 percentage points. In addition, targeted allowances can also be applied in the case of those concerned by the Job Protection Action Plan, the more disadvantaged people from a labour market aspect, but internationally comparable statistics do not reflect this. Slightly below-average values are observed in case of Hungary's competitors in the region.

4.24 Average tax wedge in the case of families with two children at 100 percent of the average wage



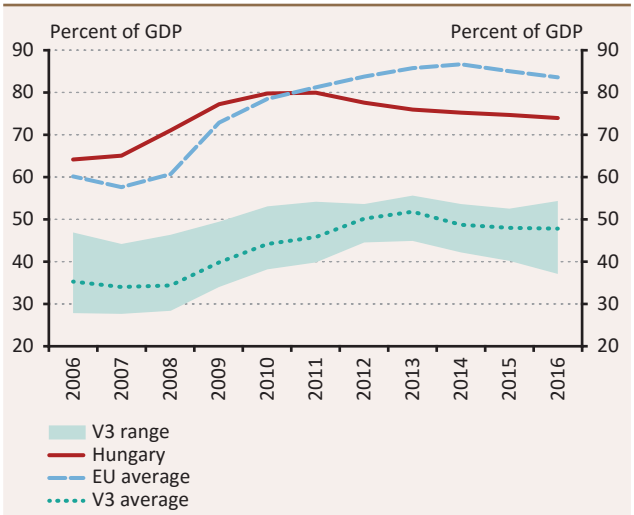
Source: EB, MNB.

In view of the differences in tax allowances, the size of the tax wedge varies across the groups with different incomes. In Hungary, the family tax base allowance, which was introduced in 2011, reduces the tax to be paid by families that are raising children. The tax wedge is seven percentage points lower for families that raise two children than that of single persons. Nevertheless, the size of the tax wedge still exceeds the averages of the EU and the V3. Since the outbreak of the economic crisis, an increase in the tax wedge has been observed in the EU, while a contrasting trend is seen in Hungary, which may stimulate labour demand and labour supply willingness and employment. With the legal framework currently in place, in this regard Hungary may sink below the average level of the EU by 2018.

4.3 PUBLIC SECTOR COMPETITIVENESS

As the largest economic agent, the state is one of the most important determinants of a country's competitiveness through regulations, contributions and expenditures. All economic agents must act within the framework of and in compliance with the laws determined by the state, and government redistribution regulates the functioning of the private economy. In addition to its regulatory tasks, the state is the largest employer, through which it has a further impact on macroeconomy and competitiveness. Inevitably, the state has recourse to its resources from the private sector; therefore, their efficient use is especially important. It is difficult to measure state competitiveness using objective indicators. Accordingly, distortions and private opinions are often involved.

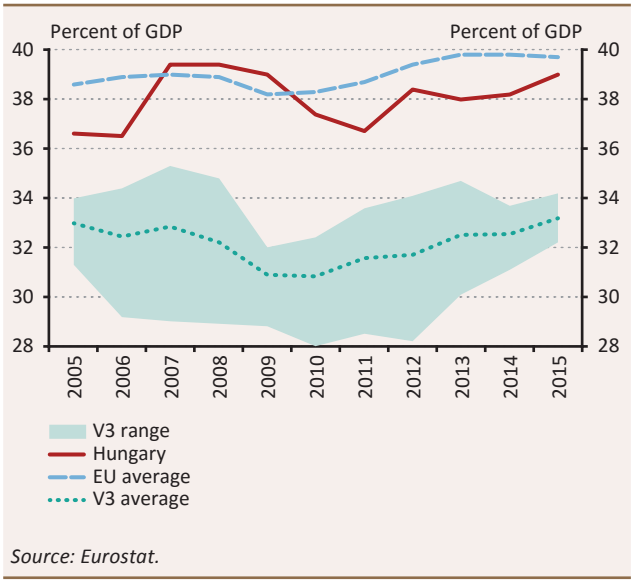
4.25 Gross public debt-to-GDP ratio



Source: Eurostat.

The degree of public debt affects the performance of the economy as well as its longer-term prospects. Hungary has been struggling with – partly inherited – high public debt since the political transformation. As a result of the irresponsible and procyclical fiscal policy typical of the 2000s and the unsustainable macroeconomic structure relying mainly on external debt-fuelled consumption, at the time of the financial crisis after 2008, compared to its stage of development, Hungary became one of the most indebted countries. As a result of the fiscal policy followed since 2011 and the upturn in economic growth, the previous unfavourable trend has reversed, and the debt ratio has declined gradually in recent years. Since 2012 it has been lower than the average of the EU. In a European comparison, the government debt-to-GDP ratio is extremely low in the V3 member states; with the lowest value, the Czech Republic stood at 37.2 percent in 2016.

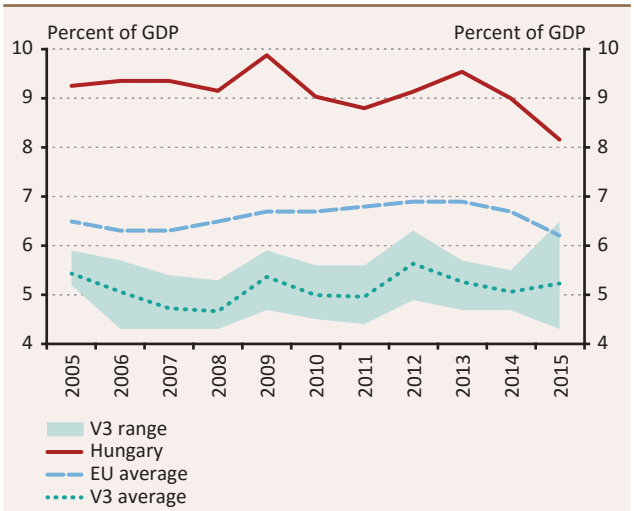
4.26 Tax centralisation



Source: Eurostat.

In addition to the tax structure, indicators quantifying the total tax burden play a prominent role in the assessment of a country's tax system. The most frequently used aggregate indicator is tax centralisation, which measures the total tax and contribution revenue as a percentage of GDP. It measures what proportion of the gross domestic product is taken in the form of taxes by the state. In Hungary, the degree of tax centralisation exceeds the average of the countries of the region, but has remained slightly below the EU average since 2010.

4.27 Public administration expenditures as a percentage of GDP

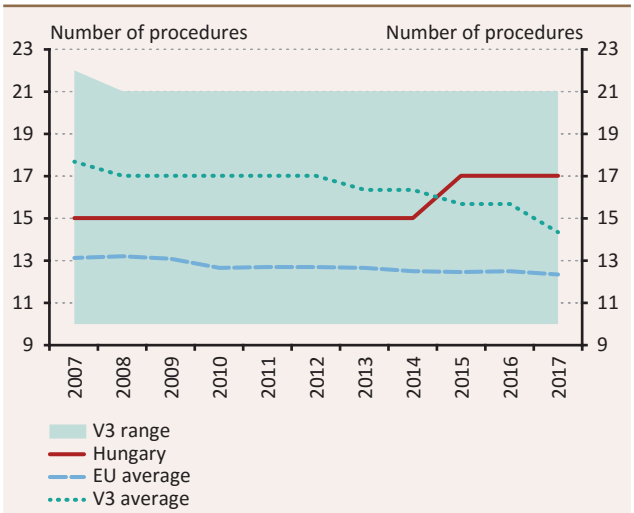


Note: Expenditures related to Public Work Scheme have been excluded from the data series for Hungary.

Source: Eurostat, MNB.

Administration is the state's basic activity; modern states cannot function without wide ranging, high quality administration. Nevertheless, a high level of expenditures of this type indicates an excessive degree of bureaucracy, and its financing deprives productive sectors of funds. In the case of Hungary, over the horizon under review, administrative expenditures, i.e. the amount spent on general public services, significantly exceeded both the EU and regional averages. Nevertheless, a steady decline has been observed since 2013, which is also the result of the reduction of red tape and disciplined fiscal management.

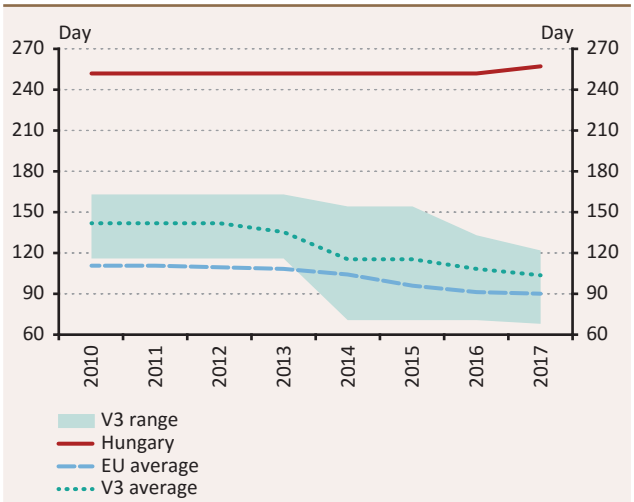
4.28 Number of procedures required to obtain construction permits



Source: World Bank.

The number of procedures required to obtain construction permits is an indicator of the bureaucratic burdens facing companies. In Hungary, the issuance of construction permits for residential properties has become much simpler, but companies need 17 permits for the construction of a commercial building. The reduction of administrative procedures may increase the willingness to invest, contributing to further stimulation of the economy and an improvement in competitiveness. The compilation prepared by the World Bank examines the competitiveness, opportunities and challenges of the SME sector. Accordingly, this indicator also presents data concerning these enterprises.

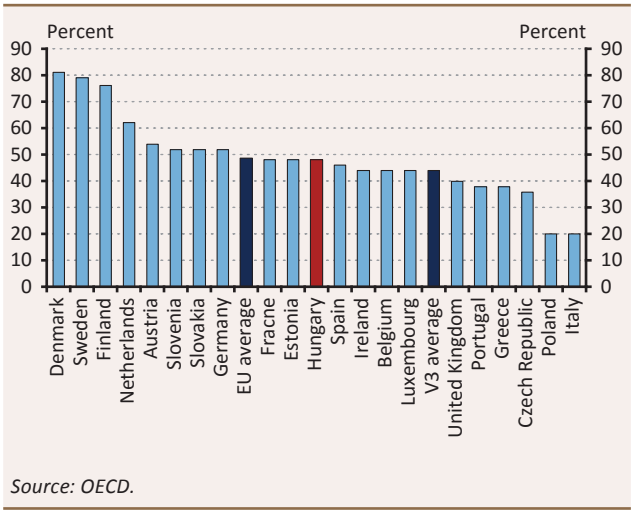
4.29 Number of days required to obtain a permanent electricity connection



Source: World Bank.

The number of days required to obtain a permanent electricity connection plays an important role in constructing a new facility or industrial plant. Electricity is an indispensable element of basic infrastructure, and not only its connection but also its later reliable quality are essential for a company's operations. The connection time is extremely long in Hungary; by law it can take as much as 257 days. This is several times higher than the EU or regional levels, which represents a competitive disadvantage. At the same time, the data presented by the World Bank take into account the maximum time stipulated by law; therefore, it does not necessarily provide an exact picture of the real situation.

4.30 Public administration through the internet (2014)



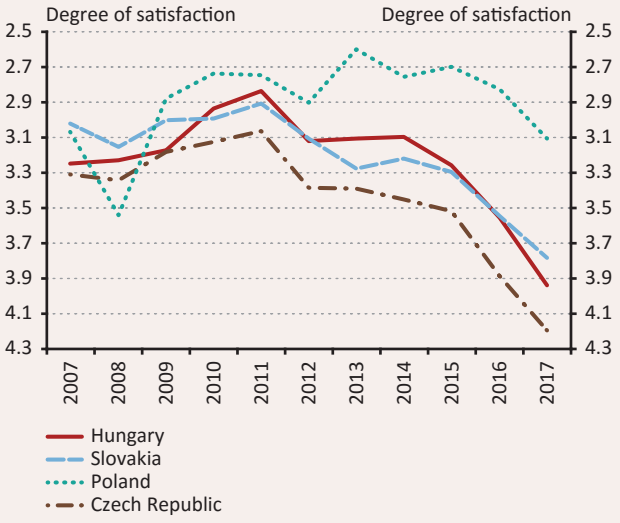
Source: OECD.

The prevalence of handling public administrative matters through the internet, i.e. e-administration, is an important issue in terms of competitiveness and efficiency both in the case of households and companies. In Hungary, the ratio of online public administration and data query exceeds the regional average, but is slightly below the EU average. While in some countries, such in Estonia, it is already possible to vote online in the parliamentary elections, in Hungary the number of official matters that can be handled completely through the internet is still limited. The spread of online public administration would facilitate cutting red tape and accelerating public administrative processes.

4.4 COMPETITIVENESS OF ENTERPRISES

The competitiveness of enterprises and within that the prosperity of the SME sector constitutes the basis for economic development. Until now, Hungarian enterprises have usually joined international value chains, in which they could progress by increasing their productivity, through their low labour cost. To meet the modern challenges (e.g. labour shortage, digitalisation), it is indispensable for businesses to implement sufficient investment and to have an adequate business environment available for this. Accordingly, the competitiveness of enterprises is determined by both external and domestic conditions. External conditions include the availability of skilled labour and a favourable corporate tax environment, i.e. low tax burden on companies as well as rapid and transparent tax administration. Domestic conditions include, inter alia, the intention to establish businesses, i.e. entrepreneurship that ensures revival, the variety of the structure of exports and industrial production, the high proportion of high-tech exports within manufacturing exports and a satisfactory investment rate of companies. At the same time, domestic and external conditions cannot be separated perfectly, which can be perceived well through the aspect of examining the size of the hidden economy.

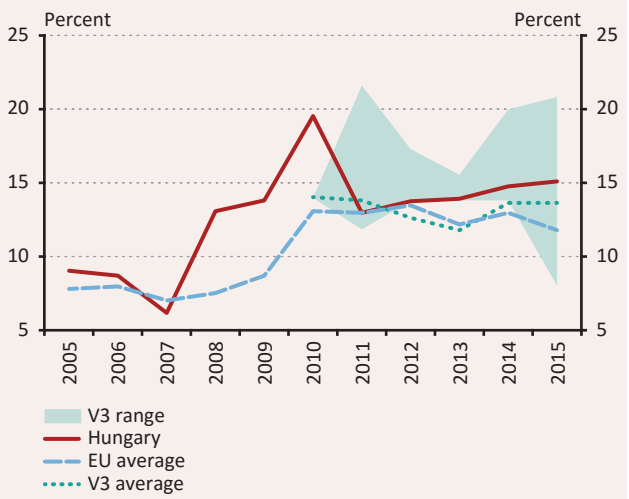
4.31 Availability of skilled workforce



Source: Source: German-Hungarian Chamber of Commerce.

The indicator of the annual business activity report of the German-Hungarian Chamber of Commerce evaluates the availability of skilled workforce by asking 230 corporate executives. On a scale of 5, 1 means a very satisfied opinion and 5 is a very unsatisfied opinion, i.e. a serious shortage of labour. In the Visegrád region, with the improvement in economic activity and the tightening of the labour market, the availability of skilled workforce started to deteriorate gradually from 2014, and the employment of well-prepared, new labour has now become a challenge for each country in the region. In Hungary, the number of job vacancies in the private sector has increased by 65 percent compared to 2007, while the tightness of the labour market is 39 percent higher than in 2007. It is important, however, that together with the rise in wages and salaries the value added produced by domestic companies (the suppliers in particular), i.e. productivity, should also increase. It would be important to progress from the business model based on low labour cost towards a productivity oriented model.

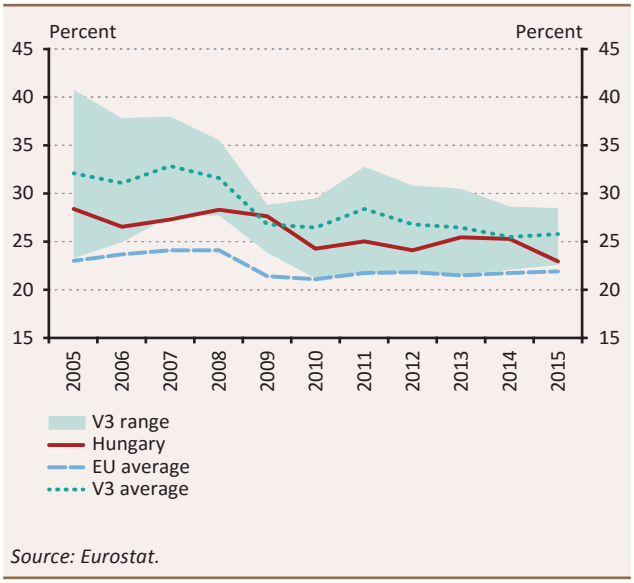
4.32 Entrepreneurial intentions



Source: Global Entrepreneurship Monitor.

Entrepreneurship is one of the main driving forces behind economic growth. In Hungary, the ratio of entrepreneurs who work on the implementation of their business ideas or organise the activity of their already established new enterprises is above the EU average. The above-average ratio was typical in the pre-crisis years as well. In addition to the general indicator of the intention to establish businesses, after 2008 the ratio of Hungarians who intend to launch a new enterprise within 3 years also increased. In 2015, for Hungary the value of this indicator was even higher than the averages of the EU and the Visegrád countries. Following the downturn in 2010 caused by the crisis, since 2011 the intention to establish a business has been growing steadily in Hungary, in contrast to the EU and regional trends.

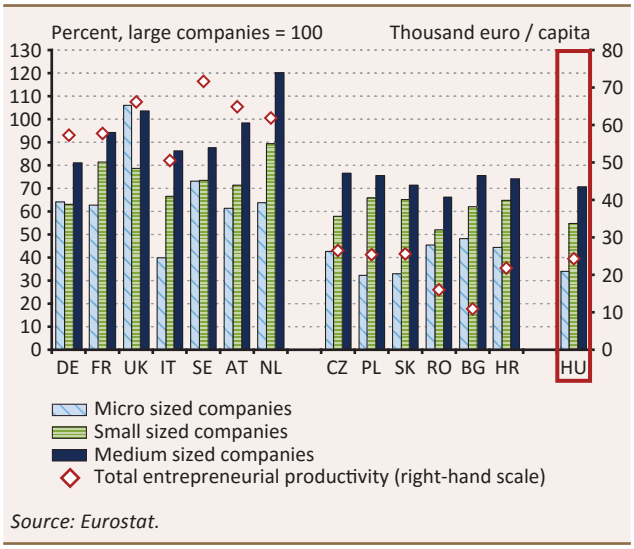
4.33 Investment rate of non-financial corporations as a proportion of the gross value added (GVA)



Source: Eurostat.

The investment rate of non-financial corporations measures the investment in tangible assets of companies operating in the non-financial sector as a proportion of corporate value added. As a result of the 2008 global economic crisis, due to postponed investment, the indicator fell by around 3 percentage points on average in the EU, with the decline even greater in the V4 countries. Following the crisis, government measures at both the EU level and in Hungary aimed at facilitating corporate investment, but all of this is less reflected in the investment rates. In Hungary, with domestic economic agents' significant balance sheet adjustment and the easing of their precautionary motives, the lending market is expected to pick up and the SME sector's investment activity to grow. Accordingly, the corporate investment rate is also likely to increase in the coming years.

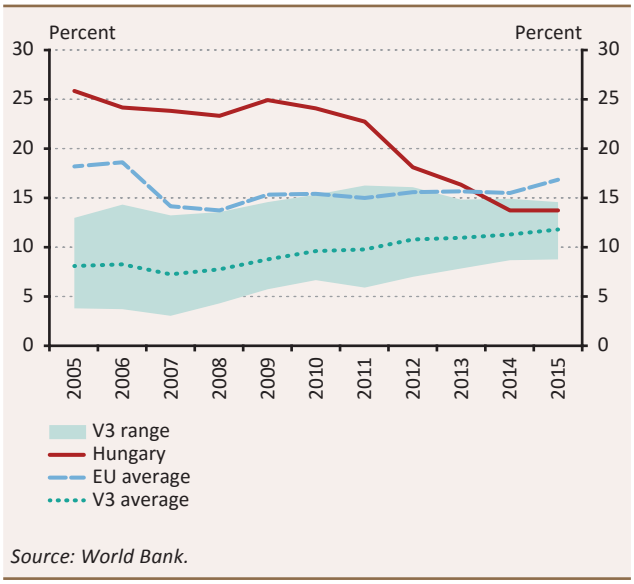
4.34 Labour productivity of the SME sector (2014)



Source: Eurostat.

Increasing labour productivity is key to economic growth and convergence. The majority of Hungarian-owned enterprises are SMEs; therefore, an increase in their productivity would strengthen the convergence of the Hungarian economy. In the Visegrád region, total corporate labour productivity is around EUR 25,000 per person, which is only 35–40 percent of the total corporate productivity of West and North European countries. While in West and North European countries the productivity of small enterprises reaches 60–80 percent of that of the large ones, and the productivity of medium-sized enterprises is close to or even exceeds that of the large ones, in the Central and East European countries the productivity of medium-sized enterprises is around 70–80 percent and of small enterprises is around 60 percent of that of the large ones. Hungarian labour productivity corresponds to the regional average, but the productivity of small and medium-sized enterprises is somewhat below what is observed in the region. Catching up first with the regional and then with the western productivity level as well as the reduction of corporate duality would greatly contribute to raising potential GDP and successful economic convergence.

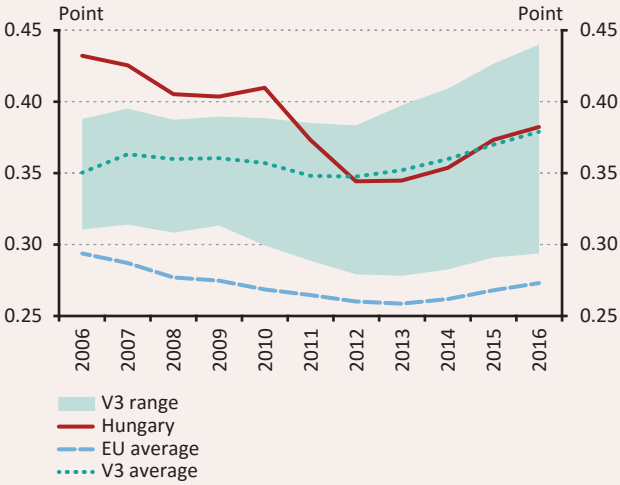
4.35 High-tech export in proportion of manufactured exports



Source: World Bank.

According to the World Bank's classification, the high-tech sector comprises aerospace, scientific instruments, IT, pharmaceuticals and electronic devices, of which the latter three industries accounting for high output in Hungary as well. The share of high-tech exports within manufacturing exports has been steadily increasing in the V3 countries since 2008, while the developments observed in Hungary are just the opposite of that. The underlying reason is that the assembly of electronic devices gradually left Hungary in the past 10 years (e.g. Nokia, Philips, Samsung), while other high-tech sectors did not increase their exports to the same degree. At the same time, the upswing in the pharmaceutical industry in Hungary can be considered a positive change in competitiveness, as the structure of high-tech exports is shifting towards an activity with higher value added.

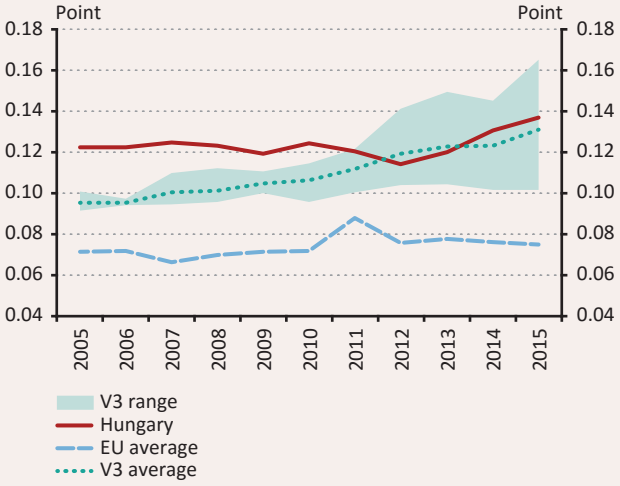
4.36 Export concentration indicator



Source: Eurostat.

Export concentration can be measured by the Herfindahl index, where 1 means total concentration and its lack is the zero value. In general, competitive countries have low export concentration, so the structure of their foreign trade is more heterogeneous, i.e. their economy stands on several pillars. Following the economic crisis, export concentration declined in Hungary, reaching a structure similar to that of the Visegrád countries, where export structures were much more heterogeneous. Since 2012, however, similarly to the countries of the region, the structure of Hungarian exports has gradually become more homogeneous, which is attributable to a stronger upswing in the export-oriented investment in the vehicle industry.

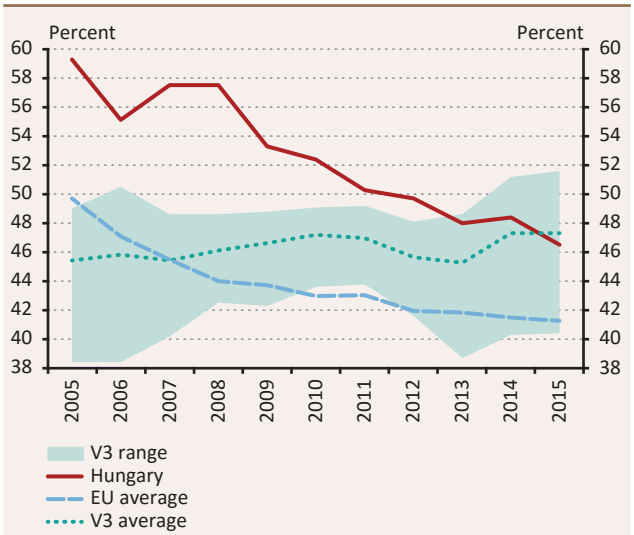
4.37 Industrial concentration indicator



Source: Eurostat.

The industrial concentration indicator measures the homogeneity of the manufacturing structure; its value measured by the Herfindahl index ranges from 0 to 1. A value around 0 indicates the heterogeneity of the economy, (based on several pillars), while a value around 1 means a high degree of dominance of certain sectors. With regard to the EU, it can be established that its industrial concentration is relatively low, while Hungary is among the countries with a more homogeneous structure. Industrial concentration in Hungary declined after the crisis, although nowadays it exceeds the pre-crisis level, mainly due to the dominance of the vehicle industry. A steady increase has been seen in the concentration index of the V3 member countries since the early 2000s, which is probably attributable to the decline in less competitive sectors and thus to the increasing homogeneity of the industrial structure.

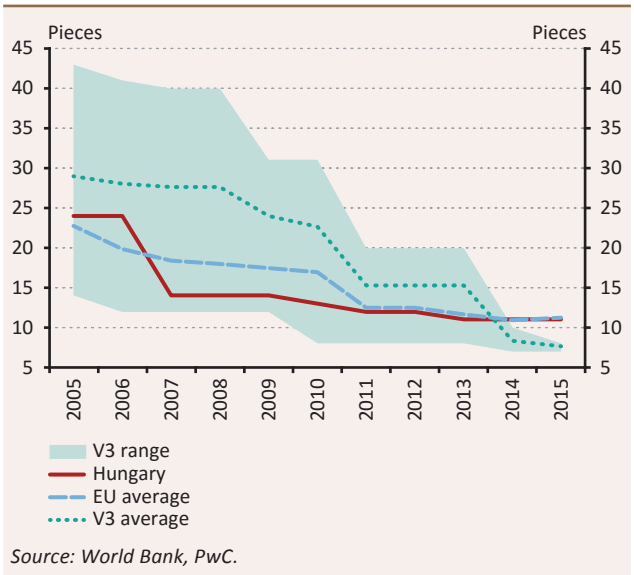
4.38 Total tax rate of enterprises as a proportion of commercial profit



Source: World Bank, PwC.

The indicator of companies' total tax rate in the publication 'Paying Taxes' by PwC and the World Bank evaluates the size of the total tax burden for a modelled, domestic enterprise employing 60 people. Companies' 'total tax rate' in Hungary declined from 59.3 percent to 46.5 percent in 10 years. As a result, Hungary caught up with the V3 average and is approaching the EU average, which shows a steadily declining trend. Nevertheless, to reach the EU average, it is necessary to further reduce the total tax rate of Hungarian companies and within that the employer's contributions, which are still relatively high. A decline in the total tax rate is facilitated by the uniform reduction of the corporate tax rate to 9 percent from 2017 and by the employer's contributions, which decreased by 5 percentage points to 22 percent starting from 2017. As a result of the wage agreement concluded by the government, employers and employees in November 2016, the contribution burdens on employers are expected to gradually decline further in the coming years. The tax burden paid by companies affects the ability to attract capital, the willingness to invest as well as the competitiveness of the economy through profit expectations.

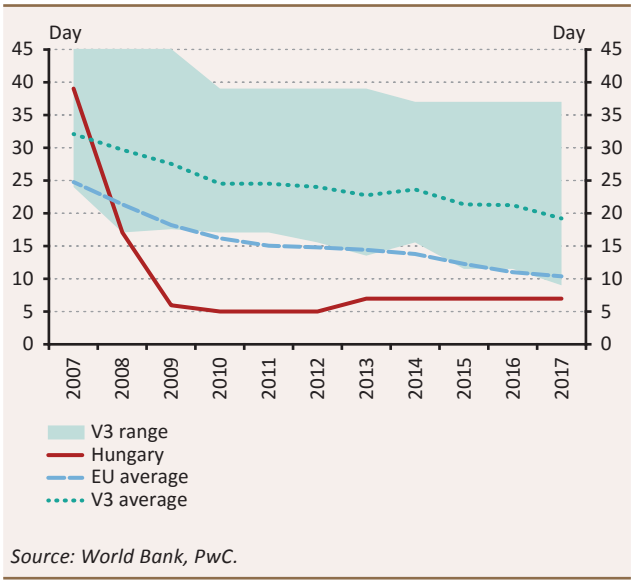
4.39 Number of tax types paid by enterprises



Source: World Bank, PwC.

The number of tax types paid by enterprises is an indicator in the publication 'Paying Taxes' by PwC and the World Bank, which deals with taxation. The indicator shows the total number of types of taxes that a modelled medium-sized enterprise employing 60 people has to pay in a year. The number of tax types paid by Hungarian medium-sized enterprises is similar to that of the EU. Compared to the EU average of 11.3, annually 11 different types of tax payment obligations must be met in Hungary, which is higher than the 7.7 average value of the Visegrád region.

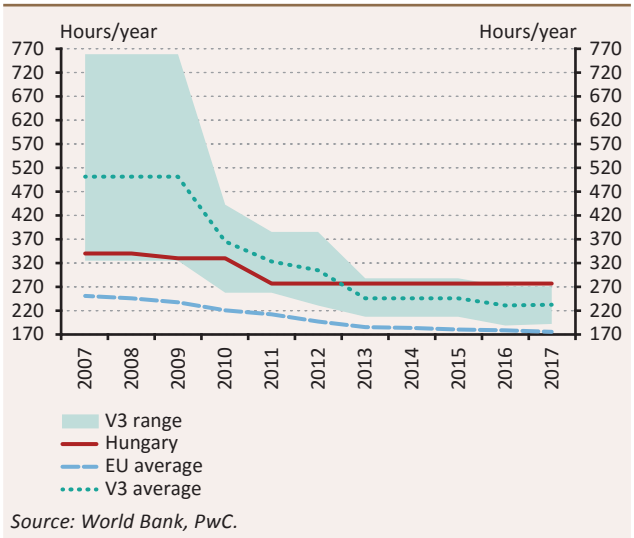
4.40 Time to start a business



Source: World Bank, PwC.

It is possible to set up an enterprise in Hungary in a relatively short time. On the one hand, this makes it easier to launch domestic small and medium-sized enterprises, while on the other hand it is also attractive for foreign capital. A declining trend is observed in this field across the EU, but Hungary achieved a result prior to other EU countries. Despite the fact that in 2007 starting a business in Hungary took more time than the average of the region, the relevant administrative steps can now be completed in nearly one third of the time than before, which is even faster than the EU average.

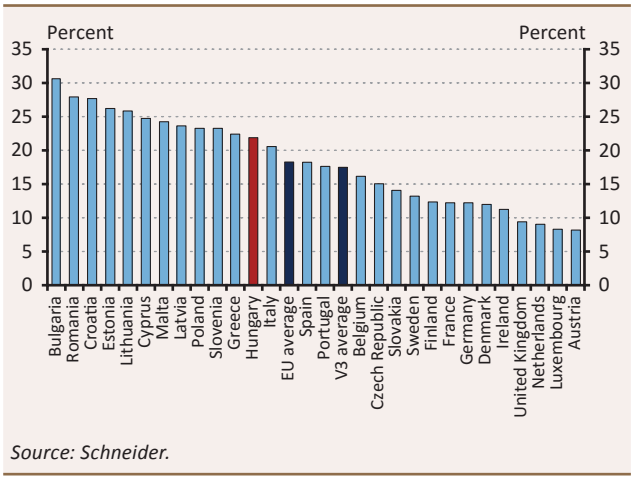
4.41 Time to comply with tax filing for enterprises in one year



Source: World Bank, PwC.

The time to comply with tax filing for enterprises in one year is also a determinant in terms of investment decisions and corporate competitiveness. Corporate tax payment time is rather high (277 hours/year) in Hungary, which is a result of the high number of bureaucratic processes. By contrast, the time of tax payment has declined steadily in the other countries of the Visegrád region since 2009. In order to preserve Hungary's competitiveness in the field of business environment, it would be necessary to reduce the time of tax payment to the level of the EU average to have a competitive advantage again over the other countries of the Visegrád region. The corporate tax return – similar to the personal income tax return – prepared by the tax authority may lead to progress for companies in this respect.

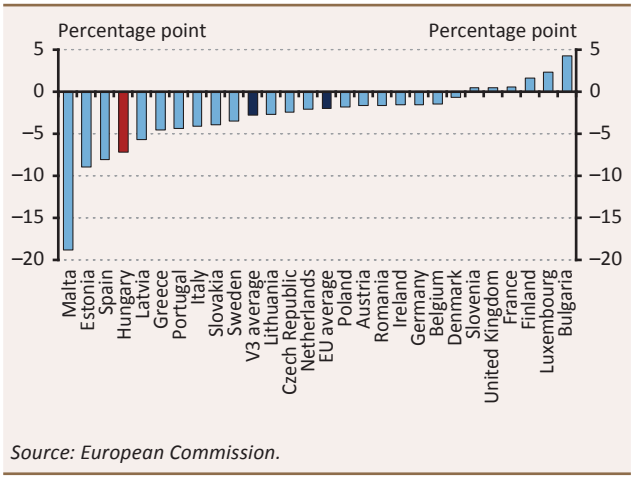
4.42 Estimated size of the shadow economy in the EU as proportion of GDP (2015)



Source: Schneider.

The shadow economy means basically legal activities that are concealed from the authorities. In the EU, the proportion of the shadow economy is on a downtrend, but this was interrupted by the 2008 crisis. Following the recession, the elimination of the shadow economy continued, and by 2015 its level as a percentage of GDP fell to a historical low. Reducing the shadow economy contributes to fair competition, the proper distribution of resources and budgetary balance. Forcing back the shadow economy is one of the key measures of the Hungarian government as well. As a result, the indicator as a proportion of GDP has improved by nearly 2 percentage points since 2010, although it remains above the EU average.

4.43 Cumulated change in VAT gap between 2013 and 2015



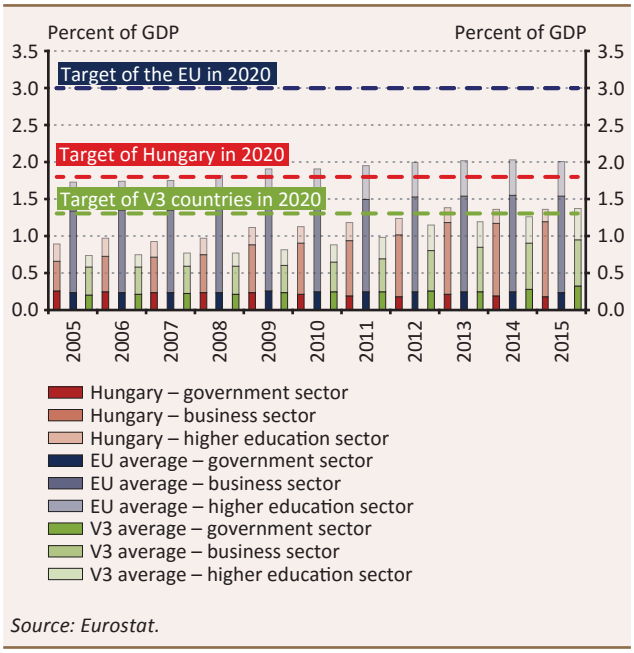
Source: European Commission.

The VAT gap shows the difference between the actual and theoretically collectable VAT revenues. The indicator can estimate tax avoidance and show the effectiveness of measures aiming at combating the shadow economy. Since 2013, the VAT gap as a percentage of the theoretically collectable VAT has fallen by a total 7.2 percentage points to 14 percent in Hungary. The decline in the estimated size of the hidden economy was significantly larger than the EU and regional averages. In 2015, the average level of the VAT gap was 13 percent in the EU, but the Hungarian figure (14 percent) is much more favourable than that of the V3 countries (23 percent). In recent years, a major part of the increase in Hungarian VAT revenues was attributable to an improvement in the efficiency of tax collection; the rest of the increase can be explained by the growth of the economy and a rise in the tax base.

4.5 RESEARCH, DEVELOPMENT AND INNOVATION

A competitive research, development (R&D) and innovation environment is an essential condition for Hungary to be able to transition to an innovation-driven business model. Measuring innovation, R&D and digitalisation is a developing branch of economic and statistical analysis. The two main indicators of R&D activity are R&D expenditures and R&D personnel, which examine the costs and the availability of human resources of research activities. The EU's Innovation Scoreboard is used for the analysis of developments in innovation. In relation to the European Union, it approaches – through a summary index – innovation and the ability to innovate from various aspects, including corporate product and process innovation as well as organisational innovation. Digitalisation, which constitutes a new form of production and work organisation, is also a new area related to R&D&I. Digitalisation makes industrial production more efficient and increases labour productivity. Deliberate strategies in the EU Member States started to be formulated around this phenomenon in 2010, and the process has numerous economic policy dimensions as well: amongst other things, it has a major impact on the financial infrastructure, education, health care and public administration. The most complex quantification of the individual aspects of digitalisation is provided by the European Digital Economy and Society Index.

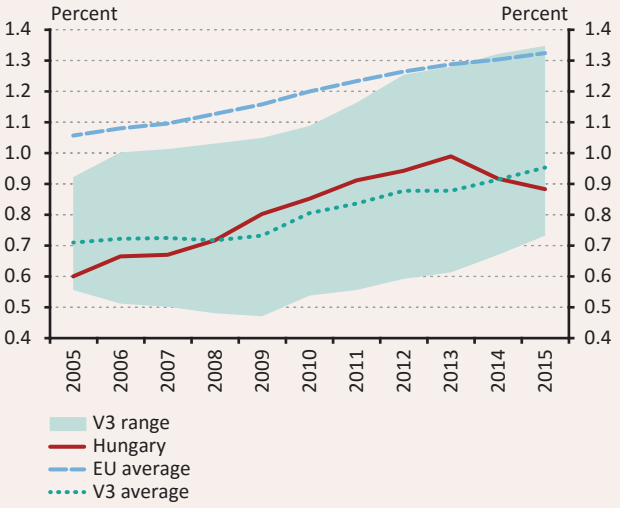
4.44 R&D expenditures in the economy and by sectors



Source: Eurostat.

Expenditures on R&D have increased in the European Union since 2005. Although the average of the Visegrád countries caught up with the Hungarian level by 2015 (primarily owing to developments in the Czech Republic), in the CEE region Hungary is still one of the three best countries in this area. The EU and Hungary need to increase their R&D expenditures by approximately 1.0 and 0.4 percentage point respectively, to reach their targets for 2020. Regarding the distribution of expenditures, in Hungary expenditures on higher education and public R&D are lower than the averages of the EU and the Visegrád region. With an increase in R&D expenditures, the representation of knowledge-intensive industries is expected to become stronger, which may result in a higher GDP growth rate and thus in an improvement in competitiveness.

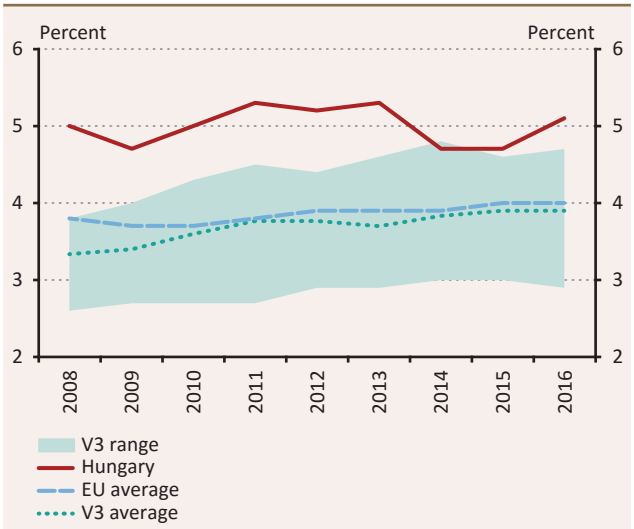
4.45 R&D personnel as a proportion of the labour force



Source: Eurostat.

Between 2009 and 2013, R&D personnel increased at about the same rate in Hungary and in the other Visegrád countries, although the indicators are not close to the EU average. Moreover, between 2009 and 2013 the share of R&D employment in Hungary grew in a way that the number of the active, and in parallel with that the number of the employed, increased steadily. An increase in the R&D personnel is a key to higher innovation performance and the development of knowledge-intensive industries. Accordingly, it would be important for Hungary to return to an upward path in the share of R&D personnel within all employees, which moved on a downward path in 2014, and already fell below the V3 average by 2015. An increase in R&D personnel contributes to advancement in international value chains.

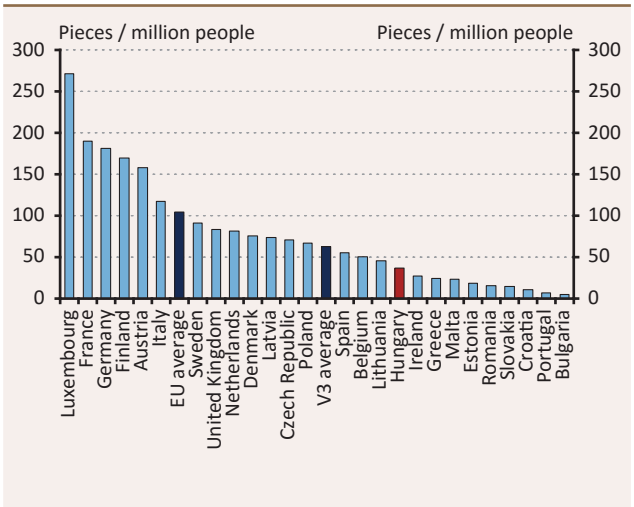
4.46 Employment rate in high-tech sectors



Source: Eurostat.

The high-tech sector is the driving force of the economy in the sense that it requires trained workforce, its value added is high and its advanced technology may spill over to other sectors. According to the methodology of Eurostat, employees in the high-tech sector include those employed in the pharmaceutical industry, computer manufacturing, electronic appliances manufacturing and the optical sector, as well as those who work in the areas of telecommunications, television, broadcasting, sound technique, programming, consultancy as well as research and development. In Hungary, the share of persons employed by this sector is very high both in EU and regional comparison. However, the value added of the sector can be boosted with the increased involvement of domestic companies at other points in the product cycle as well, in addition to assembling.

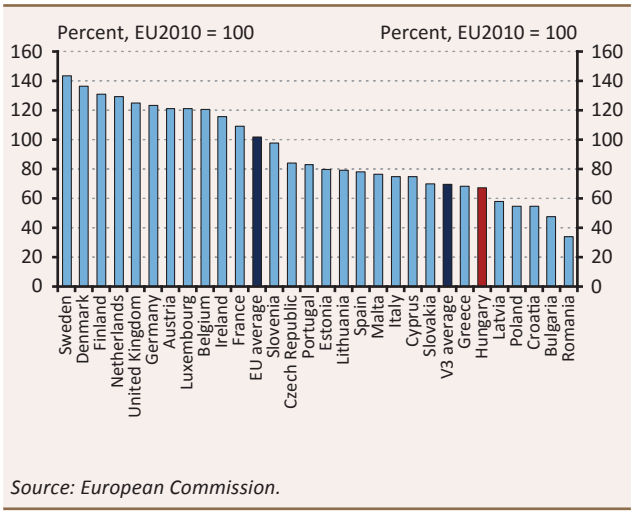
4.47 Total patent grants (2015)



Source: World Intellectual Property Organization.

In Hungary and the V3 countries, the number of new patents registered in a year is low, amounting to one half or one third of the EU average per one million people. This is partly a consequence of more active R&D activity in the Western European countries, and is partly attributable to the fact that foreign-owned enterprises – even if they conduct basic research in Hungary – tend to apply for the new patent in their home country or where the company is registered. At present, the number of patents registered annually with the national patent authority is even lower than the V3 average, while in 2016 the number of patents registered by Hungarian citizens with the European Patent Office exceeded the V3 average and was below the EU average. The rise in the number of patents is affected by the increase in innovation capacities.

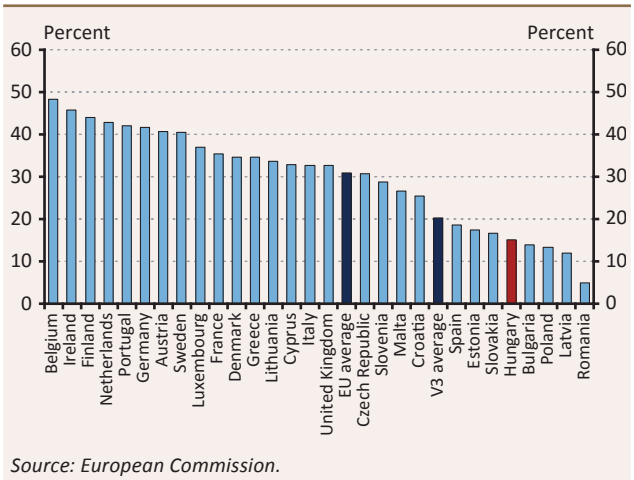
4.48 Summary Innovation Index (2016)



Source: European Commission.

The Summary Innovation Index of the European Commission is a composite indicator, which compares each country to the 2010 EU average. Hungary's performance varies in some sub-indexes. Hungary's performance is below the EU average in human resources of innovation, in research infrastructures, in the financial background of innovation, in corporate investment, in the SME sector's innovation capacity and in intellectual property rights. At the same time, Hungary's competitive disadvantage is smaller in the innovation-friendly business environment as well as in the innovation cooperation of the public and private sectors. Hungary's position corresponds to the EU average in the effects of innovation activities on employment and sales.

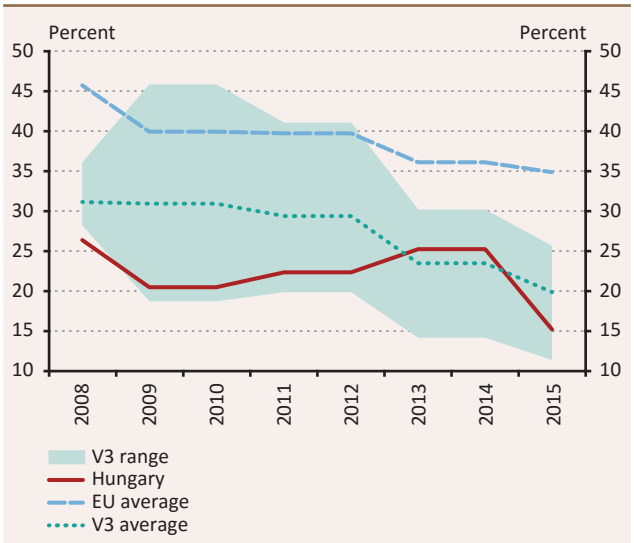
4.49 SMEs with product or process innovations (2015)



Source: European Commission.

Within SMEs, in the period between 2008 and 2015 the share of companies presenting new products or starting new production processes was lower than both the EU level and the level for the Visegrád countries. An increase in the private sector's R&D expenditures contributes to growth in product and process innovation activities.

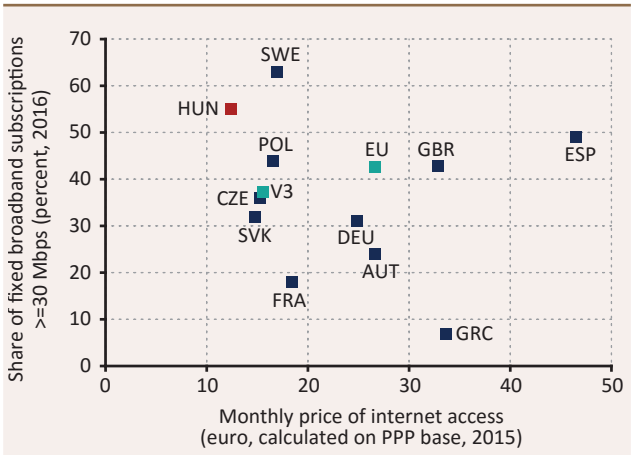
4.50 SMEs with organisational or marketing innovations



Source: European Commission.

As a percentage of all SMEs, this indicator shows the share of SMEs that launched organisational or marketing innovation processes. Following the decline during the crisis, the Hungarian SME sector started improving after 2012, before its organisational and marketing innovation performance decreased again in 2015. The value of the indicator deteriorated in the other countries of the Visegrád region as well. A stronger presence of organisational and marketing innovation processes than in the region may be conducive to increasing Hungary's competitiveness in terms of science and technology.

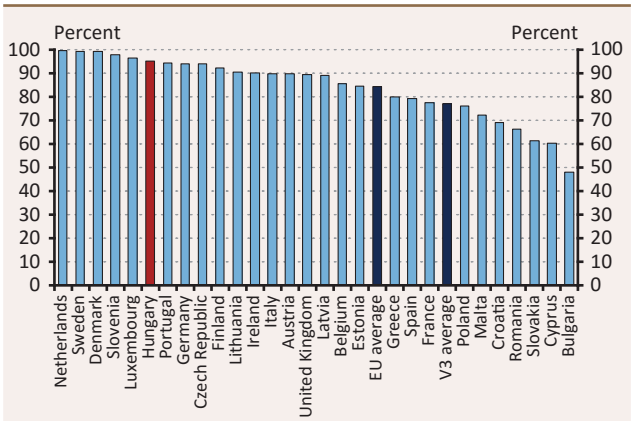
4.51 Penetration and monthly price of broadband internet



Source: European Commission.

In terms of the monthly price and penetration of broadband internet, Hungary is among the leaders in the EU. Compared to the other countries of the Visegrád region, the ratio of 30 Mbps or higher speed subscriptions is around 20 percentage points higher, and exceeds the levels of Great Britain, Germany and France. 81 percent of all Hungarian households have some kind of internet connection, which corresponds to the regional average, but is slightly below the average of EU countries. In Hungary, calculated at purchasing power parity, the monthly price of an internet subscription between 30 and 100 Mbps is not high, at 12.5 euros. In the other countries of the Visegrád region residents have to pay some 3 euros more for this. After Lithuania, the Hungarian price is the lowest in the EU. The lower price of internet subscriptions contributes to a further increase in the number of broadband internet subscriptions in Hungary, which is indispensable for the extensive spread of digitalisation.

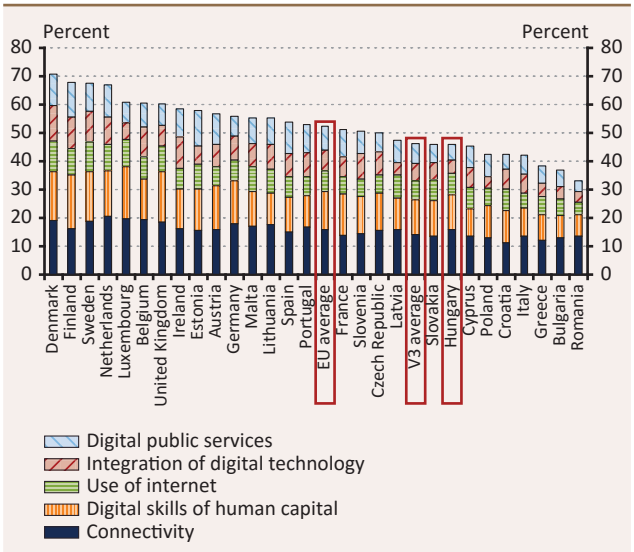
4.52 4G mobile internet coverage (2015)



Source: European Commission.

4G mobile internet coverage shows the percentage of households in the given country that have access to 4G mobile internet service. Hungary is among the leaders in 4G coverage in the European Union, but the provision of wide coverage is coupled with a high subscription price. In terms of the speed of mobile internet (50 Mbps) Hungary is the second among EU countries, and is one of the global leaders at the same time.

4.53 EU Digital Economy and Society Index (2017)



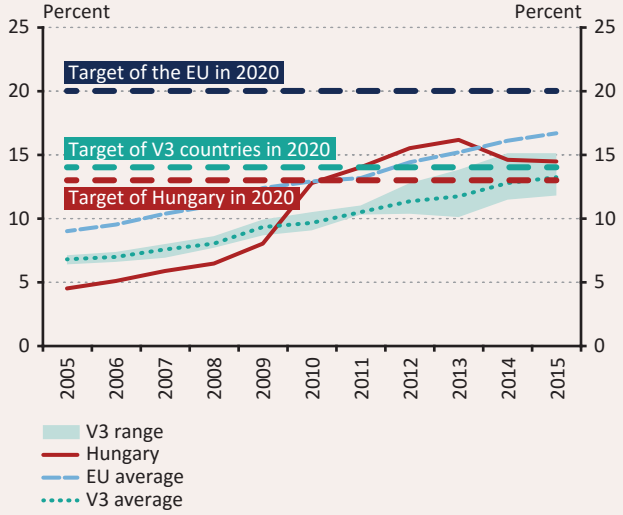
Source: European Commission.

The Digital Economy and Society Index calculated by the European Commission evaluates the digital development of EU Member States in a way that the individual components have different weights in the index: connectivity 25 percent, digital skills of human capital 25 percent, use of internet 15 percent, digital technology 20 percent and digital public services 15 percent. The level of Hungary's digital development is below the EU average, but corresponds to the average of the other Visegrád countries. According to 2017 data, within the EU Hungary is mostly falling behind in terms of the digital technology and e-commerce solutions applied by companies and in digital public services. Based on that, progress is primarily needed in the digitalisation of the business and public sectors.

4.6 COMPETITIVENESS OF THE ENERGY MARKET

Network industries and the energy market are areas that are subject to government regulation and provide basic infrastructure for the economy; their competitiveness affects the whole economy. Ensuring affordable industrial electricity and gas prices is essential in terms of the competitiveness of the energy market and in a wider sense that of the business sector. Energy costs are important items of the operations of companies, and minimising these costs is an optimisation task for the corporate sector. In addition to industrial energy prices, household energy prices are also important as they affect households' disposable income, which has an indirect effect on the competitiveness of the national economy through consumption and savings. The ratio of net energy imports shows the energy dependence on the rest of the world, while the energy intensity of the economy indicates the energy consumption per unit of GDP. Renewable energy sources contribute to sustainable growth and through that to economic competitiveness; therefore, monitoring these indicators is also essential.

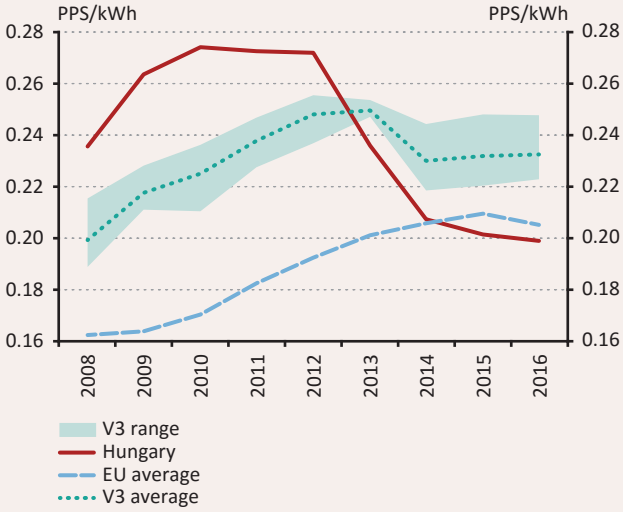
4.54 Use of renewable energy sources



Source: Eurostat.

Between 2009 and 2015, the use of renewable energy sources as a percentage of total energy consumption increased faster in Hungary than in the region or the EU, doubling compared to the pre-crisis state. Between 2011 and 2013, in terms of the use of renewable energy sources Hungary was above the average of not only the V3 but also the EU. However, in 2014, the increase in the share of renewable energy sources came to a halt in Hungary as the further spread of wind and water energy ceased. As a result, the Hungarian level fell below the EU average, but still exceeds the average of fellow competitors in the region. In 2015, Hungary exceeded its target set for 2020 by 1.5 percentage points. The European Union already exceeded the Hungarian 2020 target level in 2011. The other countries of the Visegrád region are also expected to exceed their targets by 2020. By increasing the ratio of renewable energy sources within total use of energy it would be possible to diversify the energy supply of the country and also to facilitate compliance with environmental aspects. However, at present the expansion and promotion of renewable energy capacities involves considerable additional costs, while the mass storage of renewable energy has not yet been solved.

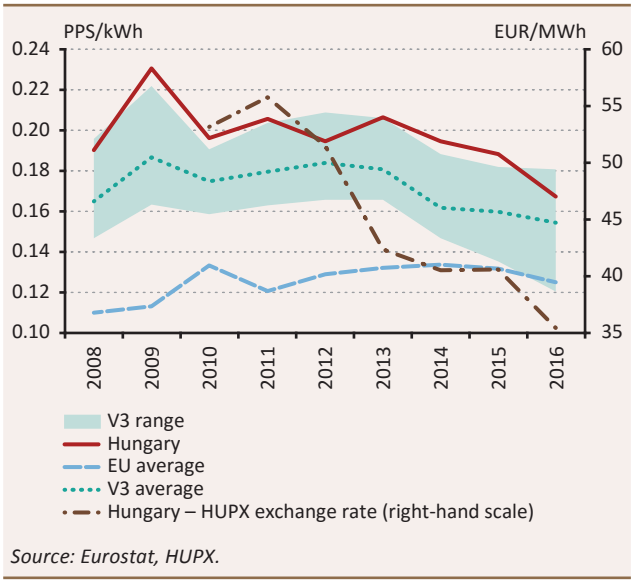
4.55 Electricity price (for households)



Source: Eurostat.

In the period between 2012 and 2014, as a result of the reduction in regulated prices in several steps, the price of electricity (for households, including taxes and other levies, calculated at purchasing power parity) in Hungary fell below the average of the Visegrád region, and since 2015 it was even lower than the EU average. The decline amounted to more than 25 percent. In 2016, the price of the Hungarian household electric energy (including taxes and other levies) amounted to EUR 0.11 / kWh.

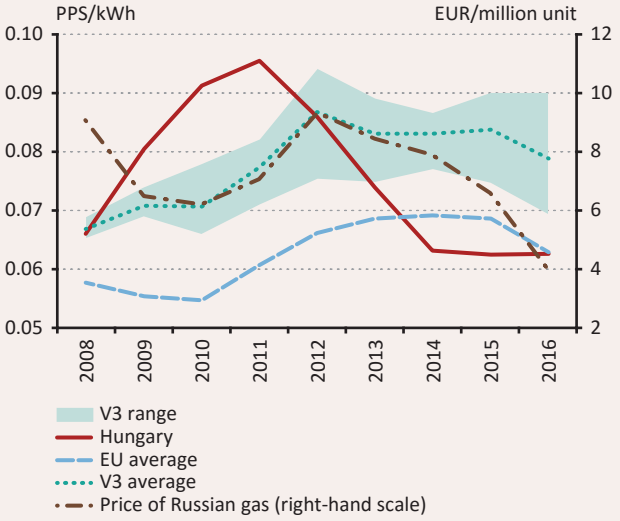
4.56 Electricity price (for industrial consumers)



Source: Eurostat, HUPX.

While for households the electricity is provided in the form of universal service, in the case of companies the free market supply results in more diversified electricity prices. How favourable price conditions a company can access electricity also depends greatly on a company's individual management abilities (and individual trading structure). Hungarian industrial electricity prices (including taxes and other levies, at purchasing power parity) have been declining since 2013, although they are higher than in the other Visegrád countries and the EU average. In 2016, the price of Hungarian electric energy for industrial use (including taxes and other levies) amounted to EUR 0.09 / kWh. In addition, the HUPX, i.e. the Hungarian Power Exchange, which determines the daily price of industrial electricity trading on a demand and supply basis, was also launched in 2010. A further decline in industrial electricity prices would be important in order to allow the fixed costs of enterprises to remain at low levels in Hungary over the long term as well.

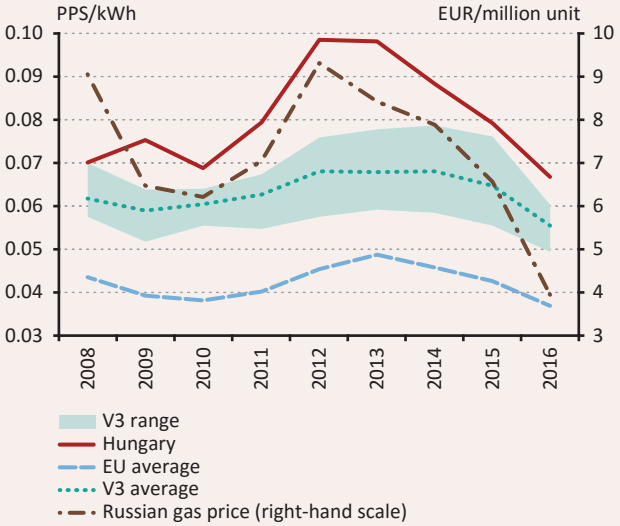
4.57 Gas price (for households)



Source: Eurostat.

Mainly due to the reduction of regulated prices, the price of gas for households (including taxes and other burdens, at purchasing power parity) in Hungary declined by 34 percent in multiple steps between 2011 and 2014. As a result, it was below the prices observed in the other Visegrád countries, and in 2014 and 2015 it was even lower than the EU average. At present, the price of one kWh of gas for households (including taxes and other levies) costs EUR 0.03. Between 2012 and 2016, the world market price of gas (the price of Russian gas at the German border) also declined by nearly 60 percent, and this degree of decline was not followed by the household gas prices in the region or the EU. The low level of household gas prices increases the consumption of other goods or the savings of households and, through that, economic competitiveness as well.

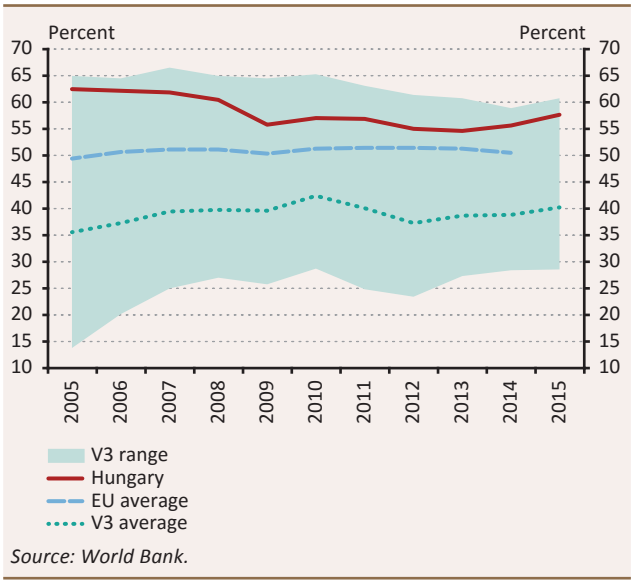
4.58 Gas price (for industrial consumers)



Source: Eurostat.

Similarly to household gas prices, as a result of global market trends the gas prices for industrial – i.e. corporate – consumers (including taxes and other levies, at purchasing power parity) declined between 2013 and 2016 in Hungary, although they are still higher compared to the gas prices valid in the other countries of the Visegrád region and the average gas prices in the EU. In 2016, the price of one kWh of gas for industrial consumers was EUR 0.04 (including taxes and other levies). As a result of the decline in the world market price, the price in Hungary also fell considerably between 2013 and 2016. Nevertheless, the price in Hungary is still higher than the average levels in the region or the EU, as the latter have also declined recently.

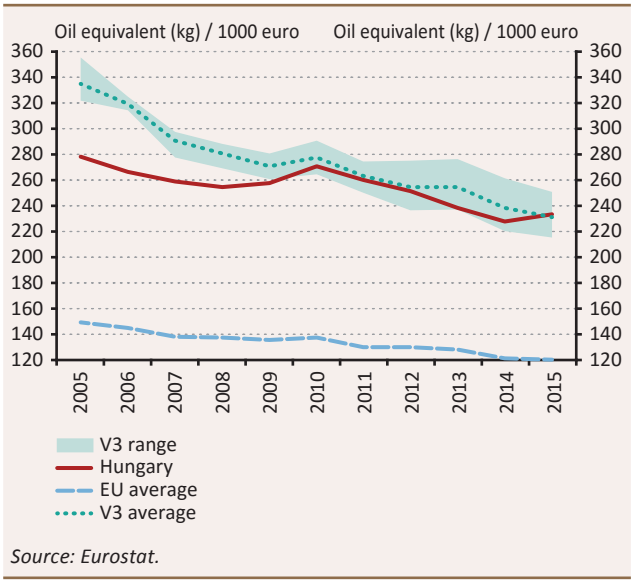
4.59 Net energy imports



Source: World Bank.

In Hungary, net energy imports as a proportion of total energy use are higher compared to both the Visegrád countries and the EU average, and increased slightly in 2014 and 2015. Compared to 2009, the Czech Republic increased its net energy imports by nearly 6 percentage points, the proportion of energy imports remained nearly unchanged in Poland, while energy imports declined by almost 4 percentage points in Slovakia. With a decline in net energy imports, a country's energy dependency also declines, resulting in an improvement in the given country's economic independence and competitiveness. A further reduction of the energy dependency can be advantageous, as it would improve the energy security of Hungary.

4.60 Energy intensity of the economy



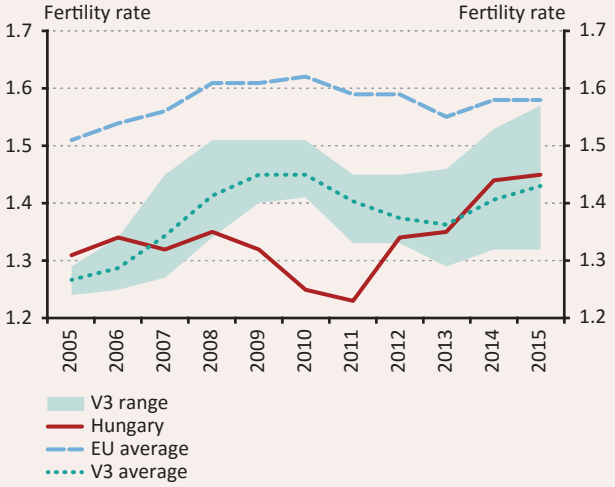
Source: Eurostat.

The energy intensity of the economy shows the amount of energy consumption per unit of GDP. Until 2014, energy intensity in Hungary was lower than the average of the other Visegrád countries, but in 2015 Hungary's energy intensity rose to the level of the regional average. The energy intensity of the Visegrád region is still about double the average of the EU. Lower energy intensity is cheaper for the operation of the economy, results in an increase in efficiency and provides more environment-friendly conditions for successful convergence over the long term.

4.7 DEMOGRAPHY AND SOCIAL STRUCTURE

The quality and quantity of human capital are key factors for economic growth and convergence. Over the long term, the quantitative factors of human capital are primarily determined by demographic trends, of which the decline in and ageing of the population represent the greatest challenges for almost all developed countries, including Hungary since the early 1980s. Hungary's current state and its position within the region are presented with indicators that are the most suitable for describing the demographic situation and trends (e.g. old age dependency ratio, fertility rate). In addition, with the help of the UN Human Development Index we attempt to present the stage of development of the society as well as the value of the Gini index from two aspects, which summarises the degree of income disparities in the society.

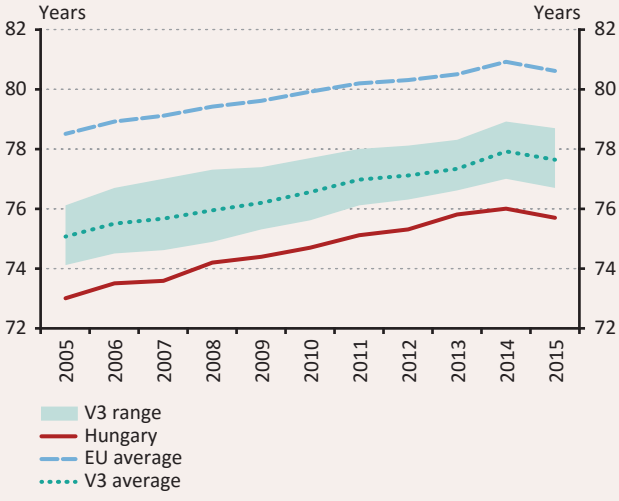
4.61 Total fertility rate



Source: Eurostat.

Total fertility rate is a hypothetical number of children calculated for childbearing-age women (15–49) on the basis of the current number of births. In order to prevent a further decline in population over the medium term, this indicator should reach the level of at least 2.1. The low number of live births is a major challenge in almost all developed countries. As a result of continuously encouraging childbearing and strengthening the family support system as well as due to the general improvement in the economic environment, the value of this indicator in Hungary has increased tangibly since the historical low (1.23) in 2011 and it exceeds the regional average. Although it reached a level of 1.49 in 2016, the indicator remains below the desirable level.

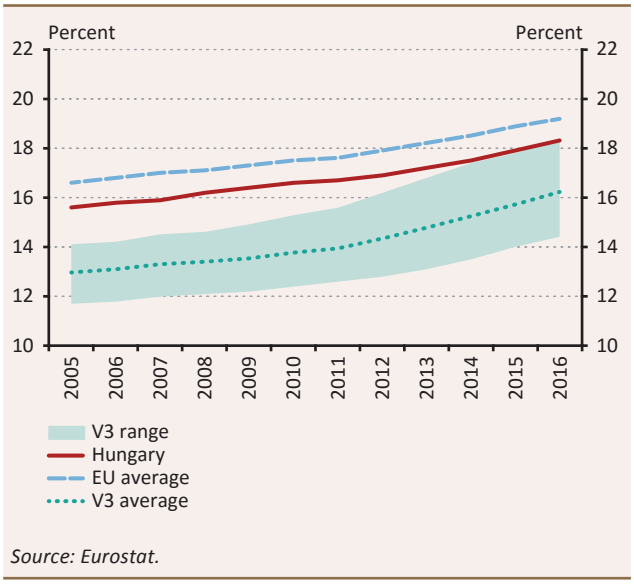
4.62 Life expectancy at birth



Source: Eurostat.

Life expectancy summarises the mortality trends of the current population. Life expectancy at birth shows how long a life a newborn can expect under the given year's mortality conditions. As a result of the development of welfare societies and health care, life expectancy increased significantly around the world in the 20th century. Between 2005 and 2015 the indicator for Hungary rose in line with the regional and EU averages. However, as the starting value was below the averages of the countries of the region and the EU, Hungary has not yet caught up with the other countries under review.

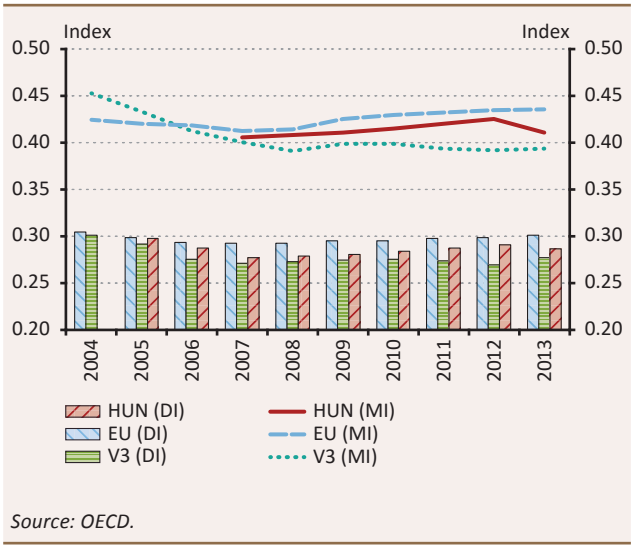
4.63 Share of the over-65 age group within the total population



Source: Eurostat.

The proportion of the over-65 age group is on a rising trend in most developed countries, attributable to both the higher life expectancy and the decline in fertility. In Hungary, the ageing of the society shows a similar trend to the EU average, although at a lower level. In the V3 countries, the ratio of elderly people in society is below the Hungarian and EU averages, but its growth rate is faster than in the EU. The ageing of society increases the ratio of the inactive to one employee, affects the consumption and savings rates, adds to health care and pension expenditures, and through all of these may mitigate an economy's ability to grow.

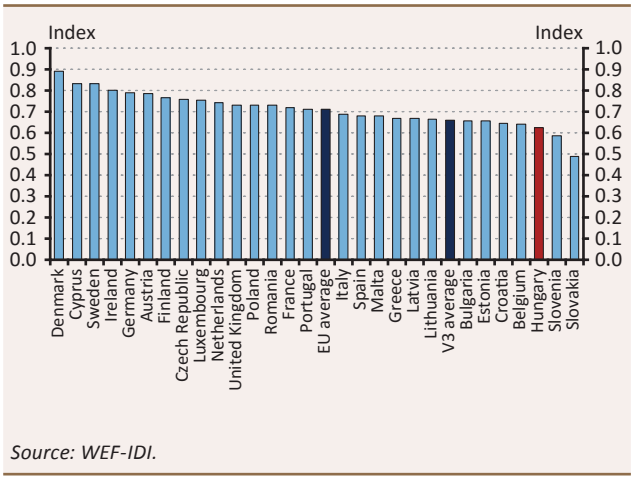
4.64 GINI index (based on income)



Source: OECD.

The GINI index measures the income or financial disparities of the society, where 1 means the total concentration of income or wealth. The income based GINI index can be measured in both the market income (MI) and disposable income (DI) categories; the difference between them is attributable to the state redistribution of income. It is generally true for European countries that they have a medium GINI value in market income, which declines considerably in the disposable incomes following redistribution, which can be considered a result of the fiscal income policy. Of the EU member countries, income disparity in Hungary is relatively low, although of Hungary's competitors in the region, lower disparities are measured in the Czech Republic and Slovakia as well. According to the Inclusive Growth and Development Index (WEF-IDI), which is based entirely on objective data and was newly elaborated by the World Economic Forum this year, income-based disparity in Hungary is the 17th lowest among the 109 countries under review, while the EU average is the 22nd.

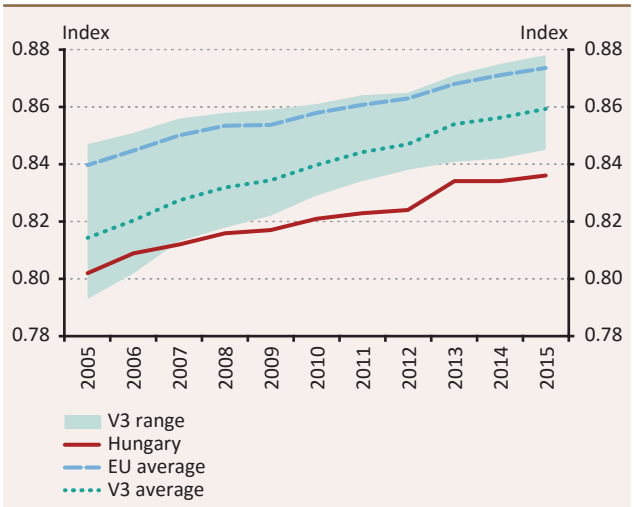
4.65 GINI index (based on wealth, 2016)



Source: WEF-IDI.

The wealth based GINI index shows the disparities existing in the assets of a given society. In relation to fluctuations in economic activity, the value of the index is somewhat volatile, as a significant part of the assets of the upper strata fluctuates together with the price movements of securities. In general, it can be established that at a global level the wealth-based GINI index is at a high value in developed national economies, i.e. social inequality is higher in these countries. Although the phenomenon is measurable, the cause and effect relationship are not proven, i.e. significant disparity in wealth does not necessarily contribute to the development of a given country. In Hungary, the degree of wealth-based social inequality is low both compared to the EU and globally. According to the WEF-IDI calculations based on actual data, the value of Hungary's wealth-based GINI index is the third lowest in the global – economic and social – ranking covering 109 countries. The main reason for the low disparity in Hungary is that the scope of real estate owners is wide, including a high proportion in the lower wealth strata as well.

4.66 Human Development Index (HDI)



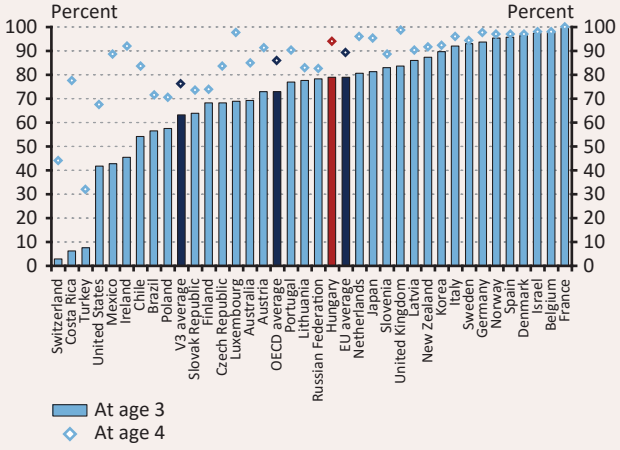
Source: United Nations.

The Human Development Index compares life quality in the countries of the world on the basis of life expectancy at birth, literacy, education and living standard. Similarly to the trends in the EU and the region, the index of Hungary is also rising steadily, although it lags behind the country's peers. The main reasons for the difference are the lag of Hungary in life expectancy at birth as well as the lower number of years spent at school and the lower value of per capita GNI compared to Hungary's competitors in the region. The UN classifies Hungary among the developed countries on the basis of the HDI.

4.8 EDUCATION

Through the quality and productivity of the available workforce, education has a major impact on the economic performance and competitiveness of a country. Accordingly, the measurement of education expenditures and the determination of the efficiency of the expenditures must be parts of a complex competitiveness report. At the same time, it is not easy to measure the efficiency of the expenditures, as in the case of a university graduate – starting from the kindergarten – we can speak about at least 18 years of education, where it is difficult to clearly determine the value added of the individual levels of education. Therefore, in our report we try to measure the efficiency of education using interim criteria (e.g. PISA surveys, participation ratio) and output criteria (e.g. early school leavers, proportion of those with higher education) as well. In addition, we must not neglect the skills that can be partly obtained outside the education system (e.g. foreign languages, financial literacy), which can also be considered the results of lifelong learning.

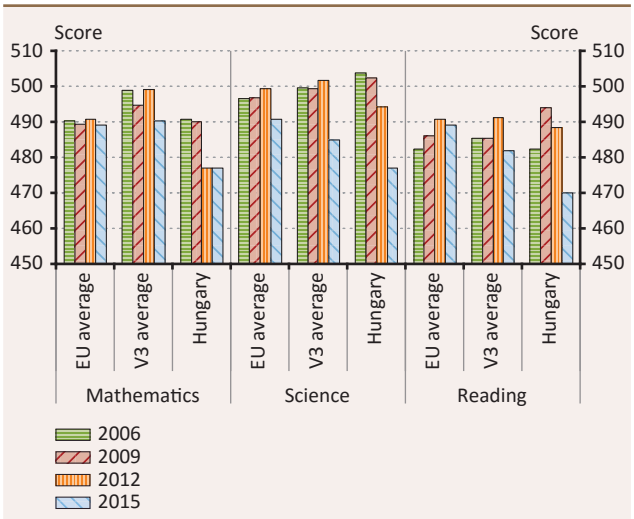
4.67 Enrolment rate in early childhood education (2014)



Source: OECD.

In 2014, the proportion of children enrolled in early childhood education in Hungary corresponded to the average of the EU countries, and significantly exceeded that of the countries of the region. 79 percent of 3-year-old children and 94 percent of 4-year-old children participated in kindergarten education. The high ratio in Hungary is the consequence of the strict statutory regulation, and the expansion of the scope of kindergarten catering provisions in the past years is expected to entail further increase in the case of needy social groups. The high ratio of participants in early childhood education is very important in terms of learning the basic skills necessary for later studies and for adequate socialisation.

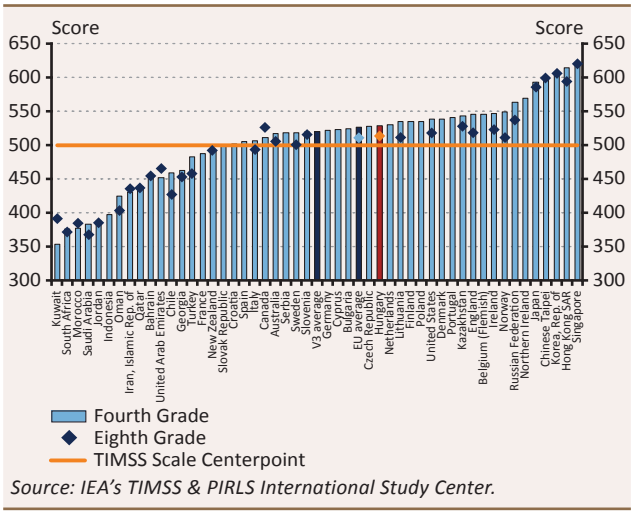
4.68 Results of PISA tests



Source: OECD.

The PISA test organised by the OECD every 3 years examines the competences of 15-year-old students in 3 selected areas (mathematics, science, reading). In the latest test conducted in 2015, Hungary's results declined in science and reading compared to the previous years, while the previous years' downward trend stopped in the case of mathematics. According to the 2015 test, the results of Hungarian students fall short of the averages of the countries of the region and the EU to a greater extent than before, which is attributable to the considerable increase in the ratio of students who did not achieve the level considered the minimum. Regarding the deterioration in the Hungarian results, it also needs to be taken into account that in the latest survey the results in the countries of the EU and the region also worsened in all the three areas. The downturn is especially visible in science, where the average scores declined across the EU with the exception of three countries.

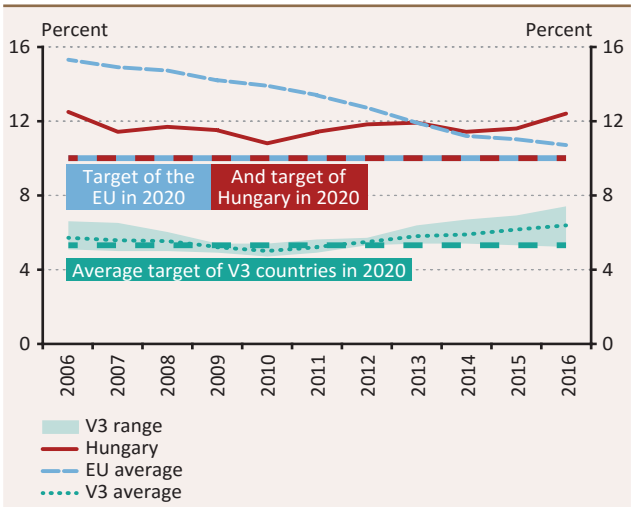
4.69 Results of TIMSS test – Mathematics (2015)



Source: IEA's TIMSS & PIRLS International Study Center.

The TIMSS and PIRLS surveys conducted by the specialised institution of Boston College measure the knowledge of 4th and 8th grade students every 4 years. In the 2015 test, Hungarian students achieved higher scores in mathematics in both grades than the average result of the students of participating EU countries. In contrast to the PISA test, which measures abilities, the TIMSS test, with the topics of science and mathematics, and the PIRLS test, which contains reading tasks, primarily focus on checking the subjects learnt. The results of the two surveys collectively show that although Hungarian students learn the subjects as expected of them, in the case of real life examples they are unable to use their knowledge to an adequate degree.

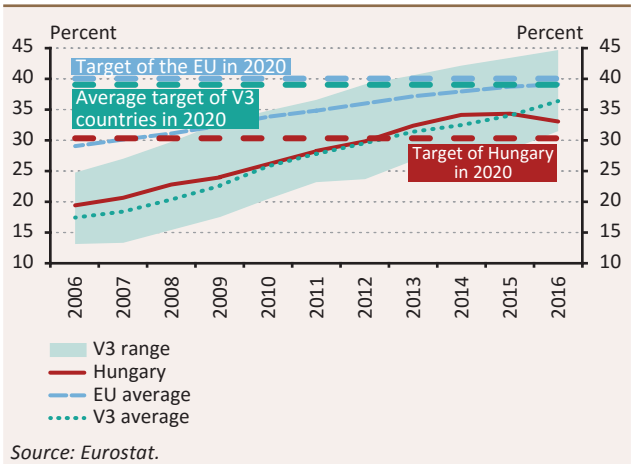
4.70 Early leavers from education and training



Source: Eurostat.

The reduction of early school leaving is one of the objectives of the Europe 2020 strategy. Early school leavers are people aged 18–24 who finished only elementary school at most and do not participate in any further education or training. Hungary's performance in this indicator was relatively stable in the period under review, although at the same time a declining trend is observed in the EU countries, while in the V3 countries the ratio of early school leavers is much lower than in other European countries. In the case of Hungary, the target set for 2020 can be met despite the deterioration in the past two years. At the same time, targeted measures would be needed to catch up with the competitors in the region in this area.

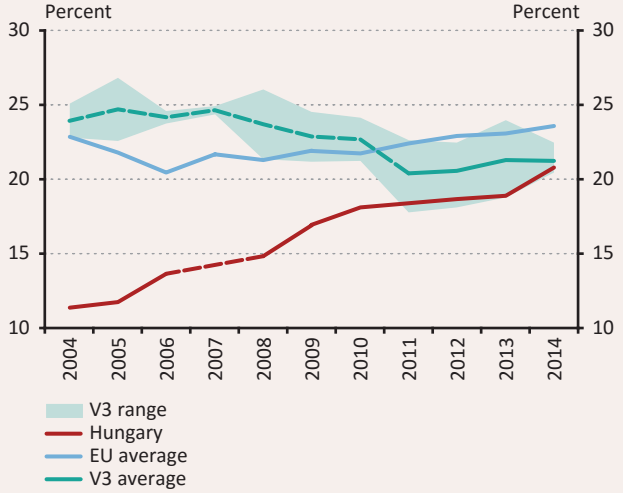
4.71 Tertiary educational attainment, age group 30–34



Source: Eurostat.

One of the objectives of Europe 2020 strategy is to increase the proportion of tertiary graduates. The underlying reason for this is the expected future rise in labour market needs. In terms of this indicator, from 2006 to 2015 Hungary's performance was better in each year than the average of the V3 countries, but – despite the decline in the difference until 2016 – the region still lags behind the EU average. In connection with the Europe 2020 indicators, the EU proposes target values as well, although they can be revised by the individual countries. Hungary undertook a proportion of 30.3 percent by 2020. After a long time, 2016 was the first year when the ratio of graduates declined in the age group under review in Hungary, although Hungary still exceeds the undertaken target value in this indicator.

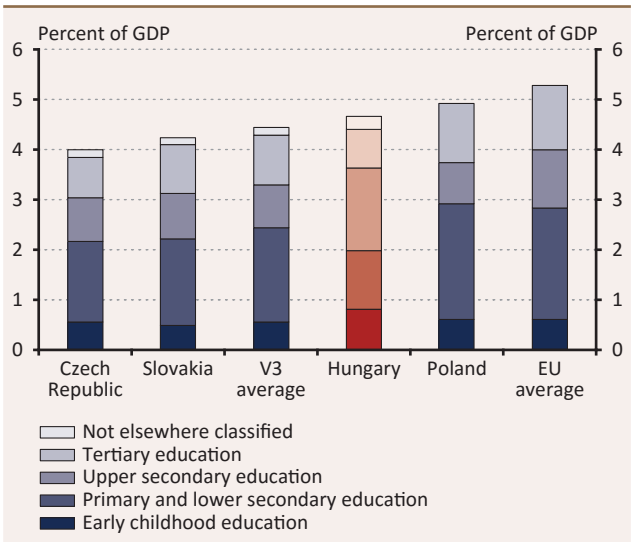
4.72 Ratio of graduates in engineering, natural sciences and ICT



Source: UN.

Within all graduates, the proportion of those graduating in engineering, natural sciences and infocommunication (ICT) in Hungary has been on a rising trend over the past 10 years, which is particularly important in view of the changes in labour market needs due to technological development and increasing digitalisation. The ratio of graduates in these subjects exceeded 20 percent in 2014, and is only 0.5 percentage point and 2.7 percentage points below the averages of the Visegrád and EU countries. The proportion of graduates in the subjects under review has been on a downward trend in the Czech Republic and Slovakia since 2004, while a continuous rise has been observed in Poland since the first year for which data are available (2011). Within the three qualifications under review, engineers account for the highest ratio (14.2 percentage points) in Hungary. In the case of ICT, following an increase between 2006 and 2008, a slight decline is observed in Hungary.

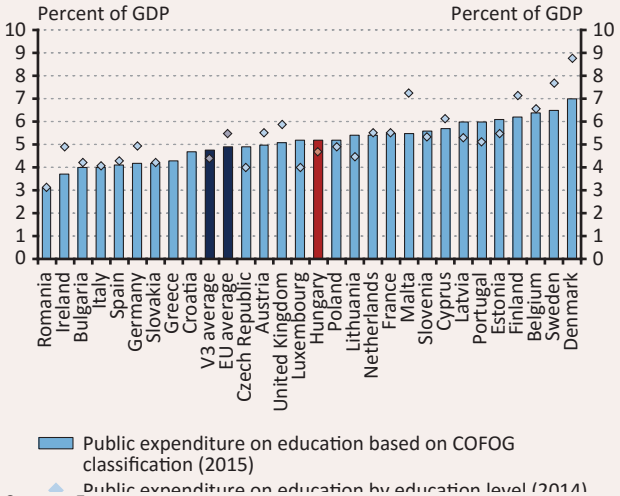
4.73 Public expenditure on education by education level (2014)



Source: Eurostat.

Based on the specialised statistics calculated by Eurostat, the ratio of public education expenditures to GDP (4.7 percent) in Hungary is below the average of the EU countries (5.3 percent), but higher than the average level in the Visegrád countries (4.4 percent). In terms of expenditures on early childhood education (0.8 percent), Hungary is among the leaders in Europe, which is attributable to the extensive kindergarten network maintained by the state. In addition, education expenditures for secondary schools are also remarkable. By contrast, a deficit is identified in expenditures on elementary school and tertiary education. The low degree of elementary school expenditures may have an unfavourable impact on the effectiveness of the further levels of education that rely upon the former. As a result of the measures taken since 2014 (e.g. higher salaries for teachers, restructuring of vocational training, etc.), Hungary's values in this indicator are expected to improve.

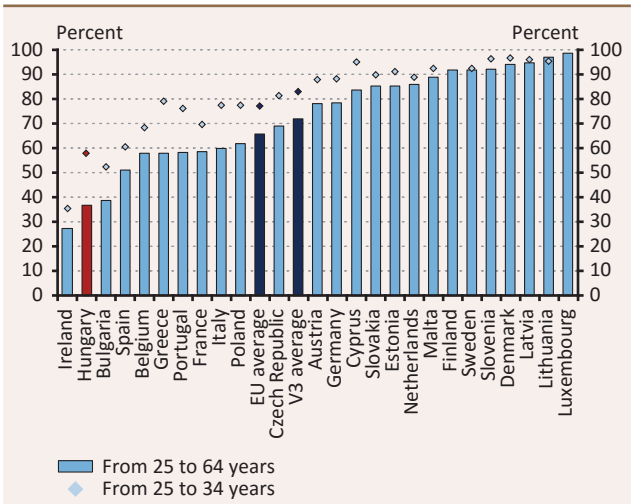
4.74 Public expenditure on education by COFOG classification (2015)



Source: Eurostat.

Examining public expenditures on education on the basis of the COFOG classification used for the functional classification of budget items, we see a higher expenditure level in the case of Hungary compared to the specialised statistics classified according to the levels of education. The difference between the two indicators is caused by the accounting principles (the COFOG-based classification is on an accrual basis, while that according to the levels of training is on a cash basis) and the different classifications of some items (e.g. accounting of scholarships, student loans). In the case of the COFOG-based expenditure level, in 2015 Hungary (5.1 percent) exceeded both the regional average (4.8 percent) and the EU average (5.0 percent). The relatively low level of the latter is mostly due to the low expenditures as a proportion of GDP of three large countries (Italy, Spain and Germany).

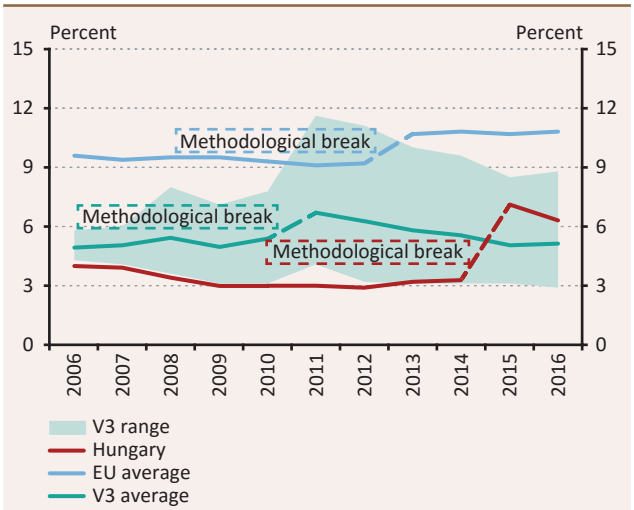
4.75 Proportion of those who speak at least one foreign language (2011)



Source: Eurostat.

In 2011, Hungary's lag behind the averages of the countries of the EU and the region was significant in terms of the people who, by their own admission, speak at least one foreign language. A mere 36.8 percent of the Hungarian population speak at least one foreign language, and the ratio of those who speak at least two foreign languages does not reach 11 percent. In the 25–34 age group the ratio of those who speak a foreign language already exceeds 57 percent, but the proportion of those who speak at least two foreign languages is only 20 percent. Nevertheless, a major positive distortion of the average value for the V3 countries is attributable to Slovakia, where at least 90 percent of the young people speak at least one foreign language, and 25 percent of them are able to communicate in at least three foreign languages. Poland is slightly below the EU average, while the Czech Republic performs somewhat above the European average in this indicator. Other surveys (e.g. by the German-Hungarian Chamber of Industry and Commerce) also confirm that the available number of experts with adequate knowledge of languages is insufficient in Hungary.

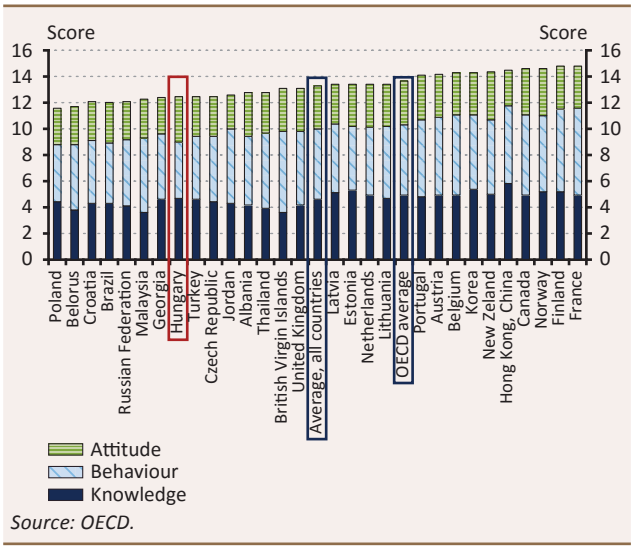
4.76 Participation in lifelong learning



Source: Eurostat.

According to the Eurostat definition, in the 25–64 age group those are considered to be participants in lifelong learning who received some kind of training or education in the 4 weeks preceding the survey. In the case of Hungary, the question for this area in the survey was amended in 2015, resulting in a sharp increase in the value of the indicator. Due to the methodological break observed in the time series, the 2016 result was especially important. Although it shows a slight decline compared to the previous year, it is still higher than the average of the countries in the region. Nevertheless, in spite of the rise in Hungary, the lag behind the European average remains significant. Various recent measures (e.g. free second vocational training programmes aiming at the development of the digital literacy and knowledge of languages of the adult population) served the purpose of improving the adult education system in Hungary.

4.77 Adult financial literacy (2014–2016)



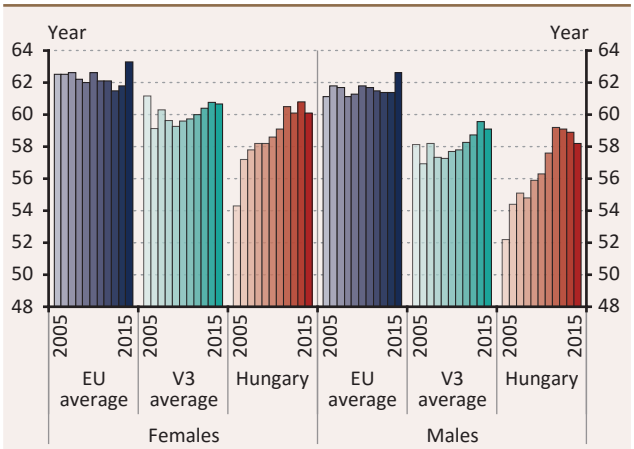
Source: OECD.

The OECD conducted a survey in connection with the financial literacy of the adult population (18–79 age group) in 29 countries between 2014 and 2016. Hungary finished 22nd with 12.5 points in the survey. Hungary is in the middle of the ranking (14th place) in financial knowledge, at the end of the ranking (29th place) in financial behaviour and among the leaders (3rd place) in financial attitude. Financial knowledge supports the development of financial possibilities, and a low level may entail slower growth or unsustainable developments. The weak result in financial behaviour is mainly the consequence of the low proportion of households that have savings other than a bank account. In this respect, macroeconomic data for the past years already reflect a more positive picture; nevertheless, it is expedient to further expand the number of active savers in Hungary. It is also important to note that of the maximum reachable 21 points, even the one that received the highest score (France) reached only 14.8 points, while the average of participating OECD countries was 13.7 points. Consequently, there is ample room for the development of financial literacy in each country.

4.9 HEALTH CARE

Health care has an impact on the economic performance and competitiveness of a country through the quantity and quality of the available workforce. Chronic illnesses reduce both the active time spent working and labour productivity, and premature mortality also causes major damage to the national economy. Health care also has a significant direct impact on the economy, as health care expenditures amount to 6–10 percent of GDP. In our analysis, special attention is paid to expenditures on medical goods, which in themselves may account for 1–2.5 percent of GDP. Of course we cannot neglect to examine the efficiency of expenditures either, which we measure using both interim criteria (e.g. bed utilisation, number of physicians) and effectiveness criteria (e.g. proportion of overweight and obese population, potential years of life lost). As the availability of medical personnel is a critical issue in the Hungarian health care system, in addition to the number of physicians we also examine the distribution of physicians by age.

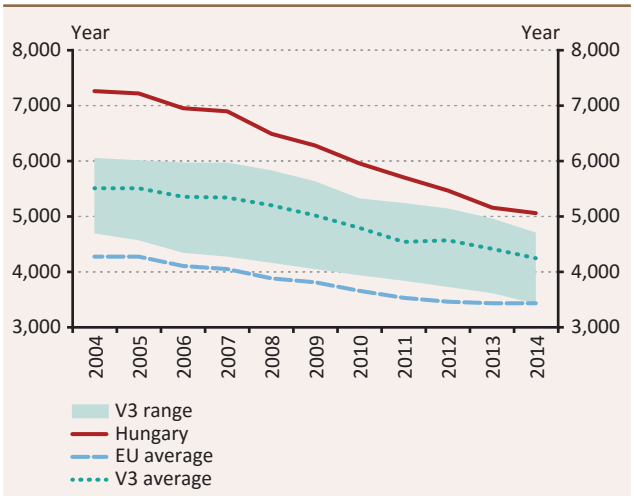
4.78 Healthy life years



Source: Eurostat.

In terms of expected healthy life years, Hungary caught up with the average of the V3 countries in the period under review. The basically improving trend notwithstanding, there is still a difference between sexes: in 2015, Hungarian men had 1.9 years less without health damage than women. Hungary's lag behind the EU average is 3.2 years for women and 4.4 years for men. As a result of a rise in the European average, the differences increased in 2015.

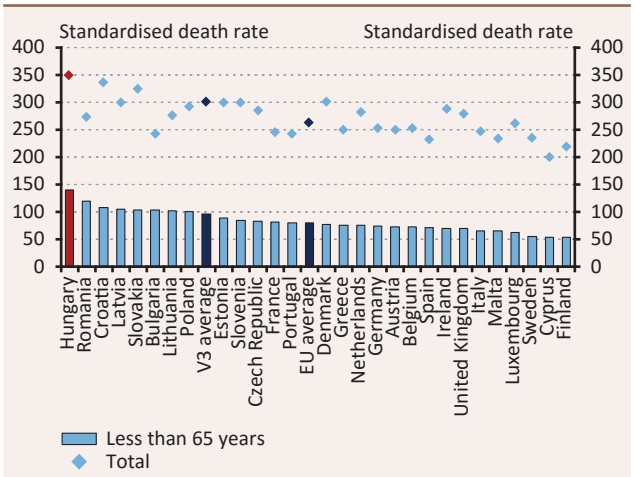
4.79 Potential years of life lost



Source: OECD.

The indicator shows, the number of lost life years per 100,000 inhabitants in a given year due to preventable death before the age of 70. The potential years of life lost declined in the countries under review, but Hungary is still well behind the countries of the region. In 2014, 5,056 life years were lost in Hungary as a result of premature mortality, which is down 30 percent on the 2005 value, but is still worse than the EU average of 3,441 lost life years. Premature mortality reduces the number of working-age population (in 2014, more than one quarter of the deaths occurred before the age of 65 in Hungary), which has a major impact on the economy and competitiveness. The level of the health provision system as well as healthy lifestyle and prevention play a primary role in the reduction of premature mortality.

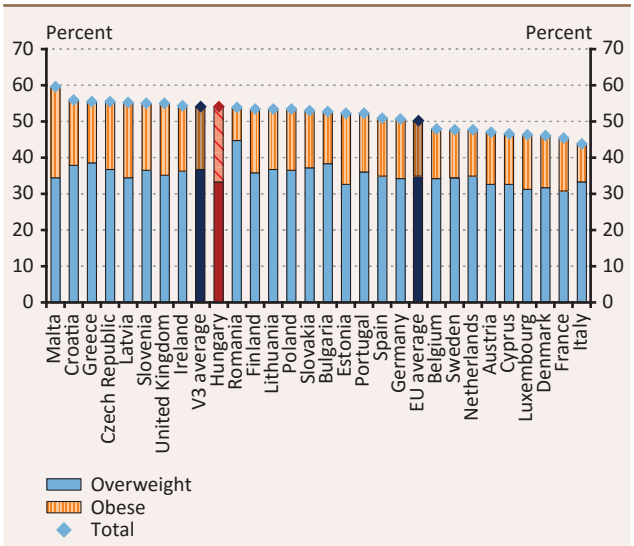
4.80 Standardised death rate – Malignant neoplasm (2014)



Source: Eurostat.

The standardised mortality rate shows what a country's mortality rate would be like if its distribution by age corresponded to the standard European population. The standardised mortality rate of malignant tumours is the highest in Hungary within the European Union both in the case of the total population and those below the age of 65. In 2014 in Hungary the number of deaths per 100,000 inhabitants was 348 within the whole population and 140 in the below-65 age group. Both values are much higher than the averages of the countries of the region and the EU. The expansion of screening examinations could play a prominent role in reducing deaths due to malignant tumours as timely diagnosis would improve the chances of survival in the case of most tumours.

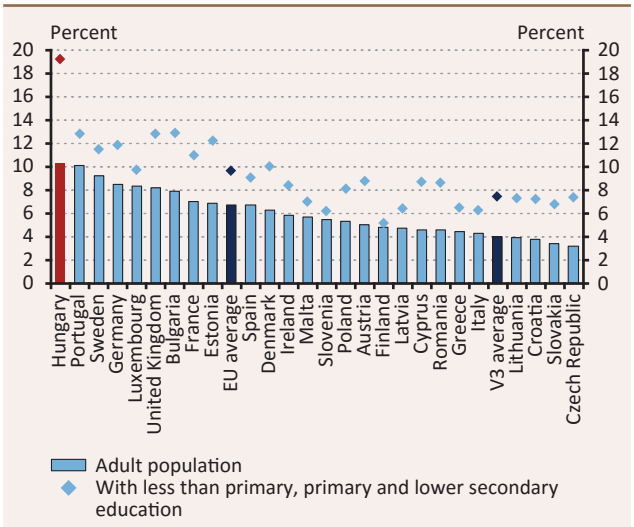
4.81 Ratio of overweight and obese adults (2014)



Source: Eurostat.

Overweight (BMI > 25) and obesity (BMI > 30) are serious problems in European countries as they contribute significantly to the increase of health expenditures through the related illnesses (such as diabetes and hypertension). Their prevention is one of the most efficient ways of improving public health. In the European Union, 50.2 percent of the population older than 18 years struggled with weight problems, of which 15.4 percent were considered obese in 2014. The V3 countries are characterised by similar ratios (53.9 percent overweight, of which 17.1 percent are obese). The ratio of the obese population is higher in Hungary (20.6 percent), while the ratio of the overweight is slightly below the average of the region. The ratio of those struggling with weight problems is increasing with age: 76 percent of the 65–74 age group are already considered at least overweight in Hungary.

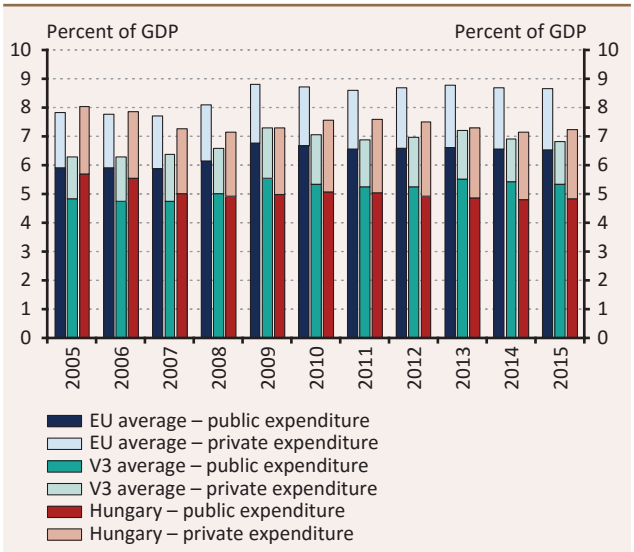
4.82 Proportion of those who experienced symptoms of depression (2014)



Source: Eurostat.

By their own admission, more than 10 percent of the Hungarian adult population experienced depressive symptoms, which is the highest value in the EU. In the Visegrád countries, the ratio of those perceiving depressive symptoms was a mere 4.0 percent on average, which is even lower than the EU average (6.7 percent). In Hungary, the value of this indicator is extremely high among those with low education, where the value for Hungary exceeds Portugal (12.8 percent), whose value is the second worse, by 6.4 percentage points. Hungary also has the highest value of the indicator among rural residents (12.5 percent). In the interests of treating existing mental problems and preventing further problems it would be necessary in the future to develop a complex package of measures dealing with mental health.

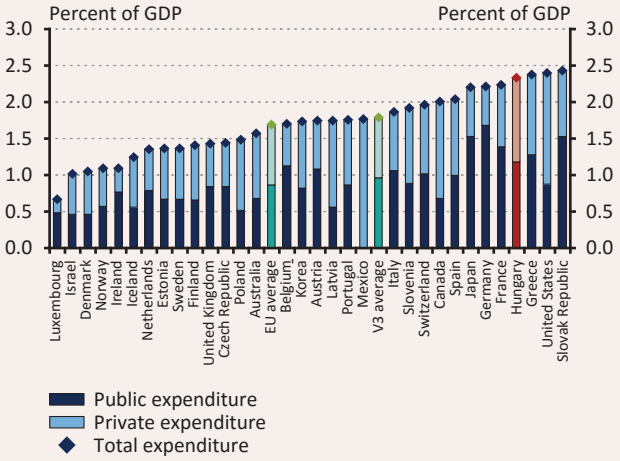
4.83 Expenditure on health care



Source: OECD.

Since the 2009 crisis, the ratio of expenditure on health care to GDP has remained practically unchanged in the EU, with a slight decline in the average of the V3 region. The slight volatility observed in recent years was mainly caused by changes in the level of private expenditures. As a result, total expenditure on health care in Hungary was at a higher level than the regional average in 2015, but within this the share of public expenditures was slightly below the average. In Hungary, two thirds of health care expenditures originate from public sources, while private expenditures (voluntary payment schemes and households' out-of-pocket payments) accounted for one third of the costs. By contrast, the ratio of public expenditures was 78 percent in the V3 countries, and 75 percent in the EU countries.

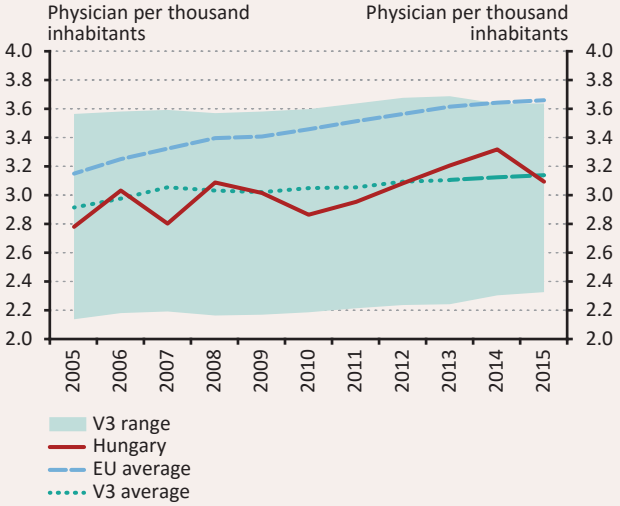
4.84 Expenditure on medical goods (2015)



Source: OECD.

Among the OECD countries, Hungary is the fourth in the ratio of expenditure on medical goods to GDP, after Greece, Slovakia and the United States. In 2015, this value amounted to 2.3 percent, which is 0.5 percentage point lower than in 2011, primarily due to the reduction of drug subsidies from the budget. A declining trend is observed in the V3 countries as well. Changing the traditions of prescribing and taking drugs in Hungary would, over the longer term, contribute significantly to the reduction of health care expenditures and to the efficient functioning of the health care system, for example, by redeploying the expenditures to prevention.

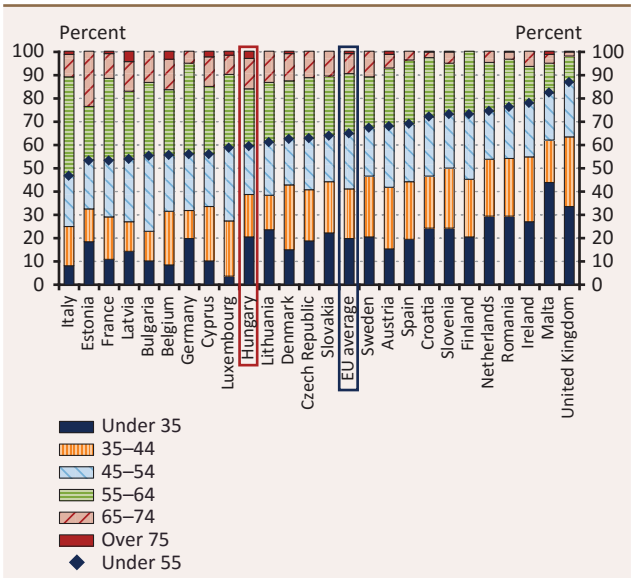
4.85 Physicians per thousand inhabitants



Source: Eurostat.

Contrary to the widely held opinion, the number of working physicians per one thousand inhabitants is not low in Hungary. Although their number is indeed below the EU average, in the past years it was around the average of the V3 countries. Nevertheless, the picture is nuanced by the fact that the value of the indicator is also determined by the decline in the population as well as the later retirement and ageing of health personnel. Moreover, the indicator shows the number of physicians who have a licence to practice in the given country, but not all of them play a role in the provision system (career changer) or actually work in Hungary. The number of physicians obtaining qualifications declined in the past years. Moreover, significant differences are observed across specialisations in terms of the availability of physicians; therefore, the sector faces many challenges in the area of human resources.

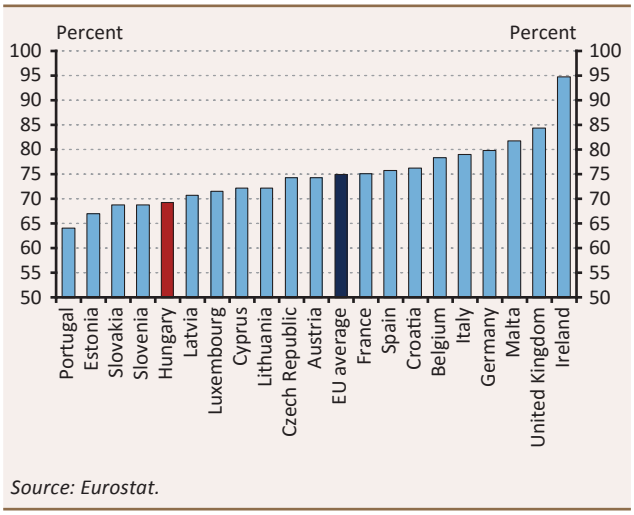
4.86 Age distribution of physicians (2015)



Source: Eurostat.

The ageing of physicians is typical not only in Hungary, as it is a general challenge in health care in Europe. In the EU countries, on average, 35.2 percent of the physicians were older than 55 in 2015. This ratio is 40.5 percent in Hungary, 37.2 percent in the Czech Republic and as high as 53.3 percent in Italy. The ratio of physicians younger than 35 years is 20.2 percent in Hungary, which is slightly above the EU average (19.7 percent). At the same time, it is a problem in Hungary that 15.9 percent of the physicians with a licence to practice are over 65 years of age, which is the fourth highest value among the EU countries. The fact that many of the European countries struggle with the problem of the ageing of health personnel contributes to supporting the migration of health personnel towards West and North European countries, where financial conditions are more favourable.

4.87 Curative care bed occupancy rate (2015)



Source: Eurostat.

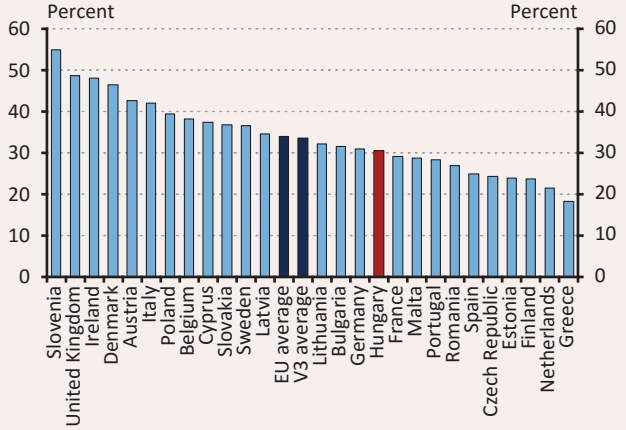
One key issue in service management is the number of beds needed for active care in hospitals. The indicator of the efficient utilisation of capacities is bed utilisation, with a level of 70–85 percent considered desirable in the relevant literature. In 2015, bed utilisation was 69.3 percent in Hungary, which is slightly below the expected minimum level, thus showing reserves in efficiency. The average for the EU countries in this respect was 74.9 percent, while there were only three countries in total that succeeded in reaching the 80 percent utilisation rate. The 94.7 percent result in the case of Ireland indicates an underplanning of hospital capacities.

4.10 BANKING SYSTEM COMPETITIVENESS

The efficiency and quality of financial intermediation have a structural impact on the competitiveness of a country. Examination of this correlation needs to start with the measurement of banking sector competitiveness. An index measuring the competitiveness of the Hungarian banking sector in a European comparison was not previously available. Therefore, in order to obtain the accurate possible picture of the comparative advantages and disadvantages of European banking systems, and in particular of the Hungarian banking sector's competitiveness and efficiency in a wider sense, an MNB banking sector competitiveness index has been developed in the MNB, which synthesises contrasting perspectives as well.[15] Basically, we consider those banking sectors competitive over the long term that operate efficiently in financial allocation and are able to consistently support growth, although banking sector competitiveness can be interpreted according to various approaches, depending on which market player's preference system is focused on.

This report provides a selection of basic indicators which – together with a number of other indicators – constitute the backbone of the MNB banking sector competitiveness index. We highlighted indicators on both the demand and supply sides where Hungary lags behind or has seen significant progress in solving the related dilemmas in the past period. In addition, the expansion and deepening of household lending offers low risk and considerable opportunities. At present, the corporate sector's access to loans is apparently becoming simpler, but the ratio of firms turning to banks with confidence is low in the European ranking. Based on volume, the proportion of payments by bank card is also an area to be developed, together with the reduction of the extremely high interest burdens on mortgage lending.

4.88 Financial card transactions in proportion to consumption per capita (2015)

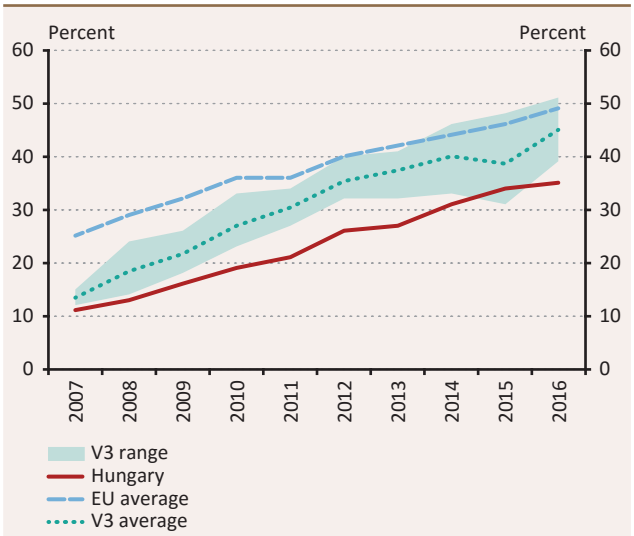


Source: IMD – WCR, Eurostat.

The proportion of bank card expenditures reflects the stage of a country's changeover from traditional modes of payment to the use of bank cards. In terms of this indicator, Hungary is middle-ranked, and thus lags slightly behind the EU and V3 averages. The relative shortfall in the penetration of bank card payment may indicate the population's slower technological adjustment, the weak attractiveness of credit institutions' offers and/or an insufficient penetration of POS terminals. In particular, the spread of POS terminals is considered an important regulatory task, as their general availability not only makes domestic bank card use more popular, but is also an expectation of foreigners arriving in Hungary (primarily from more developed countries). Ensuring convenient, rapid payment for the population and tourists clearly increases the competitiveness of the economy, and may entail a decline in the shadow economy.

[15] Péter Asztalos – Gábor Horváth– Štefan Krakovský – Tamás Tóth (2017): Resolving Conflicts in Measuring Banking System Competitiveness – MNB Banking System Competitiveness Index, Financial and Economic Review, Vol. 16, Issue 3, September 2017

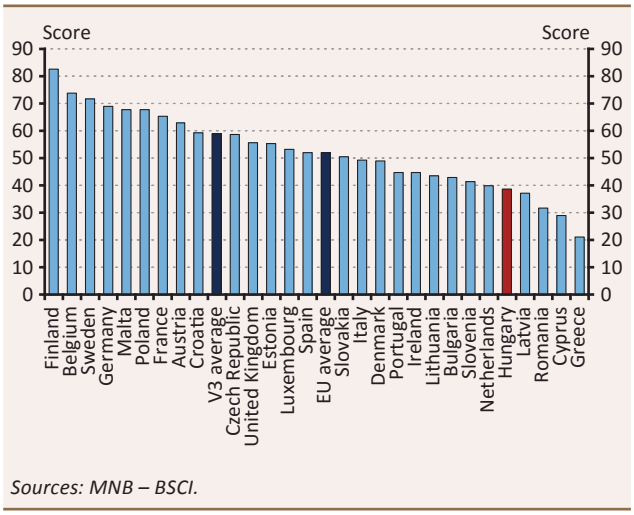
4.89 Individuals using the internet for internet banking



Source: Eurostat.

According to Eurostat statistics, a positive change was observed in Hungary in the area of internet banking between 2007 and 2016. It is important to mention that – although the EU average for this indicator rose to 49 percent by 2016 – this value is significantly reduced by Bulgaria, Romania and Greece every year. Apart from these three Member States, last year only the performance of Italy, Portugal and Cyprus was worse than that of Hungary. Looking back, however, in 2007 the EU was at an average level of 25 percent, so between 2007 and 2016 the Hungarian banking sector developed at a rate corresponding to the EU average – made worse by the lagging countries –, i.e. by 24 percentage points, although the initial potential (11 percent) provided more room than that. With its advance of 39 percentage points, the Czech Republic is an outstandingly positive example both at the regional and EU level.

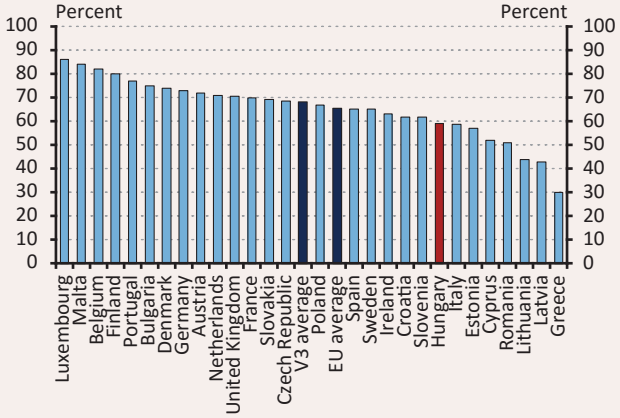
4.90 Access to bank loans (2017)



Sources: MNB – BSCI.

The access to bank loan indicator is one of the sub-pillars of the MNB banking sector competitiveness index (BSCI). This composite indicator, which condenses 5 different basic indicators, measures the possibilities and limits of access to loans both in the household and corporate segments. In the access to bank loan indicator, Hungary had 38.8 points out of 100, thus finishing 24th among the EU countries. The average of the EU was more than 52 points, while that of the V3 member countries was around 59 points. The relatively good performance of the region in this area is mainly attributable to the generally outstanding performance (67.6 points) of Poland. The primary reason for Hungary's competitive disadvantage is that economic agents consider the loan products to be expensive and the application process to be complicated.

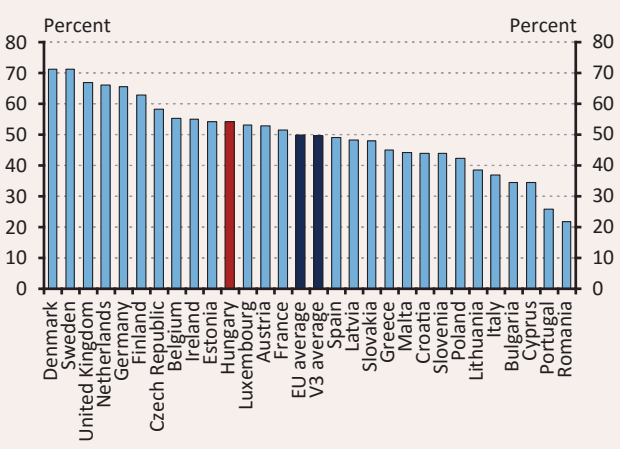
4.91 Percentage of companies who feel confident talking about financing with banks (2016)



Source: ECB - SAFE.

According to research on the access of European businesses to sources of financing, in Hungary a mere 59 percent of respondents turn with confidence to the domestic banking sector in financing issues. This value represents a significant lag behind the average of 65 percent in EU Member States and 68 percent in the V3. Accordingly, in this respect Hungary can be considered less competitive both within the EU and the Visegrád group of countries. In a historical comparison, the current result is more favourable than the average observed recently, although it represents a decline compared to the previous 63 percent. The indicator for access to loans, which shows supply constraints, is coupled with distrust: it may take longer time for the economy of a country to recover from this negative feedback.

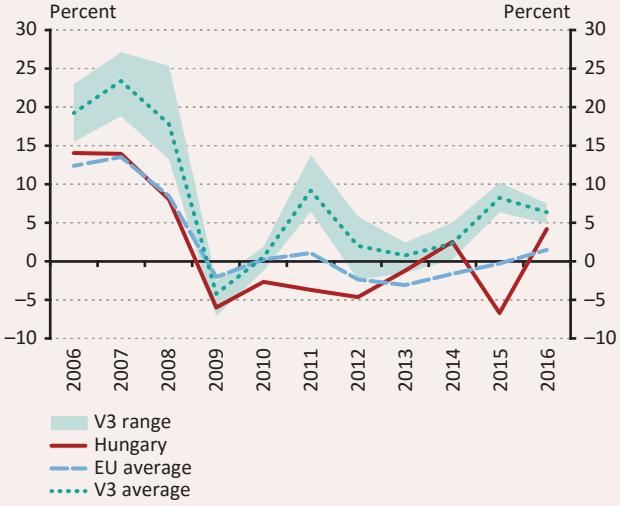
4.92 Percentage of adults who are financially competent (2014)



Source: S&P.

Globally, only about one third of the adult population understand financial rudiments, but in Europe the average figure is nearly 50 percent, and Hungary reached a value that is some points higher. Women in particular as well as the poorer and less educated strata are exposed to financial risks; therefore, their loan applications deserve particular attention. Nevertheless, in household lending, risky borrowing by even a smaller portion of the population may lead to social and systemic problems, as occurred with foreign currency lending. It is worth observing that the poorly ranked banking sectors that are the least stable and the financially less informed countries are the same. This is one of the reasons why development in this area is a key priority of the MNB.

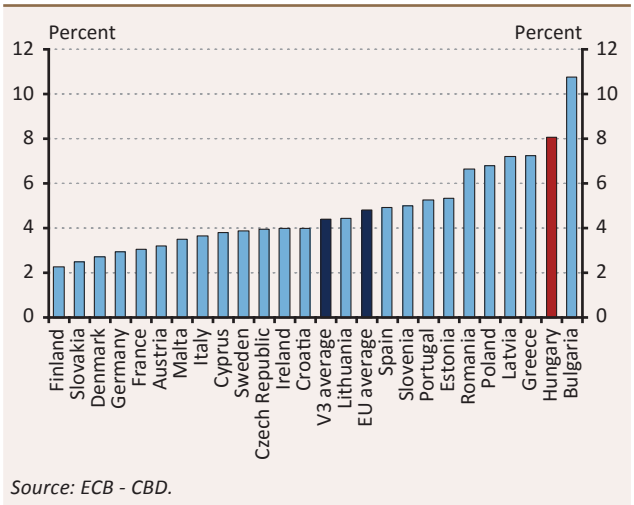
4.93 Annual growth rate of bank loans to non-financial corporations



Source: ECB, MNB.

This indicator shows the annual percentage increase in credit institutions' outstanding loans to financial corporations as a result of loan transactions. The outbreak of the crisis entailed a decline in companies' bank financing both in the countries of the region and in the euro area. This contraction, however, materialised in a protracted credit crunch in Hungary and the currency zone, while outstanding loans typically increased in the other Visegrád countries in the period under review. The Funding for Growth Scheme, which was phased out at the of end of March 2017, had a significant impact on domestic developments, and with the turnaround in lending, the expansion of corporate lending may continue on a market basis, both in the corporate sector and for SMEs. Consequently, the growth rate in Hungary reached that of the regional countries and exceeds the euro area average, which is expanding only moderately due to the Mediterranean countries.

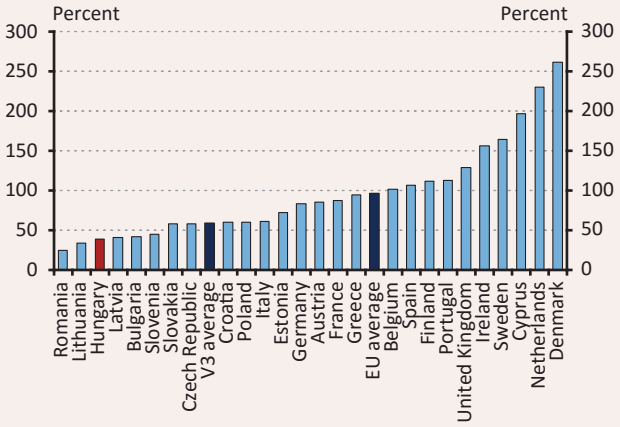
4.94 Average interest rate spread on retail loans (2016)



Source: ECB - CBD.

In terms of the average interest rate spread on retail loans, Hungary is ahead of only Bulgaria in the international ranking. With high spreads, it is more difficult for households to purchase real estate and increase consumption, which reduces the country's competitiveness from the side of households' credit demand. The gradual decline in the risk costs of credit institutions also justifies the adjustment of spreads. In addition, a positive change may be brought by the expected price competition caused by the consumer-friendly loan product, as the easier comparability of products provides a platform for picking the offer with the lowest interest rate spread.

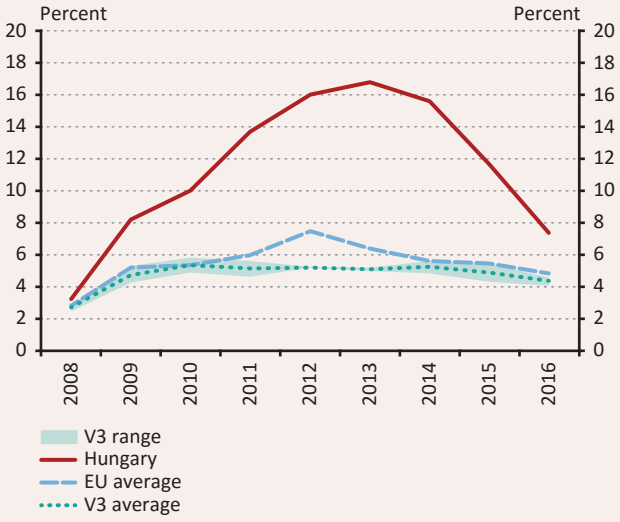
4.95 Household loans to disposable income (2015)



Source: ECB - CBD, MNB.

In a European comparison, the indebtedness of Hungarian households compared to their disposable income is low. Only Lithuania and Romania have greater possibilities of expansion in the EU. However, serious risks are seen in the case of Danish and Dutch households, whose outstanding debt is more than twice their disposable income. Nevertheless, the concentration, average maturity and interest burden of outstanding loans is not seen from this indicator; therefore, further analyses within countries are needed for a clearer picture of household vulnerability.

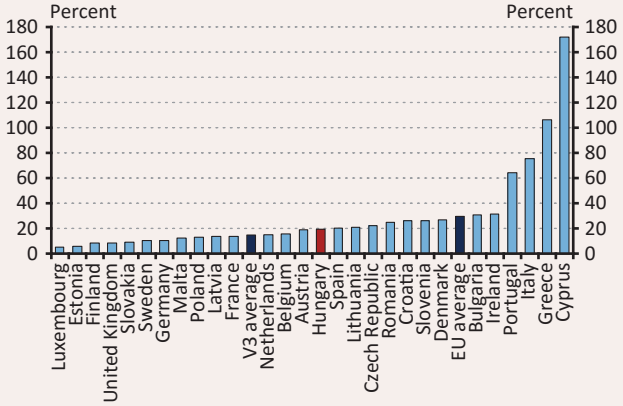
4.96 Share of non-performing loans of the credit institution sector



Note: Calculated by clients until 2014 and by contracts from 2015.
Source: World Bank.

The share of non-performing loans in Hungary continues to exceed the averages of the EU or V3 countries. The largest difference was measured in 2013, when the Hungarian rate reached its historical high. Starting from a level of nearly 17 percent, the ratio of non-performing loans started to fall sharply, and this favourable trend remains in place. While in 2013 the non-performing ratio measurable in Hungary exceeded the EU average by some 10 percentage points and the average of the V3 countries by 11 percentage points, by 2016 these values declined to 2.5 percentage points and to around 3 percentage points, respectively. The ratio of non-performing loans in the banking sector has significant effects on the economy and on competitiveness as well. A high ratio significantly reduces the sector's ability and willingness to lend, through which channels it affects economic growth as well. Further decline in the ratio of non-performing loans in Hungary contributes to the evolution of a competitive banking sector that supports the sustainable growth of the national economy.

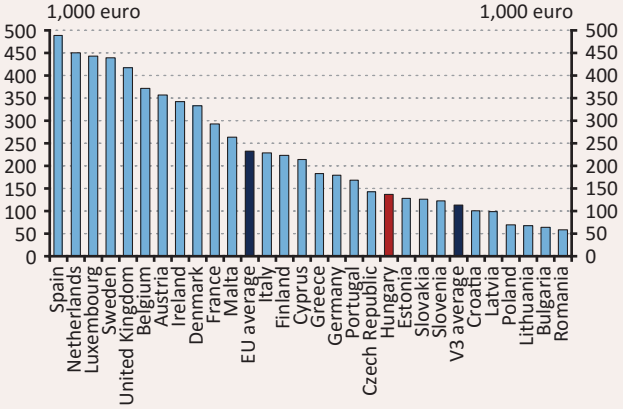
4.97 Texas ratio (2015)



Source: IMF - FSI, ECB - CBD, MNB.

Hungary's banking sector has become more stable as a result of steps taken by parent banks and the central bank in the years following the crisis. The Texas ratio shows the magnitude of loans becoming non-performing in a banking sector and also the level of prudent operation by the given banking sector to reach that state. The low value may simultaneously mean that lending took place with low risk appetite in the past, but also that although higher-risk lending occurred, the profit originating from higher spreads resulted in adequate loan loss provisioning and capital reserves. Based on its average value, Hungary can be considered stable in the European ranking, as a result of capital injections following the crisis and the steps facilitating the resolution of non-performing loan portfolios. The instability of the banking sectors at the last six places is caused by the uncleaned non-performing loans and their costs that comminute capital. (Note: The Texas ratio describes the coverage of non-performing loans by capital and loan loss provisioning. The indicator is used to measure the stability and efficiency of banking sectors.)

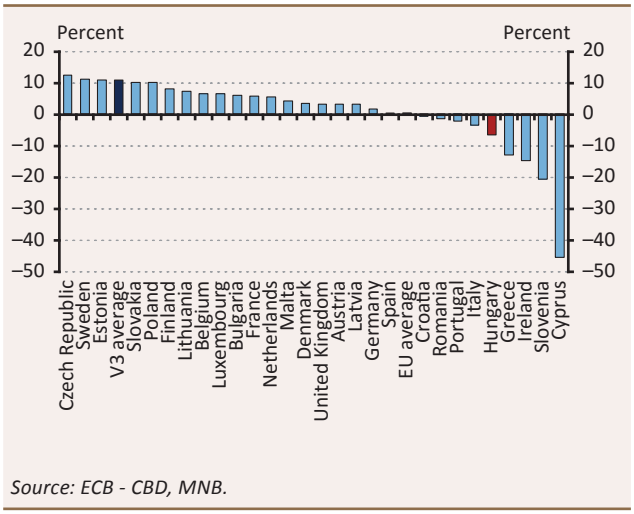
4.98 Interest and fee income earned by an employee (2015)



Source: ECB - CBD, MNB.

The examination of the productivity of bank employees reveals that Hungarian banks are more effective than their counterparts in the Central East European and Baltic countries, but are far behind their western counterparts. Although taking into account the labour costs of employees would presumably provide a more refined picture, the productivity of Hungarian bank employees is around one third of that of West Europeans in terms of the interest and fee income produced. The evaluation of the indicator may also be distorted to some extent by the magnitude of revenues stemming from cross-border financing, especially in the case of the leading banking sectors of Britain, Luxembourg and Spain.

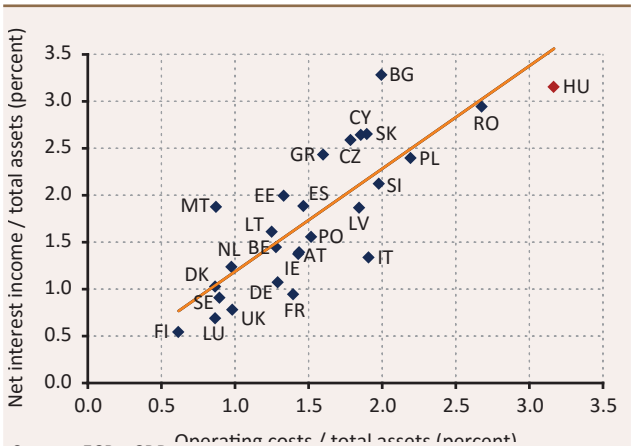
4.99 Return on equity (2010–2015 average)



Source: ECB - CBD, MNB.

The average return on equity was negative in Hungary between 2010 and 2015, which is explained by the irresponsible lending before the crisis and the compensating regulatory steps. Prior to the crisis, Hungary's banking sector was characterised by overheated lending and high risk appetite, which, however, was not accompanied by adequate provisioning. Mounting loan losses following the crisis as well as damages stemming from government and central bank steps resulted in negative effectiveness. Nevertheless, the outstanding, nearly 20 percent profit in 2016 marks the beginning of a new period and a double-digit RoE structurally as well, with which Hungary may join the leaders in the region.

4.100 Operating costs and net interest income as a proportion of total assets (2016)



Source: ECB - CBD.

In the EU ranking, Hungary's banking sector has the highest cost level as a proportion of the balance sheet total, coupled with significant profits from interest. Operating cost as a proportion of assets is considered a comprehensive indicator that integrates labour costs as well, and adequately captures the efficiency of economic sectors of individual countries, making them easily comparable. In this respect, with its value of 3.2 percent, the banking sector of Hungary is at the bottom of the ranking on the basis of consolidated international data, lagging well behind both the EU and Visegrád region averages. It is worth taking into account that all financial institutions are compelled to cover their respective operating costs with proportionate revenues, in this case the outstanding profit from interest of the sector. It is expedient to strive for the implementation of the trend of a parallel decline in operating costs as a proportion of assets and in interest incomes, which at the same time means increasing the banking sector's allocation efficiency and competitiveness as well as the improvement of customers' loan repayment potential through the reduction of spreads. At present, one of the most obvious forms of efficiency increasing is the deepening of bank digitalisation, primarily through the automation of services and its subsequent promotion, with serious progress already seen in the neighbouring countries.

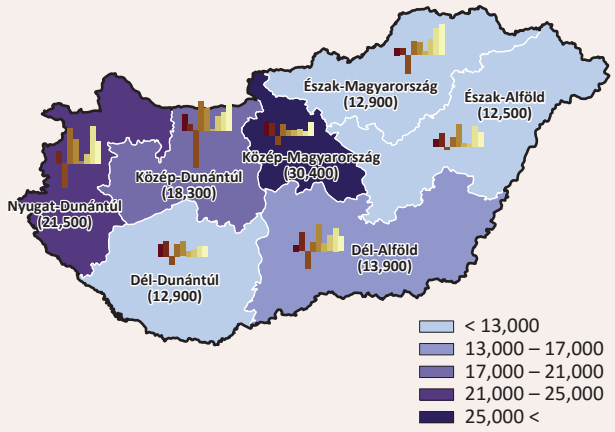
4.11 REGIONAL COMPETITIVENESS

In new wave economic paradigms, the measuring unit of competitiveness is shifting from national economies towards lower-level statistical regions, and thus territorial analyses are of key importance in competitiveness analyses. Central and eastern Europe and within that the V4 region constitute a special area of analysis, as in view of the size and economic structure of these countries the regions of the capitals dominate and are characterised by outliers. This is partly the reason for the fact that the stage of development of individual regions is more dependent on the location of the region within the country than on the average development of the given national economy.

In our analysis, we strive to cover various areas of competitiveness during regional measurements and to apply regional indicators where the internal territorial disparities are evident and identifiable. As a result, we measured general economic development as well as the regional economic structure, and also took into consideration the quantitative and qualitative conditions of the labour market. It was possible to demonstrate the regional heterogeneity within the country by applying indicators with high relative dispersion. An exception is the employment rate, in respect of which territorial values have converged in recent years; regional disparities were partly eliminated in this field.

Note: the regional values of the heat maps depict the latest data of the analysed time series in each case.

4.101 GDP per capita at purchasing power parity (EUR, 2007–2015)

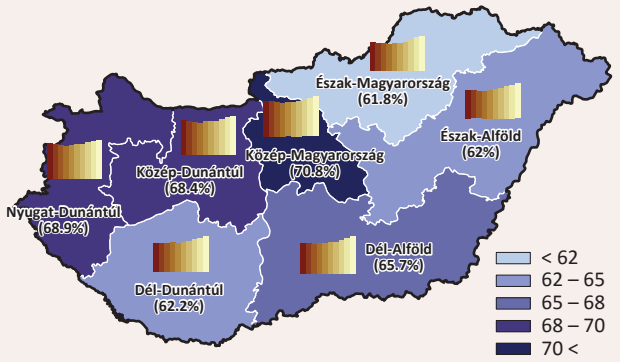


Note: The column diagram depicts the annual change in per capita regional GDP.

Source: Eurostat.

In 2015, in the area of economic development – which is typically measured by GDP per capita– the average lag of the V4 states and Hungary behind the EU average amounted to 20 percent and 30 percent, respectively, and all the three Visegrád countries are above Hungary in the ranking. Compared to the EU, the disparities across regions in terms of the stage of development are high in Hungary, although the prominence of the regions around the capital is typical of the East Central European states, which stems from the economic and social structure and the size of the countries. In Hungary, the real GDP growth of the Western Transdanubia region is outstanding: in the past 10 years the gross domestic product increased one and a half times in this region (its annual average growth rate was above 7 percent between 2013 and 2015). With an increase in competitiveness, efficiency and production capacities, Hungary may also develop further, catching up with the average level of development of the region and then the EU.

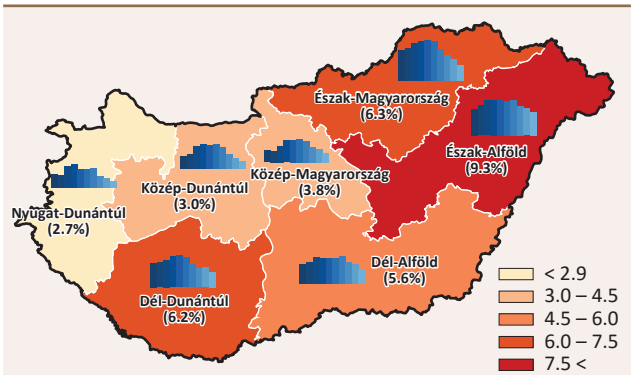
4.102 Employment rate in the 15–64 age group (2007–2016)



Source: Eurostat.

At the regional level, the employment rate (proportion of the employed within the working-age population) is an indicator with a relatively low standard deviation; its value was between 61.8 percent and 70.8 percent in Hungary in 2016. From 2010 to 2016 Hungary increased its employment rate by 11.6 percentage points. The less developed eastern regions contributed to this growth to a greater degree than the more developed western regions. In the period under review, EU member countries and the V3 states increased their respective employment indicators by 2.6 and 6.2 percentage points on average, while all Hungarian regions achieved higher growth rates. Boosting the employment rate in underdeveloped Hungarian regions was facilitated by the expansion of the Public Work Scheme in 2010, with an average of 202,000 employees working within this framework in 2016.

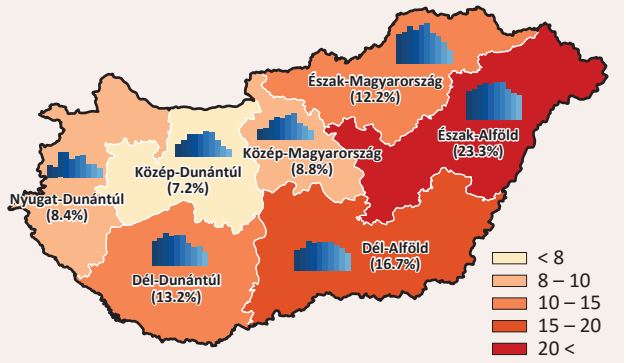
4.103 Unemployment rate in the 15–74 age group (2007–2016)



Source: Eurostat.

The unemployment rate shows the proportion of the unemployed within the active population aged between 15 and 74 years. In 2016, this indicator in Hungary stood at 5.1 percent (4.5 percent at the end of the year), which is 3.5 percentage points lower than the EU average and also lower than the V3 average, except for the Czech rate, which is 1.1 percentage points lower. The regional distribution of unemployment is heterogeneous in Hungary; the Western Transdanubia region, which has the lowest value, stands at 2.7 percent, while unemployment amounts to 9.3 percent in the Northern Great Plain region. It can be observed in the time series that between 2010 and 2016 the unemployment rate of the Central Transdanubia region, which had suffered from factory closures and reductions of capacities during the crisis, declined from 10 percent to 3 percent.

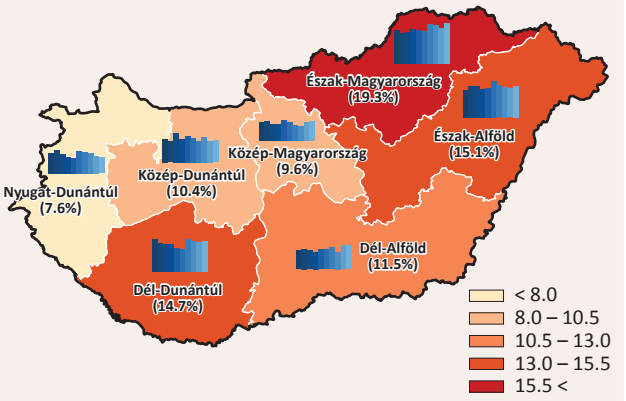
4.104 Youth unemployment rate (2007–2016)



Source: Eurostat.

The youth unemployment rate measures the ratio of the unemployed in the 15–24 age group compared to the active population. In 2016, the ratio of young people who quit school and do not appear in the labour market was lower in the V4 countries than the EU average, which is attributable to the Mediterranean countries, which boost the average value, and to the development in the Visegrád states in the past years. Between 2010 and 2016, youth unemployment in Hungary fell by an average of 13.5 percentage points to 12.9 percent; the dynamics of this development was the highest among the EU Members. Within the country, Northern Hungary achieved the best development, where youth unemployment dropped from 31.7 percent to 12.2 percent in 6 years.

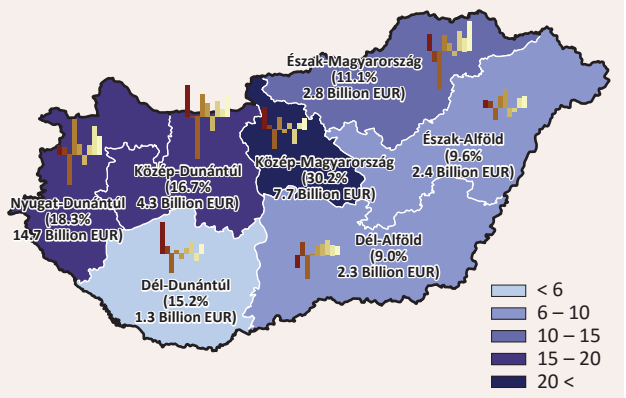
4.105 Early leavers from education and training (2007–2016)



Source: Eurostat.

The ratio of early leavers from education and training measures the proportion of young people who quit school and do not have any qualification in the 18–24 age group. The indicator for the V3 member states is favourable (6.4 percent). In 2016, the EU average was 9.5 percent, compared to which the Hungarian average is 2.9 percentage points less favourable. In the post- crisis years, the ratio of early leavers improved significantly in the western regions, but the eastern regions worsened the national average. The trend in the less developed regions is similar to the more underdeveloped regions of the Mediterranean countries, where in recent years it has not been possible to reduce the ratio of early school leavers, (which surged after the crisis) to the pre-crisis level.

4.106 Regional distribution of industrial production (EUR billion, 2007–2015)



Megjegyzés: Az oszlopdiagram a regionális ipari GVA éves változását szemlélteti.

Source: Eurostat.

The indicator for the regional distribution of industrial production – excluding construction – depicts the regional distribution of the national economy industrial value added. The data show that in the past 10 years the Central Hungary region accounted for roughly one third of Hungarian industrial production, but its contribution fell after the crisis. In 2016, the three north-western regions (Western Transdanubia, Central Transdanubia and Central Hungary) generated two thirds of total industrial GVA, i.e. the industrial concentration of the Hungarian economy is clearly found along the route of the M1 motorway. In addition, the developments seen in recent years in the Northern Hungary and Southern Great Plain regions, which are mostly due to the high-volume developments of foreign investors (Bosch, Mercedes), also deserve attention.

5 Follow-up of the MNB's competitiveness proposals

Another objective of this publication is to monitor the implementation of the competitiveness proposals formulated in the work 'Competitiveness and Growth' published by the Magyar Nemzeti Bank in 2016. Widespread implementation of the proposals can only take place over a longer period of time, partly because of their large number (some 50 measures) and partly due to their need for fiscal resources. An overview of the measures announced in the past period reveals that eight of the 50 proposals given in the book have materialised completely or to a great extent, and progressive steps were taken in the case of another 26, although they cannot yet be considered as realised.

The main measures implemented by the government were the following: reduction of tax avoidance, simplification and reduction of corporate tax burdens, the corporate tax (TAO), the small taxpayers' itemised lump sum tax (KATA) and the small business tax (KIVA), reduction of taxes on labour, formulation of an industrial policy strategy, acceleration of the issuance of construction permits, encouraging of childbearing, planned increase in the capacity of crèches, increasing expenditures on education, and revision of the system of educational institutions. In addition, the MNB also took steps in the fields within its competency. Accordingly, of the proposals formulated in the book as objectives, the most progress took place in the following areas: expansion in corporate lending, decline in the ratio of non-performing loans, reduction of the procyclicality of the banking system, improvement in banks' capital position and liquidity as well as the stimulation of the stock exchange.

Table 5.1
Review of the implementation of the MNB's competitiveness proposals

Labour market competitiveness	
	Reduction of taxes on labour
	Encouraging the least employed groups to work
	Raising the upper limit of the Job Protection Action Plan up to the amount of the minimum wage
	Development of the public work scheme: encouraging training and market-based employment
	Strengthening the elements of the pension system that motivate staying in the labour market
	Promotion of non-typical forms of employment
Corporate competitiveness	
	Reduction of tax avoidance
	Simplification of corporate tax payment
	Tax changes that encourage investment
	Regular evaluation of the existing tax allowances
	Increasing R&D funding
	Increasing the number of researchers and developers
	Increasing the innovation manager capacity of the SME sector
	Competing guarantee organisation in order to facilitate lending to SMEs
	Formulating a more active domestic industrial policy, adoption of new technologies
	Regional and local economic development
	Reduction of regulated energy prices

Table 5.1
Review of the implementation of the MNB's competitiveness proposals (cont.)

	Public sector competitiveness
	Revision of the headcount and wage costs of public institutions
	Revision of the structure of public administration
	Regular satisfaction survey concerning public services
	Promotion of law-abiding behaviour
	Acceleration of public administration through e-governance
	Acceleration of the issuance of construction permits
	Development of public utility services
	Increasing the effectiveness of bankruptcy proceedings
	Competitiveness of human resources
	Measures concerning demographic developments
	Providing additional funds by allowing private funds in the health sector
	Strengthening preventive healthcare
	Connecting childbearing and pensions
	Strengthening the role of self-reliance
	Increasing the amount spent on education from budgetary and private sources
	Improving the quality of elementary and secondary education
	Improving the knowledge of languages in secondary education
	Further increase in the number of graduates
	Increasing the ratio of graduates in technical subjects and natural sciences
	Increasing R&D expenditures in the tertiary education system
	Mental health package
	More efficient absorption of EU funds
	Competitiveness and growth aspects of development policy and their impacts
	Competitiveness and growth plans of development policy in Hungary
	Further preparatory tasks of the development cycle serving competitiveness and growth
	Increasing the absorption of directly accessible EU funds in Hungary
	Special topics
	Expansion of stock exchange activity and capitalisation
	Stimulating the increase in households' savings
	Banking system competitiveness
	Stimulation of corporate lending that supports growth
	Sound bank financing of the household sector
	Strong banking system capital and liquidity position over the long term
	Banking system that is profitable over the long term
	Decline in non-performing household and corporate loans
	Efficient and innovative banking system
	Competing banking system

Legend: *partly materialised* *materialised*

5.1 LABOUR MARKET COMPETITIVENESS

5.1.1 Reduction of taxes on labour – increasing activity and employment by cutting taxes on labour, for which the reduction of the personal income tax may be suitable.

Implemented measure: The 16 percent personal income tax rate, which had become a clearly flat rate tax – in several steps – after 2011, declined further to 15 percent from January 2016. In addition, taxes on labour are also reduced by the fact that the rate of the social contribution tax paid by employers declines by 5 percentage points in 2017 and at least by another 2 or 2.5 percentage points in 2018 depending on the rate of the average nominal wage increase in the private sector (by 2.5 percentage points if wage growth reaches 11 percent in the first 9 months of 2017). According to the sectoral wage agreement concluded in November 2016, employers' contribution burden may decline by a further annual 2 percentage points from 2019 until 2022 if the average wage increase in the private sector reaches 6 percent in the previous year. The decline in employers' contributions reduces corporate labour cost, thus facilitating an increase in employment and also contributing to fighting the shadow economy. Nevertheless, the rate of taxes on labour is still higher than in the case of Hungary's direct competitors; therefore, further reduction may be advantageous depending on the budgetary leeway.

5.1.2 Encouraging the least employed groups to work – extension of the Job Protection Action Plan to employees' contributions, which would increase labour supply in the case of the least employed groups.

5.1.3 Raising the upper limit of the Job Protection Action Plan up to the amount of the minimum wage – raising the upper limit of the targeted relief from employers' contributions available through the Job Protection Action Plan at least up to the amount of the minimum wage.

5.1.4 Development of the public work scheme: encouraging training and market-based employment – strengthening training and financial support for private sector employment in a way that the state pays the labour cost for a specified period of time in order to facilitate market-based employment.

Implemented measure: The implementation of the programme 'From public work to the private labour market' started in March 2017. Within its framework the state allows the disbursement of the amount of the employment substitution support (HUF 22,800) even after the public worker finds a job in the private sector, until the expiry of the period of the public work. The objective of this measure is to increase the ratio of those who flow from public work to the private sector, which would reduce labour shortage, and would improve the performance of the national economy as well.

5.1.5 Strengthening the elements of the pension system that motivate staying in the labour market – acknowledgement of the employment period exceeding 40 years to a greater degree upon determining the initial old-age pension.

5.1.6 Promotion of non-typical forms of employment – expansion of employment through promoting non-typical forms of employment (teleworking, part-time work).

Implemented measure: Introduction of funding amounting to a total HUF 5 billion from 2016 for small and medium-sized enterprises that employ part-time employees. Part-time employment is also supported by the measure that the amount of the relief from contributions available within the framework of the Job Protection Action Plan is unchanged, irrespective of the form of employment (full-time or part-time). In addition, the institution of maternity leave payment 'GYED Extra' also supports the employment (including part-time employment) of mothers returning from child-care to the labour market, simultaneously stimulating childbearing and increasing labour supply.

5.2 CORPORATE COMPETITIVENESS

5.2.1 Reduction of tax avoidance – in addition to increasing fiscal revenues, reducing the shadow economy may also help mitigate competition-distorting effects.

Implemented measure: The system of online cash registers had already been introduced before, but the scope of companies obliged to use them was broadened, and now affects 200,000–230,000 enterprises this year. Online connection of invoicing programmes to the National Tax and Customs Administration started from July 2017. In addition, the operation of the Electronic Trade and Transport Control System was also developed.

5.2.2 Simplification of corporate tax payment– reduction of the administrative burden on businesses and improvement of the mid-year plannability of the budget through the cancellation of the tax advance supplement.

Implemented measure: A major change is the standardisation of the corporate tax rates (10 and 19 percent) and their reduction to 9 percent as of 2017.

5.2.3 Tax changes that encourage investment – creation of a tax system that supports the implementation of productive investment.

Implemented measure: The conditions of benefiting from the preferential and simplified tax forms (KATA and KIVA) also eased further from January 2017, so more taxpayers will be able to use them. The tax rate of the KIVA declined from 16 to 14 percent in 2017 and will decrease further to 13 percent from 2018. These changes result in a decline in companies' cost burdens and an increase in their profitability.

Taxpayers qualifying as small and medium-sized enterprises on the last day of the tax year when a credit agreement (including financial leasing) is concluded may benefit from a tax allowance based on the interest on the loan used for the procurement and manufacturing of tangible assets and borrowed from a financial institution and used only for this purpose (including other loans taken in a verified manner for the repayment of the loan used). Starting from 2017, the size of the tax allowance is the interest rate on the loan. It means that the limitation concerning 40/60 percent of the interest and the HUF 6 million ceased to apply.

5.2.4 Regular evaluation of the existing tax allowances – expansion of the tax bases by the regular assessment and revision of the major allowances in the tax system, in the course of which it is important to also pay attention to the predictability of the business environment.

5.2.5 Increasing R&D funding – increasing the R&D expenditures of the corporate sector by the creation of an institutional, business and market environment that facilitates research and development to a greater degree.

Implemented measure: In order to increase research and development funding, from January 2017 the basis of the R&D tax allowance was extended to the social contribution tax, which stimulates corporate development projects. According to the amendment, if a company cannot use the corporate tax base allowance because its tax base is not high enough (e.g. the company is loss-making), it can deduct the allowance from the social contribution tax up to 50 percent of the tax base, at a tax rate of 9 percent.

5.2.6. Increasing the number of researchers and developers – increasing the ratio of employees engaged in R&D activities.

5.2.7. Increasing the innovation manager capacity of the SME sector – raising the ratio of successful innovative firms in the SME sector by increasing capacities for innovation management.

Implemented measure: In February 2017, the government launched the Supplier Development Programme, aiming at a higher participation of Hungarian small and medium-sized enterprises in the development and manufacturing of products with higher value added, thus joining the supplier network of large international companies. Within the framework of the programme, reaching the status of qualified supplier is also regulated precisely; its elements contain technology development that also increases innovation management capacity as well as increasing own R&D activity. A similar purpose is served by the free training seminars launched by the government for the SME sector at end-2016 to develop management, IT and foreign language skills.

5.2.8. Competing guarantee organisation in order to facilitate lending to SMEs – reduction of the SME sector's credit risks and thus supporting the development ideas of the sector through the expansion of institutional guarantee.

5.2.9. Formulating a more active domestic industrial policy, adoption of new technologies – creation of an institutional and regulatory system that supports the innovation process.

Implemented measure: The objective of the Irinyi Plan, which was presented in 2016, is to support the domestic industry and strengthen the SME sector. The Irinyi Plan focuses on the segments of the vehicle industry, health economy, food industry, 'green economy' development, the ICT sector and the defence industry as key areas to be developed so that the economy of Hungary can achieve a better regional and international position. The Industry 4.0 concept was also formulated as part of the Irinyi Plan with the objective to facilitate the spread of production activities with higher value added and high innovation requirement, the digitalisation of SMEs and more intensive integration into the information and communication economy. The National Technological Platform, which was set up in May 2016 and covers the Hungarian Industry 4.0 concept, and the 2017 expansion of the Digital Welfare Program (as well as the strategies adopted within its framework) also intend to facilitate the adoption of new technologies.

5.2.10. **Regional and local economic development** – strengthening the competitiveness of various regions of the country, accelerating the convergence of less developed regions.

Implemented measure: The Modern Cities Programme, which was launched in 2015, contributes to the economic, infrastructural and social convergence of the country. The government concluded agreements with 23 cities (the county seats and another 4 cities) in a value of HUF 3,400 billion. The agreements mainly cover the extension and construction of industrial parks, motorway development and the construction of community institutions (e.g. swimming pools, spas, gymnasiums, playgrounds and cultural centres).

5.2.11. **Reduction of regulated energy prices** – improvement of enterprises' competitiveness, reduction of their costs and increasing the purchasing power of households' incomes.

5.3 PUBLIC SECTOR COMPETITIVENESS

5.3.1 Revision of the headcount and wage costs of public institutions – more efficient administration, the implementation of which frees up resources for the private sector.

Implemented measure: The new classification and wage system introduced in the county and capital government offices within the framework of the reform launched in 2016 is the first measure in the revision of public institutions, which will continue in several steps. This system is planned to be gradually introduced in public administration as a whole. The wage scale will be replaced by a system that better appreciates performance. Wage bands will be determined, which better encourages performance and higher efficiency.

5.3.2 Revision of the structure of public administration – making the functioning of the state more efficient, one means of which may be the revision of the background institutions of ministries and the termination of parallelisms.

Implemented measure: In 2016, within the framework of the reduction of red tape the government examined the closure of 90 public background institutions, half of which were terminated by succession, thus reducing parallelisms and bureaucracy.

5.3.3 Regular satisfaction survey concerning public services – improving the quality of public services through regular satisfaction surveys.

5.3.4 Promotion of law-abiding behaviour – improving the efficiency of arranging legal matters, which may contribute to strengthening the law-abiding behaviour of economic agents. For this, it may be expedient to take steps, inter alia, to accelerate sentencing.

Implemented measure: The National Assembly adopted the new criminal procedure code, which intends to accelerate criminal procedures.

5.3.5 Acceleration of public administration through e-governance – reduction of the private sector's administrative burdens, an important instrument of which, based on international experiences, is e-governance.

5.3.6 Acceleration of the issuance of construction permits – faster and more efficient administration in the construction sector, which is also of key importance in terms of investment, dwelling and economic growth, and especially the reduction of procedures necessary for a construction permit.

Implemented measure: As of 1 January 2016, a simplified permit procedure was introduced for residential properties not exceeding 300 square metres. This significantly reduced the administrative burden on households, thus facilitating the expansion in household investment. In addition, however, further simplification would be necessary in the case of buildings, offices and industrial facilities built by companies, in order to facilitate investment decisions and stimulate the economy.

5.3.7 Development of public utility services – in the case of greenfield investment, the acceleration of the occupancy of new buildings and making the connection of electricity easier.

Implemented measure: The National Competitiveness Council (NCC) is a body established by the Hungarian Government. The main task of the NCC is to strengthen the competitiveness of Hungary and to formulate proposals in order to improve public services. In 2017 H1, one of the first proposals for measures of the Council concerned the improvement of utility services, as a result of which the Hungarian National Assemblyalso adopted an amendment of the law. As a result of the new regulation, below a specified size category the permitting procedures for the connection of electricity, water and natural gas has become faster, and the fees related to the procurement of meters have fallen.

5.3.8 Increasing the effectiveness of bankruptcy proceedings – improvement of the efficiency of bankruptcy proceedings, which would contribute to the financial stability of the private sector, and in particular of the SME sector.

5.4 COMPETITIVENESS OF HUMAN RESOURCES

5.4.1 Measures concerning demographic developments – increasing the maternity leave payment, the family tax base allowance and the one-off maternity grant as well as the capacity of crèches, and the period of the child care benefit/maternity leave payment should qualify as employment.

Implemented measure: From 1 January 2017 the scope of settlements where it is mandatory to maintain crèches has expanded, and new, 'flexible' forms of crèche provision have also become permitted. In addition, the size of the family tax base allowance and the range of beneficiaries have increased. As announced by the government, 2018 will be the year of families. Accordingly, the degree of the family tax base allowance, which has been increased gradually since 2016, will be raised further until 2019 for families with two

children, the period of the maternity leave payment for those with a degree will be extended by one year, the student and mortgage loan debts of women who undertake to have more than one child will be reduced or cancelled, and some HUF 100 billion will be spent on the development and establishment of crèches and kindergartens within the framework of various tenders.

5.4.2 Providing additional funds by allowing private funds in the health sector – improving the standard of public health care, for which – in addition to an improvement in efficiency – expansion in funding available for the health provision system seems to be necessary.

5.4.3 Strengthening preventive healthcare – life expectancy should gradually catch up with the average value of EU countries; strengthening preventive healthcare may contribute to this.

Implemented measure: The improvement of public catering continues, and a programme will be launched to develop children's health conscious lifestyle in order to promote healthy nutrition and active lifestyle. The Ministry of Human Capacities started to elaborate the 'National Public Health Strategy 2017–2026' for the period 2017–2026. From 1 January 2017, the public health product tax applies to beers prepared with sweeteners and to alcoholic refreshments as well. Also from the beginning of 2017, the order or minors' screenings became stricter: there will be more medical examinations than now, and it will be compulsory to participate in all of them until the age of 18. The two-step colon screening will be centrally organised and available all over the country for the 50–70 age group. In addition, the ratio of district nurse cervix screening will be further increased, and the system of breast cancer screening will be strengthened.

5.4.4 Connecting childbearing and pensions – the pension system should be just and sustainable, a possible means of which is the acknowledgement of childbearing in the pension system.

5.4.5 Strengthening the role of self-reliance – the role of partial self-reliance should gradually strengthen in the fields of health care and the pension system, and the amount of pension savings should grow.

Implemented measure: At the initiative of the MNB, various amendments to the law were adopted, which aimed at the more flexible use of fund services, the improvement of members' knowledge, the greater coverage of the society with fund products and an increase in the economies of scale for funds. These steps resulted in the appearance of health and mutual aid funds as new type of funds, and thus now within one fund it is possible to have recourse to the services that used to be available only with memberships in two funds. Voluntary pension funds that operate an optional portfolio system may allow their members to place the amount collected on their individual account in two portfolios simultaneously. As a result of the comprehensive ethical regulation amendment in the pension and life insurance market, the choice of insurance products was replaced by lower-cost products that are of more stable value. In addition to the modification of the regulatory environment, the MNB communicates through printed and online channels as well to call attention to the importance of self-reliance.

5.4.6 Increasing the amount spent on education from budgetary and private sources – improving the performance of the education system, which can be supported by increasing the amount available for education institutions from budgetary and private sources.

Implemented measure: Teachers' pay rises within the framework of the career path model introduced in 2013 continued in the past period. Teachers working in public education receive an average pay rise of around 40 percent in total until 2017. From 1 January 2016, crèche teachers with tertiary education also became involved in the promotion system of educators. Starting from 2016, the career path model was introduced in tertiary education as well; a 15 percent pay rise was granted in the sector in the first year. A steady increase has been observed in the education expenditures of the budget since 2013.

5.4.7 Improving the quality of elementary and secondary education – the quality of elementary and secondary education as well as the acquisition of basic skills in public education should improve.

Implemented measure: For the education system to comply with the present and future expectations of the labour market as best as possible, the revision of the National Core Curriculum and framework curricula has started. The underlying concept was formulated by the spring of 2017, and the relevant professional consultations are going on at present as well. The subject of the consultations is the introduction of a 9th grade in elementary school education.

5.4.8 Improving the knowledge of languages in secondary education – the level of the knowledge of languages should improve, which may be facilitated by widening language teaching in secondary education.

5.4.9 Further increase in the number of graduates – the qualification of Hungarian labour should meet the current expectations and should be able to conform to future needs.

5.4.10 Increasing the ratio of graduates in technical subjects and natural sciences – the structure of tertiary education should be adapted to the needs of the labour market, i.e. the ratio of graduates in technical subjects and natural sciences should grow further.

Implemented measure: The strategy 'Changing Gears in Tertiary Education' contains the renewal of the structure of technical and IT training, increasing the efficiency of teaching methods as well as the thorough revision of training and output requirements in the light of sectoral trends, the demands of domestic companies and international experiences. In addition, a set target is the reduction of the ratio of drop-out, which is a serious problem affecting technical and scientific training, by 10 percentage points.

5.4.11 Increasing the R&D expenditures in the tertiary education system – the contribution of tertiary education to the innovation performance of the Hungarian economy should increase.

Implemented measure: The strategy 'Changing Gears in Tertiary Education' sets a target of raising the R&D&I expenditures in tertiary education to 0.5 percent of GDP and increasing the institutional system's direct R&D&I revenues to 10 percent by 2020. In order to achieve this, within the framework of two tenders the government provided a total HUF 35 billion of EU and budgetary funds in the 2016–2020 period for the cooperation of tertiary education institutions and industrial research centres. Within the framework of the tender, the members of the accepted eight consortia undertook to increase the number of the employed research and development staff, and also assumed obligations concerning the number of doctoral candidates involved in the research work, publications, industrial property rights procedures and the spin-off enterprises starting from the institution.

5.4.12 Mental health package – the mental health of the Hungarian population should improve.

5.5 MORE EFFICIENT ABSORPTION OF EU FUNDS

5.5.1 Competitiveness and growth aspects of development policy and their impacts – by 2020, at least 50 percent of the enterprise development funding should be received by preferential sectors.

Implemented measure: The calls for applications were announced for the total support framework of some HUF 9,000 billion belonging to the 2014–2020 cycle, and 85 percent of the total amount is expected to be contracted by end-2017. Based on the funds allocated to the thematic objectives, more than 20 percent of the total amount will be received by the energy, information and communication technology and R&D&I sectors. In addition, more than 20 percent of the total amount serves the development and support of SMEs and employment.

5.5.2 Competitiveness and growth plans of development policy in Hungary – 60 percent of the EU funds should directly be spent on economic development, and this requires the reform of the institutional system.

Implemented measure: 60 percent of the EU funding scheduled to be disbursed in the 2014–2020 cycle will be spent on economic development according to the government's targets. Of the operational programmes announced in the 2014–2020 programming cycle, several have economic development aspects as well, and the EDIOP and CCHOP operational programmes expressly have economic development objectives. According to our calculations, based on the tenders announced in accordance with the priorities of the operational programmes, the value of the tenders that have direct economic development objectives reaches 50–55 percent of the total amount of available funds. Within the funds belonging to the 2014–2020 cycle and disbursed until 2017 H1, the ratio of funds with a direct economic development objective is estimated to be 40 percent.

5.5.3 Further preparatory tasks of the development cycle serving competitiveness and growth – focusing EU funding on activities, sectors, groups of entrepreneurs and regions of high potential economic growth as well as on employment and increasing value added.

Implemented measure: See the points above. (The actual effect of the 2014–2020 funds on economic development and growth can be assessed after 2020.) The thematic objectives formulated by the EU and the operational programmes prepared in line with them exactly determine the sectors and regions where the funding can be spent.

5.5.4 Increasing the absorption of directly accessible EU funds in Hungary – increasing the participation and absorption of Hungarian players in the award and absorption of the funds directly controlled by the European Commission and the European Investment Bank (EIB).

5.6 SPECIAL TOPICS

5.6.1 Expansion of stock exchange activity and capitalisation – expansion of the activity and capitalisation of the Budapest Stock Exchange in order to increase the weight of capital market financing and financial intermediation.

Implemented measure: In December 2015, the Budapest Stock Exchange (BSE) became Hungarian-owned again, with the Magyar Nemzeti Bank as its majority owner. In 2016, the BSE adopted a 5-year strategic plan, the overarching aim of which is to formulate and implement a comprehensive stock exchange development programme in Hungary, which will result in capital fundraising increasing its role in Hungarian corporate finance, making it an effective supplement to credit from the banking system, which is currently predominant. The objective of the BSE is to become the most important platform for competitive, successful enterprises in Hungary. Increasing stock exchange activity has positive effects on the national economy. If the capitalisation of the domestic stock market increased by 30 percent of GDP in line with the objectives of the stock exchange development strategic plans, according to the MNB's estimate it would raise potential GDP growth by 0.2–0.3 percentage point. Waberer's International Zrt. entered the stock market in 2017, and trading in its shares, the fifth largest paper on the Hungarian stock exchange, started at the BSE.

5.6.2 Stimulating the increase in households' savings – stimulating households' savings, resulting in an increase in the amount of funds necessary for investment which contributes to the development of the economy, without a rise in external debt.

Implemented measure: The health contribution tax on interest incomes, the rate of which was previously 6 percent, was cancelled as of 2017.

5.7 BANKING SYSTEM COMPETITIVENESS

5.7.1 Stimulation of corporate lending that supports growth – restoration of market-based corporate lending which ensures support for sustainable economic growth and means a 5–10 percent expansion in annual terms in corporate, and within that SME, loans outstanding.

Implemented measure: The Funding for Growth Scheme (FGS) introduced as a temporary and targeted instrument by the Magyar Nemzeti Bank in 2013 fulfilled the trend reversing and growth objectives defined upon its announcement, and thus it was gradually phased out starting from the beginning of 2016. In parallel with that the Growth Supporting Programme (GSP) was launched, with the aim of facilitating banks' smooth return to market-based lending. A part of this is constituted by the Funding for Growth Scheme's third, phase-out period, which consists of two pillars. Compared with the second phase, the first pillar allows for more limited HUF-based lending both in terms of volume and loan purposes. The second pillar allows banks to provide FX financing to SMEs that have natural FX hedge. With this pillar the MNB intends to address the market distortion observed in long-term FX financing. The GSP also comprises the Market-Based Lending Scheme (MLS), a package of instruments containing positive incentives for banks to boost their lending activities. The MLS supports the banking system's lending activity through an interest rate swap conditional on lending activity (LIRS), a corresponding preferential deposit facility, as well as incentives by means of setting banking capital adequacy requirements and a new corporate credit information system. Between 2009 and 2013, the SME sector's loans outstanding shrank by more than 5 percent. However, as a result of the MNB's targeted lending stimulation programmes, it was possible to avoid the total freezing of the credit market, and as a result of the stimulation of lending activity as well as of the gradual recovery of the European economic activity from the crisis, since end-2015 the expansion dynamics of the Hungarian SME sector's loans outstanding has been in the 5–10 percent band, which is estimated to be optimal by the MNB.

5.7.2 Sound bank financing of the household sector – achieving active, but prudent household lending, primarily in the financing of home-building.

Implemented measure: As a result of the underregulation of the credit market before 2010, the FX-denominated (mainly Swiss franc) indebtedness of Hungarian households reached unhealthy and unsustainable levels, and in view of the considerable external vulnerability and exchange rate increases, instalments rose significantly. In order to reduce households' financial burdens, the Hungarian government and the Magyar Nemzeti Bank decided to convert the foreign currency loans into forints and to phase them out once and for all. The MNB undertook an active, initiating role in the negotiations between the banking system and the government, but the implementation of the conversion required a government decision, for which the Curia's decision of 16 June 2014 created the legal grounds. In the implementation phase, the MNB contributed to the successful conversion of households' FX loans into forints by making the necessary FX liquidity (some EUR 9 billion) available for the commercial banks. Due to the nature of the conversion into forints, the conversion exchange rate had to be fixed in advance, which required close cooperation between the three parties (government, banks and the MNB). The foreign currency tenders linked to the phase-out of household mortgage loans were conducted in the autumn of 2014 and in early 2015, while the forint conversion tenders for FX-denominated personal and vehicle loans were conducted in August and September 2015, i.e. practically no foreign currency loans remained in Hungarian households' balance sheets by end-2015. The conversion exchange rate of FX loans was successfully fixed before the Swiss central bank terminated its exchange rate threshold against the euro, and thus the negative impacts of the further appreciation of the Swiss franc did not effect Hungarian households. As a result of the settlement, in the case of an average debtor the repayment burdens declined by 20 percent, while for an average debtor with a mortgage loan they fell by 25 percent. Without the settlement and conversion into forints, the repayment burden of the earlier FX-based mortgage loans could have been even 70 percent higher upon the termination of the Swiss central bank's exchange rate threshold against the euro.

Based on its authorisation laid down in the new MNB Act effective as of 1 October 2013, the MNB as macroprudential authority adopted an MNB decree, which is at the same level with government decrees in the hierarchy of legal regulations, in order to prevent excessive outflows of household loans. The new regulation, which entered into force on 1 January 2015, consists of two main pillars. The payment-to-income ratio (PTI) limits the repayment burdens that can be assumed with new loans in a certain ratio of the regular, verifiable incomes of customers, and thus reduces their indebtedness. The loan-to-value ratio (LTV) limits the size of available loans as a proportion of the value of collateral (value of real estate), in the case of collateralised loans (e.g. mortgage loans). In the case of new forint loans taken after 1 January 2015, the

payment-to-income ratio may not exceed 50 percent, and in the case of customers with high income (net income of HUF 400,000 or higher) it may not exceed 60 percent.

From 2016, signs of a permanent change in trends can be identified in household lending, accompanied by a steady easing in supply conditions. Nevertheless, the average interest rate spread on housing loans significantly exceeds the ones observed in the countries of the region, which is mainly attributable to the insufficiency of market competition. At the same time, in international comparison, both household loan penetration and – in spite of a pick-up in new loans – the dynamics of loans outstanding are well below the regional average.

5.7.3 Strong banking system capital and liquidity position over the long term – banks should have sufficient capital over the long term as well to be able to cover their expected losses and adequately support sustainable growth with lending even in the case of an unfavourable macroeconomic scenario.

Implemented measure: Following the outbreak of the financial crisis, the need to mitigate the systemic risks arising from banking system pro-cyclicality arose, and one of the most important tool to achieve this has become the so-called countercyclical capital buffer. Firstly, this new instrument directly increases the banking system's shock absorbing capacity, and secondly, it also mitigates the financial cycle swings. The supplementary capital requirement accumulated in the ascending phase of the credit cycle may curb credit outflows, while in crisis periods the release of the formerly accumulated capital buffers helps lending, and thereby the recovery of the economy. The MNB conducts quarterly revisions of its countercyclical capital buffer requirement introduced from 1 January 2016. As part of this, it also publishes its assessment of the current situation of the financial cycle, underlying the revision. Considering the current state of the financial cycle and the developments in cyclical-type systemic risks, the MNB determined the countercyclical capital buffer rate applicable to domestic exposures as 0 percent, hence it does not impede the development of lending which is about to accelerate.

In order to maintain the liquidity buffers accumulated in the banking system, accelerating the European scheduling, from 1 April 2016 the MNB prescribed the 100 percent liquidity coverage requirement (LCR), which regulates and ensures the banking system's solvency. At present, the banking system has adequate liquidity reserves, the majority of institutions maintain significant buffers above the minimum requirement, and thus the LCR serves as a risk prevention tool. In the future, the prescribed minimum LCR level is likely to effectively prevent the development of liquidity risks both at individual bank level and systemic level.

5.7.4 Banking system that is profitable over the long term – over the long term, banking system profitability should become stable at a level that is able to ensure the owners' permanent interest, attaining this through prudent lending practices and fair competition between the parties.

Implemented measure: Credit institutions closed 2016 with an outstanding result, i.e. with pre-tax profits amounting to HUF 517 billion. As a result of the historically high profit, the return on equity rose to its pre-crisis level, with its pre-tax value being 16.9 percent. However, the positive picture is refined by the fact that the increase in credit institutions' profitability mostly originated from the improvement in single and one-off, unsustainable profit and loss items. The improvement in the operating profit was influenced to the largest degree by the decrease in credit losses; this profit and loss item also contributed, in an unusual manner, to the increase in profits. However, the persistence of this situation is doubtful: the loss realised on the sold portfolios indicates that the return achievable by banks does not justify a further permanent reversal of the loan loss. In accordance with the amendment to the law that entered into force in January 2016, the bank levy was reduced compared to the previous year, and the decrease will continue – albeit at a smaller rate – in 2017 as well. Although in the absence of the one-off items recognised during 2016 no similar profit can be expected in the coming years, the reduction of the bank levy and the impact of the decline in non-performing portfolios on profits may raise the profitability of the Hungarian banking system close to the average level of the region.

5.7.5 Decline in non-performing household and corporate loans – significant reduction of the high non-performing ratio within loans outstanding extended by the banking system to the private sector, which may improve the banking sector's ability and willingness to lend.

Implemented measure: In the past years, the central bank helped the banking system with a number of targeted measures to clean up the corporate loan portfolio. As part of this, the MNB established MARK Zrt., which contributed significantly to the elimination of non-performing commercial loans from the banking system. With the foundation of MARK Zrt., interest in the Hungarian market among investors specialising in this area increased considerably, and for domestic banks it became obvious that they were unable, and it was also not worth it, to further postpone thorough portfolio cleaning. As the ratio of non-performing corporate loans of the banking system declined to nearly one half, and even the market is able to handle the remaining portfolio, the MNB decided to sell MARK Zrt. in the market. The winner was APS Investment s.r.o., one of the most important professional investors in Central and Eastern Europe, which acquired 100 percent ownership in MARK Zrt.

The management of the systemic risks arising due to problematic project loans can be best ensured by a targeted macroprudential instrument, the Systemic Risk Buffer (SRB) requirement. The SRB is an instrument for the management of concentrated risks stemming from specific exposures. The SRB must be made of the best-quality (CET1) capital elements in addition to the SREP capital requirement. Basically, this instrument can manage risks in two ways: firstly, due to the higher capital requirements it significantly increases the resilience to shocks of the institutions concerned; secondly, by increasing the capital requirements and thus the user costs, it efficiently encourages institutions to reduce problematic project exposures. The capital buffer must be first accumulated starting from 1 July 2017, based on data for the end of the first quarter of 2017.

2016 could be considered a turning point in the management of non-performing household mortgage loans in several respects. The extraordinary foreclosure and eviction moratorium, introduced as a supplementary measure related to the settlement and the forint conversion, was lifted in March, which offered a new opportunity for portfolio cleaning. In March 2016, the MNB issued a recommendation concerning the permanent restoration of the solvency of defaulting household mortgage loan debtors. The lenders falling within the scope of the recommendation contacted the debtors from May 2016 at a predefined schedule: by the end of the year the first contact was established with roughly 72,000 debtors.

5.7.6 Efficient and innovative banking system – a banking system that functions at low operating costs and at the same time has a developed risk management system, which allows lower margins.

Implemented measure: In 2017, the Magyar Nemzeti Bank decided that GIRO Zrt., which is owned by the central bank, should set up the central infrastructure of the instant payment system. The system must be ready for the instant processing of payment transactions as of 2019 H2, and the rise in service level must not entail any perceptible fee increase for payment service providers or for their clients. Use of the system will allow the performance of transfers and other innovative payment orders based on them within maximum 5 seconds on every day of the year, night and day. A database handling secondary account identifiers will also be created; as a result, it will be possible to launch payments by using email addresses, mobile phone numbers or tax numbers, without having to know the receiver's long bank account number. All of these functions will be ensured by the new basic infrastructure with outstanding processing capacity and continuous availability. As a result of the development, new payment service providers' and FinTech firms' entering the market will become simpler, which encourages the creation of innovative payment solutions, as all providers will be able to use the same modern basic system for their services. The winners of the resulting increase in competition will be retail and corporate customers, who will practically be able to use fast and efficient payment solutions as well in addition to cash in any payment situation. The new payment system will ensure the immediate and final execution of payments for customers, resulting in the prompt reusability

of the amounts sent. For this purpose, payment service providers must continuously ensure that they always keep a sufficient amount of money as cover on the technical account of GIRO Zrt. held with the MNB.

From February 2016, the MNB launched its securities account query application (ÉSZLA), where the clients of investment service providers may – anonymously – learn about the balance of their securities and customer account held with the investment service provider. The platform may allow a significant strengthening in the supervisory efficiency of the central bank, and thus in the confidence in financial markets as customers may compare whether their data sent to the MNB and to them are in conformity. On the surface of the ÉSZLA, the end-of-month balance of the available funds as well as the identifier, description and quantity of the securities held on the account and the currency of the settlement can be seen; in the case of debt securities (e.g. government securities), the nominal value as well. Since July 2017 electronic customer identification has been possible in Hungary as well. As a result, one can open an account through online channels as well. The framework of customer identification and the detailed rules of the procedure are determined by Decree 19/2017 (VII. 19.) of the Magyar Nemzeti Bank, in which the MNB declares that financial institutions must use safe and audited electronic channels for the account opening procedures.

In assessing the steps taken towards digital convergence, strategies relying on this were seen in the case of several banks. In the past period, the MNB paid special attention to the examination of various international indicators in the area of bank digitalisation for the assessment of Hungary's relative development. It was found that Hungary still lags well behind the EU in terms of the ratio of those who use internet banking and those who execute payments through the internet. Although the rate of the development observed so far can be explained with the Hungarian banking system's weaker ability to attract capital typical in the past years, the current trends of profitability and activity undoubtedly provide adequate motivation to attract further investment.

5.7.7 Competing banking system – fair competition in the banking system, which may improve the competitiveness and growth potential of the economy through more efficient allocation of funds.

Implemented measure: In terms of both financial stability and consumer protection, the MNB considers the development of price competition in the market of housing loans to be extremely important. In the MNB's assessment, price competition among domestic banks is not strong enough in the area of housing loans: this is shown by the level of average interest rate spreads, which is high in international comparison, and the low number of loan refinancing transactions. In order to reduce interest rate spreads and increase the transparency of loan products, the MNB created the qualification 'certified consumer friendly housing loan', which can only be awarded to bank housing loan products that meet the conditions. With the introduction of the qualification, transparent and comparable housing loans with standard conditions and favourable pricing can spread in the market. A criterion vis-à-vis the consumer friendly product is that it must be available for a wide range of consumers, including the borrowers who benefit from the family home creation allowance (CSOK). Only easily understandable and comparable housing loan products that can be taken with simple administration and that do not contain hidden costs and tie-ups can receive this qualification. The product must ensure the predictability of the amount of the future payment obligation over the longer term as well. Other important criteria include flexible adjustment to the consumer's changed circumstances and encouraging consumers to utilise the advantages stemming from loan refinancing.

Albert Szent-Györgyi

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

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

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

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

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

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

In 1947 he left the country, and settled in Woods Hole, near Boston, where first he was the director of the Marine Biological Laboratory, then a professor of Dartmouth College. He devoted the last two decades of his life to cancer research. His important observation was the realisation of the role of free radicals in the development of cancer and the realisation of the radical catching role of vitamins (such as vitamin C). In 1972 he founded the National Cancer Research Foundation. In the 1960s he started to deal with politics as well. He wrote numerous articles in which he criticised the nuclear arms race, and in 1970 he also protested against the Vietnam War. In1978 he was a member of the delegation that brought the crown jewels back to Hungary.

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

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